LOST IN THE GROCERY AISLE

NAVIGATING THE CHALLENGES OF FOOD WASTE MANAGEMENT THROUGH PERFORMANCE MEASUREMENT SYSTEMS AND SENSEMAKING

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Lost in The Grocery Aisle: Navigating the challenges of food waste management through performance measurement systems and sensemaking

Abstract

This paper aims to uncover how Sustainability Performance Measurement Systems (SPMS), and more specifically KPIs, can be used as tools to make sense of the challenges inherent to sustainability management, within the specific empirical setting of food waste. Through a case study based on a global food retailer in Sweden, we aim to comprehend how employees use food waste KPIs to make sense of the challenges inherent to food waste management. We base our research on analytical concepts that merge two areas of the literature: research on organizational sensemaking, and studies investigating the function of accounting in sustainability decision-making. Our study makes three key contributions: (1) highlighting the role of sensemaking in shaping how employees manage trade-offs and work with KPIs, (2) emphasizing KPIs as enablers for addressing food waste management complexities, and (3) underscoring the significance of informal and formal sensegiving mechanisms to foster collective sensemaking. While KPIs can help employees comprehend the effects of their actions on food waste, our study also reveals their limitations and the importance of sensegiving to prioritize food waste reduction activities.

Keywords:

KPIs, Management Control Systems (MCS), Sustainability, Sustainability Performance Measurement Systems (SPMS), Sensemaking

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1. Introduction

The UN's Food and Agricultural Organization estimates that roughly one-third of all food produced for human consumption is lost or wasted annually, amounting to nearly USD 1 trillion in economic losses (FAO, 2019). Food waste undermines all three dimensions of sustainability. It constitutes a misuse of natural resources, incurs substantial costs, and is a major societal issue to tackle – as close to 830 million people are affected by hunger (UN, 2023). In our consumer society, the retail industry is one of the key sectors contributing to waste production, placing food retailers in a central position to address the challenges of reducing food waste and promoting resource efficiency.

While food waste reduction represents a cornerstone of food retailers' sustainability actions (Eriksson et al., 2014, Mena et al., 2011), it is not a simple task. External factors, such as changes in consumer behavior and fluctuations in supply chain management, create substantial uncertainty, resulting in demand fluctuations and significant variations in food waste at food retailers (Brancoli, 2017; Eriksson et al., 2014; Kazancoglu et al., 2020; Lee & Tongarlak, 2017; Mena et al., 2011). Despite efforts to mitigate food waste, such as discounting and donations, food retailers face challenges due to the perishable nature of food and the unpredictability of customer demand (Eriksson et al., 2014; Lee & Tongarlak, 2017). In addition, the imperative of realizing sales and maintaining high product availability can lead to overstocking and inadvertently food waste (Filimonau & Gherbin, 2017). Yet, the environmental impact, ethical concerns, and economic costs associated with food waste also exert pressure on food retailers to prioritize waste reduction efforts. As a result, food retailers are constantly faced with the challenge of balancing sales maximization with food waste reduction.

The issue of food waste management in the retail sector thus presents a compelling context to investigate the challenges of sustainability management. Scholars contend that corporate sustainability requires the pursuit of various goals across multiple time frames (Benkert, 2021; Chen et al., 2021; Hahn et al., 2014). These goals tend to be multidimensional, with the economic, social, and environmental dimensions being the most prominent. As those dimensions may involve desirable yet interdependent and conflicting demands, corporate sustainability entails multiple tensions that can undermine companies' sustainability efforts (Pencle, 2022). Decision-makers encounter ambiguity in comprehending sustainability issues, their ramifications, and how to address them (Sharma & Jaiswal, 2018). The inquiry into how employees comprehend sustainability tensions remains insufficiently investigated, and a thorough analysis of employees' sensemaking of sustainability tensions is still lacking (Chen et al., 2021; Hahn et al., 2018).

To make sense of the ambiguity inherent to corporate sustainability, Management Control Systems (MCS) have been called to play a central role in shaping the processes supporting

sustainability strategy implementation (e.g. Traxler et al., 2020). Yet, our understanding of how companies use management control to support sustainability strategies is limited (Sundin & Brown, 2017). Furthermore, despite the need to structurally embed all three dimensions of sustainability, organizations primarily rely on MCS that prioritize financial results, resulting in a sustainability paradox (Argento et al., 2022; Durden, 2008). Within the MCS literature, some papers have investigated external sustainability reporting practices, but limited attention has been directed to exploring how employees draw on accounting to make sense of corporate sustainability (Durden, 2008; Egan, 2019). Few papers have looked at the role sustainability performance measurement systems (SPMS) play in managing these contradictions (Argento et al., 2022).

Our study thus aims to uncover how SPMS – and more specifically KPIs – can be used as tools to make sense of the challenges inherent to sustainability management, within the specific empirical setting of food waste management. The research question developed in this study, therefore, asks: *How are food waste KPIs implicated in employees' sensemaking processes of the challenges inherent to corporate food waste management?*

To comprehend how employees use SPMS to navigate sustainability challenges, we draw on analytical concepts that merge two areas of literature, namely, research on organizational sensemaking, and studies investigating the function of accounting in sustainability decision-making. By using sensemaking as a theoretical lens, we answer the call from Smith and Tracey (2016) to "*develop more compelling insights by discovering tensions inductively and by seeking, as far as possible, to view the world from the perspective of their informants, rather than assuming a set of tensions at the outset*". In addition, exploring the internal dynamics of sustainability by centering on organizational actors has been identified as a relevant research avenue to better understand how sustainability trade-offs are managed (Argento et al., 2022).

Management accounting is considered a critical tool to mitigate food waste in the food retail sector (Brancoli, 2017). However, while several studies have focused on food waste quantification and categorization (Brancoli et al., 2017; Eriksson et al., 2017; Eriksson et al., 2014, Kazancoglu et al., 2020; Lee & Tongarlak, 2017), none have explored how accounting can address the challenges of food waste management. In addition, Filimonau and Gherbin (2017) found that managerial attitudes often present a significant barrier to the adoption of effective food waste management practices. Food waste management entails various challenges, compounded by the inherent uncertainty of the food retail industry. Thus, examining employees' perception of food waste and the role SPMS play in addressing its specific challenges, is an interesting avenue to comprehend how food waste management is integrated across companies.

To answer our research question, a case study was conducted by investigating food waste management practices of FoodCo[1], a global discount food retailer that entered the

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[1] The name of the company and employees interviewed have been disguised to protect the confidentiality.

Swedish market in 2003. Data was collected through semi-structured interviews with 15 employees from FoodCo's Swedish office and one employee from the Swedish Food Retailers Federation, also known as Svensk Dagligvaruhandel (Svdh) in Swedish. As sustainability is such a transversal topic, effective measurement and management of sustainability require a high level of interplay between various actors in a company (Maas et al., 2016). Therefore, to get a more comprehensive picture of food waste management, the interviewees were selected from different departments and hierarchical levels. While the roles of specific actors in organizations, such as accountants or sustainability managers, have been examined, researchers have not adequately addressed the interaction between different departments and management levels (Maas et al., 2016). This study thus aimed to investigate how different departments perceived one another and worked together to make sense of the challenges related to food waste management.

Our findings indicate that employees' personal beliefs and department focus influence the cognitive frames they adopt to understand the trade-offs involved in food waste management. These cognitive frames, in turn, affect how employees interact with food waste KPIs. Thus, our study enhances the understanding of how employees' cognitions, attitudes, and emotions intersect with sustainability tensions (Chen et al., 2021; Joseph et al., 2020; Luo et al., 2020; Sundin & Brown, 2017). Furthermore, we highlight the potential of SPMS as facilitators in making sense of the complexities of food waste management (Wouters & Wilderom, 2008), with KPIs enabling employees at various levels and departments to comprehend the impact of their actions on food waste management (Ferreira & Otley, 2009; Wijethilake & Ekanayake, 2018). Furthermore, we also emphasize the significance of both formal and informal sensegiving mechanisms to promote collective sensemaking (Egan, 2019; Gioia & Chittipeddi, 1991; Goretzki & Messner, 2016) on the importance of food waste management. As such, we also point out the limits of KPIs in acting as enablers, as they are not enough to ensure that employees work towards food waste reduction.

The thesis will be structured as follows: Section 2 provides a literature review to clarify the relationships between sustainability trade-offs, SPMS, organizational roles in sustainability integration, and the sensemaking of food waste management. Section 3 outlines the methodology, while Section 4 summarizes the empirical findings and Section 5 situates them within the literature. In Section 6, we discuss the relevance of the study for addressing food waste management challenges, offer implications for theory and practice, and discuss limitations and future research directions.

2. Literature review

The following section provides a review of the literature pertinent to answering the research question. Section 2.1 explains the challenges inherent to corporate sustainability. Section 2.2 investigates the role played by SPMS in operationalizing sustainability strategies. Section 2.3 reviews how organizational actors across departments and hierarchical levels interact with SPMS. Section 2.4 showcases the challenges inherent to food waste management. Section 2.5 presents sensemaking as the theoretical lens adopted to analyze the case findings. Section 2.6 details the theoretical framework, which delves into the SPMS and sensemaking literature to uncover how employees manage challenges inherent to food waste management.

2.1. Multiple Dimensions and Tensions of Corporate Sustainability

Organizations with strong sustainability commitments seek to balance strong financial results with the social and environmental impacts of their activities (Carroll, 2010). Yet, simultaneously achieving effective financial, social, and environmental objectives is one of the biggest sustainability challenges (Epstein et al., 2015). Pursuing multiple goals across multiple time frames is at the core of corporate sustainability (Benkert, 2021; Chen et al., 2021; Hahn et al., 2014), and this inherent complexity also gives rise to contradictions and conflicts. According to Hahn et al. (2014), most firms experience strategic tensions, as decision-makers often implement contradictory strategies to address the triple-bottom-line levers of sustainability. Environmental, social, and economic concerns *"reside at different levels, require change processes, or operate in conflicting temporal and spatial frames"* (Hahn et al., 2014).

Furthermore, although sustainability needs to be anchored in all three dimensions, organizations with strong sustainability commitments primarily rely on MCS that emphasize financial performance, resulting in a sustainability paradox (Argento et al., 2022; Durden, 2008). Managers often favor short-term financial measures over longer-term nonfinancial measures, even in companies with strong sustainability commitments (Ittner et al., 2003). In a case study on an Italian-listed multi-utility company, Argento et al. (2022) showed that the profitability goals were prioritized over other sustainability goals, as parallel MCS existed resulting in sustainability not being integrated within all organizational practices. Besides, the indicators being monitored and linked to the company's remuneration system were mostly related to financial issues, indicating that the social and environmental dimensions of the company's sustainability performance were marginalized and subordinated to the financial one (Argento et al., 2022). Investigating the internal dynamics of sustainability by examining organizational actors can be a relevant research avenue to understand how this sustainability paradox unfolds (Argento et al., 2022).

Although social, economic, and environmental dimensions may be diverging in essence, there are highly interconnected. Decision-makers within organizations face ambiguity in understanding sustainability issues, their implications, and how to tackle them (Sharma & Jaiswal, 2018). While complexities are embedded in the management of corporate sustainability (Daddi et al., 2019), there is a lack of research analyzing tensions and conflicts linked to it. Furthermore, the literature lacks studies on the design and implementation of systems to achieve sustainability (Joshi & Li, 2016).

To address this misalignment, organizations must reconcile the economic, social, and environmental dimensions of sustainability and harmonize organizational goals with societal responsibility (Argento et al., 2022). While the sustainability paradox has been examined by analyzing how companies use MCS (Hunoldt et al., 2020), few papers have investigated the role SPMS play in managing these contradictions.

2.2. Ambivalent Role of SPMS in Sustainability Management

"What gets measured gets managed" - for companies' sustainability agenda to be successfully implemented, the strategic relevance of sustainability needs to be translated into operational activities, making the measurement and management of sustainability performance critical (Gebhardt et al., 2022; Schaltegger et al., 2015; Searcy, 2011; Traxler et al., 2020).

SPMS can be defined as the systems governing the process of collecting, analyzing, and communicating sustainability performance information to support better management decisions (Maas et al., 2016). Such systems play a pivotal role in controlling and ensuring that a company is aligned and working towards the same goal (Wijethilake & Ekanayake., 2018). Lisi (2015) demonstrates that adopting SPMS helps clarify expectations, by providing a coherent reflection of environmental priorities and reducing the ambiguity associated with tasks related to achieving environmental strategies.

At the core of SPMS, we find the Sustainability Key Performance Indicators (SKPIs), which are the economic, environmental, and social performance measures adopted by organizations to assess their sustainability performance and the success of their sustainability strategy (Thoradeniya et al., 2015). While SPMS are of high importance to operationalizing a sustainability strategy, translating sustainability strategy objectives into KPIs in a performance measurement system is a complex process (Virtanen et al., 2013).

In most organizational contexts, several uncontrollable factors can affect the KPIs set to evaluate environmental performance (Virtanen et al., 2013). In a case study analyzing a Finish-based company's energy efficiency strategy, Virtanen et al. (2013) highlight the complexities involved in the measurement and management of SKPIs. First, they demonstrate that various uncontrollable factors can affect the performance outcome of a particular SKPI. Second, due to the complexity of defining SKPIs, setting appropriate

performance targets is also a challenging process, as "*no practical method exists for setting relevant target levels*" (Virtanen et al., 2013). This in turn results in difficulties for employees across the company to understand how the indicator value is constructed, which impedes their ability to monitor the sustainability strategy accurately. In addition, introducing formal performance measurement systems, with measures perceived to have low controllability or technical validity, can be counterproductive and ultimately threaten overall performance (Franco-Santos et al., 2012; Virtanen et al., 2013; Wouters & Wilderom, 2008). Adopting a more flexible approach to the usage of KPIs, through setting loose targets for instance, has been identified as an avenue to mitigate such challenges (Jordan & Messner, 2012).

Not only are there challenges inherent to SKPIs formulation, but complexities can also be found when analyzing how the information from such KPIs is used across organizations. Indeed, having diverse SKPIs in an SPMS does not offer any assurance as to whether the insights provided by those will be factored in by managers in decision-making (Hunoldt et al., 2020).

As sustainability is such a transversal topic, effective measurement and management of sustainability information require a high level of interplay between various actors in the company for the collection, analysis, and communication of relevant information (Maas et al., 2016). Thus, understanding how SKPIs are being used across different departments but also hierarchical levels can be key to grasping how sustainability is operationalized within companies.

2.3. Departmental and Hierarchical Interaction with SPMS

SPMS shape actors' practices but are also shaped by actors. Yet, little is known about how managers, who are the very subject of an SPMS, mobilize those measurement systems in their day-to-day practices (Englund & Gerdin, 2015). Sustainability integration involves actors from different horizontal and vertical levels and requires further exploration (Argento et al., 2022; O'Dwyer & Unerman, 2016).

Analyzing SPMS from a vertical perspective sheds light on how a company's sustainability strategy is transformed into an actionable plan with measurable metrics to track progress. While the literature has focused on researching the tensions between finance and sustainability, few papers have looked at how this process is unfolding at different organizational levels.

When discussing the implementation of SPMS, most of the literature tends to focus on the top-management perspective (e.g., Battaglia et al., 2016; Ditillo & Lisi, 2016; Lisi, 2015), despite the crucial role of employees in gathering, analyzing, and evaluating data (Beusch et al., 2022; Johnstone, 2019). Beusch et al. (2022) found that the implementation of a sustainable balance scorecard and sustainability KPIs required intensive dialogues between strategic and tactical levels to mitigate the difficulties linked to the incomplete

technical and organizational integration of the two systems. Such dialogue was also demonstrated to avoid the marginalization of sustainability in favor of financial concerns (Beusch et al., 2022). Besides, involving lower-level management in defining performance targets can reduce role ambiguity (Chenhall & Brownell, 1988), which is particularly important within the context of sustainability.

Sustainability integration requires the involvement of different departments. Yet, departments operationalize strategies in different ways, as they do not focus on the same core activities (Virtanen et al., 2013). As such, studying the role SPMS play in such integration progress is specifically interesting. Several papers have demonstrated that managers in different organizational roles may seek different sustainability information types, either quantitative versus qualitative, monetary, physical, environmental, social, or economic (Mio et al., 2021; Schaltegger et al., 2015). The role of actors engaging with sustainability within specific departments has been investigated, such as that of accountants (Hartmann et al., 2013, Pencle, 2022) or the CSR department (Hunoldt et al., 2020). However, the interplay between different departments has not gained much attention from researchers (Maas et al., 2016).

The nature of the sustainability paradox is closely tied to how the internal dynamics of sustainability unfold, meaning how sustainability is implemented, practiced, but also understood by individuals within organizations. Investigating the connection between the system, groups, and performance outcomes could help bring further clarity to the SPMS discussion (Johnstone, 2019) and show how interactions help bypass the ambiguity of sustainability as a concept. Furthermore, researchers have emphasized the need to shift the focus of empirical studies from a "*content-driven analysis of sustainability initiatives to the underlying managerial perceptions, interpretations, and attitudes*" (Ditillo & Lisi, 2016; O'Dwyer, 2003).

2.4.   Complexity and Uncertainty of Food Waste Management

The food retail industry and the case of food waste management present a relevant context to explore the sustainability paradox and challenges in corporate sustainability management.

External factors, such as changing consumer behavior, weather patterns, supply chain management fluctuations, and competitors' offers, create a high level of uncertainty, leading to significant variations in customer demand (Brancoli, 2017; Eriksson et al., 2014; Kazancoglu et al., 2020; Lee & Tongarlak, 2017; Mena et al., 2011). This uncertainty, combined with the perishable nature of food, pose significant challenges for food retailers to accurately predict, manage, and measure food waste (Brancoli, 2017; Lee & Tongarlak, 2017; Parfitt et al., 2010).

Moreover, food retailers typically carry more food than they expect to sell, leading to food waste (Eriksson et al., 2014; Lee & Tongarlak, 2017). A lack of demand results in a

lower sell rate or turnover, which, combined with limited shelf-life, can increase food waste (Eriksson et al., 2014). As food waste is associated with social, economic, and environmental costs (Lee & Tongarlak, 2017), food retailers implement initiatives to reduce food waste, such as discounting products with short best-before dates and donations. Filimonau and Gherbin (2017) found that financial savings and reputational gains were the primary drivers for adopting food waste mitigation practices in-store. Although donations were high on the corporate food waste mitigation agenda, discounts were preferred to maximize revenues while addressing food waste.

To monitor food waste management, retailers implement food waste KPIs. However, there are no standardized KPIs established to measure food waste in the industry. Some actors report food waste in kilograms, while others in monetary value or as a percentage of total sales (e.g., Axfood, 2022; Coop 2022; ICA, 2022; Lidl, 2022). This creates difficulty for both external stakeholders and competitors to compare the respective performance of each food retailer (Brancoli, 2017).

Management accounting has been posited as a critical instrument in mitigating food waste within the food retail sector (Brancoli, 2017). In the paper of Brancoli (2017), the significance of relying on various food waste measures, such as food waste in mass, economic costs, and environmental impacts, is underscored. Moreover, the paper by Anand and Barua (2023) stresses the necessity for firms to adopt collaborative approaches with external partners across the supply chain, including non-profit organizations and suppliers, to enhance knowledge sharing and optimize internal production to reduce waste.

Furthermore, according to Filimonau and Gherbin (2017), managerial attitudes often present a significant barrier to the adoption of effective food waste management practices, notably in grocery retail ventures. Yet, with a few notable exceptions (Filimonau & Gherbin, 2017; Mena & al., 2011; Tjärnemo & Södahl, 2015), existing research has mainly focused on the issue of food waste quantification and characterization in supermarkets (Brancoli et al., 2017; Eriksson et al., 2017; Eriksson et al., 2014, Kazancoglu et al., 2020; Lee & Tongarlak, 2017). This study aims to plug this knowledge gap by exploring employees' attitudes and sensemaking processes regarding the importance of food waste minimization.

2.5. Making Sense of Sustainability with Accounting Tools

The theory of sensemaking, which posits that managers' actions are based on the meanings they ascribe to events and information, forms a cornerstone of the conceptual framework of this study (Weick et al., 2005). Sensemaking is an important process in organizational behavior that involves making sense of complex and ambiguous situations. It is a cognitive and social process that helps individuals and groups to understand their

context, identify patterns, and generate insights, to navigate uncertain organizational environments (Egan, 2019; Goretzki & Messner, 2016; Weick et al., 2005).

2.5.1. Interpretative Schemes, Personal Values, and Cognitive Frames in the Sensemaking Processes

Individuals' interpretation and understanding of a concept can vary based on internal factors, such as their background, values, and beliefs, as well as external factors, such as cultural, societal, and organizational structures (Dougherty, 1992; Joseph et al., 2020). Dougherty (1992) identified that departmental differences in knowledge and perspectives, explained as "thought worlds," act as filters to read information and can hinder interdepartmental collaboration. This was supported by Goretzki and Messner (2016), who showcase that individuals' role-specific accountabilities influence their sensemaking process. On top of departmental priorities, personal values can also significantly impact sensemaking processes and thus the way potential strategic tensions are managed (Joseph et al., 2020; Luo et al., 2020). As such, it is essential to recognize that individuals bring their unique perspectives and priorities to the decision-making process. This aligns with the findings of Sundin and Brown (2017), who found that environmental outcomes receive greater attention in decision-making when agents' interests are in line with them.

Although a diversity of thought can be an asset to explore strategic options comprehensively, it can also result in conflicting interpretations. Such conflicting interpretations, applied to the context of sustainability, can create confusion and a lack of clarity regarding organizational goals and priorities, resulting in fragmented sensemaking (Brown et al., 2015; Contrafatto, 2014). If different departments or employees with different thought worlds have diverging views on sustainability, it can lead to a lack of consensus and direction (Dougherty, 1992; Joseph et al., 2020), making it challenging to implement sustainable practices. This misalignment in sensemaking can create a sustainability paradox, where internal actors hold diverse expectations and understandings of sustainability and its associated objectives (Aras & Crowther, 2008; Bebbington, 2001). Hahn et al. (2014) suggest that decision-makers adopt one of two cognitive frames when addressing sustainability issues: a paradoxical frame or a business case frame. Paradoxical frames involve accepting and sustaining the duality and interdependence between opposing elements, without attempting to resolve tensions. Decision-makers adopting this frame prioritize workable certainty and ongoing experimentation. On the other hand, business case frames prioritize integrating opposing elements quickly, potentially at the expense of social and environmental goals. Decision-makers with a business case frame prioritize social and environmental issues that align with the firm's economic objectives (Sharma & Jaiswal, 2018). This means that adopting different kinds of frames influences the sensemaking process (Hahn et al., 2014).

2.5.2. Role of Sensegiving in Achieving Shared Sensemaking

While sensemaking is influenced by personal values and departmental priorities, it can also be influenced by other actors. According to Aras and Crowther (2008), Board of Directors and managers have a crucial role in prioritizing sustainability goals over financial and social dimensions. The personal commitment of directors influences the success of sustainability-related decisions made by managers (Epstein et al., 2015). Middle managers are responsible for implementing operational initiatives and ensuring alignment with sustainability mandates, thus acting as intermediaries between directors and their teams (Aras & Crowther, 2008). Hence, their sensemaking plays a key role in interpreting, communicating, and implementing sustainability, which in turn influences subordinates' interpretations (Brown et al., 2015). Communication across organizational levels and departments is vital for achieving collective sensemaking, notably through the form of knowledge and information sharing (Aras & Crowther, 2008; Goretzki & Messner, 2016). Collective sensemaking can be linked to the concept of sensegiving (Giuliani, 2016), where sensegiving is prompted by a perceived or anticipated gap in organizational sensemaking processes (Maitlis & Lawrence, 2007).

Gioia and Chittipeddi (1991) defined sensegiving as the process of influencing the sensemaking and meaning construction of others towards a preferred redefinition of organizational reality. Sensegiving aims to diffuse justifications within an organization to legitimize certain organizational realities (Gioia & Thomas, 1996). These findings are supported by Egan (2019) who highlights the importance of sensegiving from CEOs. When top management shows clear support for sustainability practices, employees can leverage their ethical values, resulting in mutual benefits for the company and the environment (Egan, 2019). However, Voronov (2008) brings up a more critical perspective of sensegiving, by highlighting that it can limit sensemaking mechanisms by suppressing alternative interpretations of reality and restricting participation in the sensemaking process.

Sensemaking can be a useful lens to analyze how employees understand and manage the ambiguity inherent to food waste management. Thus, investigating how employees leverage accounting tools in turn can help structure how the sensemaking process is unfolding.

2.5.3. Accounting Tools as Sensemaking Maps

Accounting tools can be useful as sensemaking maps where a "good" map continues to be developed and drive action, rather than necessarily leading to the "right" outcome (Ancona, 2012; Weick, 1995). MCS, and more specifically SPMS, can become valuable sensemaking tools in ambiguous contexts, by giving both qualitative and quantitative data to *"bind an organization together and structure interactions"* (Faure et al., 2010). Tillmann and Goddard (2008) conducted a study investigating how strategic management accounting (SMA) was perceived and used in practice. The authors identified three

different ways accounting is employed to make sense of strategic situations marked by uncertainty, namely *structuring and harmonizing*, *bridging and contextualizing*, and *compromising and balancing*. First, SPMS provide structure and harmonization by making information more understandable and organizing activities. Second, SPMS bridge information across time and help to contextualize it across space, thus effectively informing sensemaking. Third, SPMS inform sensemaking through compromising and balancing, enabling employees to analyze different alternatives and adjust judgments accordingly (Tillmann & Goddard, 2008).

Several studies have examined how accounting can provide a deeper understanding of both corporate sustainability as a concept and its subsequent implementation. Egan (2019) found that guidance through sustainability reports played a critical role in the processes of making sense of sustainability efforts within the organization. While some argue that accounting can positively contribute to organizational sensemaking of sustainability (Egan, 2019; O'Dwyer & Unerman, 2020), others take a more critical perspective, suggesting that accounting can limit related debates (Gasparatos et al., 2009; Gray et al., 1995; Larrinaga-Gonzales & Bebbington, 2001). Gasparatos et al. (2009) argue that accounting may not be effective in supporting corporate sustainability as it fails to account for the intricate, interrelated, dynamic, and non-linear connections that are inherent to sustainability.

Thus, further research is needed to explore the ambiguous role accounting may play in supporting employees to make sense of corporate sustainability (Bebbington, 2014; Benkert, 2021; Durden, 2008).

2.6. Theoretical Framework

In this section, we present our theoretical framework, which draws upon the literature related to SPMS (Egan, 2019; Gasparatos et al., 2009; Tillmann & Goddard, 2008) and sensemaking (Weick, 1995), and adapt it to the specific context of food waste management.

To date, the literature has provided limited insights into the challenges and complexities of managing food waste in the retail industry. This study aims to address this gap by examining the role of SPMS in managing food waste challenges. By integrating the literature on SPMS with the concepts of sensemaking and sensegiving, we seek to enhance our understanding of how employees utilize food waste KPIs to navigate food waste management complexities. Specifically, this research aims to answer the following research questions:

How are food waste KPIs implicated in employees' sensemaking processes of the challenges inherent to corporate food waste management?

We use Weick's (1995) sensemaking concept as the theoretical foundation for this study, as it has been identified as highly relevant to investigate how employees navigate complex and uncertain situations. Thus, it can help shed light on employees' understanding of the uncertain and complex setting which is that of the food retail industry (Brancoli et al., 2017). We also incorporate the theory of cognitive frames of Hahn et al. (2014) to comprehend how employees interpret the trade-offs involved in food waste management, particularly that related to maintaining high product availability to boost sales while reducing food waste.

To understand the different factors potentially influencing employees' sensemaking processes, we rely on the study of Joseph et al. (2020) highlighting the importance of personal beliefs, and on the studies of Dougherty (1992) and Goretzki and Messner (2016) emphasizing the role of departmental accountabilities. This approach enables us to illuminate the values, beliefs, and assumptions that drive organizational decision-making and to explore the complexities of the sustainability paradox phenomenon (Dougherty, 1992; Joseph et al., 2020).

We further rely on various papers to understand the way accounting has been used by individuals to make sense of environments characterized by uncertainty (e.g Egan, 2019; Gasparatos et al., 2009; Goretzki & Messner, 2016; Tillmann & Goddard, 2008). Moreover, to broaden our understanding of how SPMS are used to make sense of challenges related to food waste, we draw upon the theory of sensegiving (Gioia & Chittipeddi, 1991). Sensegiving is often prompted by a perceived or anticipated gap in organizational sensemaking processes (Maitlis & Lawrence, 2007). As sustainability is characterized by a multiplicity of goals, different employees may make sense of it in different ways, which could result in fragmented sensemaking. We thus strive to understand if such fragmented sensemaking is apparent, and if sensegiving is used to mitigate such gaps.

By combining concepts from the sensemaking and sensegiving literature, our framework provides a comprehensive understanding of how SPMS can be used in the context of food waste management. It offers a unique lens through which to analyze the complexities of sustainability practices and provides insights into how employees can effectively navigate the challenges inherent to food waste management.

3. Method

This section outlines the case background of our chosen company, the research methodology, and the research design. In Section 3.1, a detailed background of the case company is presented. Section 3.2 outlines the data collection process, followed by Section 3.3 which details the data analysis process.

3.1. Case Background

To fulfill the objectives of this paper, a qualitative case study of FoodCo, a global food retailer, was conducted. This research focused on the company's operations in Sweden. The case study method was deemed relevant as it holds greater potential for *"open-ended interaction between the researcher and researched"* (Ahrens & Chapman, 2006), which is crucial to investigate employees' sensemaking process of the multifaceted and complex nature of food waste management.

The food retail industry is a critical component of the global food system, responsible for the distribution and sale of food products to consumers. Yet, food retailers face multiple challenges. Due to the highly competitive nature of the food industry and the imperative of increasing sales, the availability of products is often prioritized over sustainability aspects. This can result in significant overstocking, leading inadvertently to food waste. Furthermore, the environmental impact of food waste, the ethical concerns arising from discarding edible food, and the economic costs tied to unsold products have resulted in mounting external pressure on food retailers to put food waste at the top of their agenda. Food retailers are thus facing a trade-off between the environmental, social, and financial impact of food waste on the one hand and increasing attractiveness via high product availability on the other hand. Striking the right balance between maximizing sales while minimizing food waste is thus a constant challenge, making food waste a particularly interesting setting to analyze sensemaking.

FoodCo entered the Swedish market in 2003 and now has more than 200 stores operating across Sweden (FoodCo Sweden, 2023). FoodCo was selected to answer our research question for a few reasons. First, as a discount food retailer, the company does not compete by offering a large variety of products but rather by ensuring high on-shelf availability. Due to its thinner margins, the focus is on driving sales. As such, balancing food waste reduction with sales maximization represents an even greater challenge. Second, FoodCo has implemented a performance measurement system to improve inventory management, reduce overstocking, and monitor its operation across departments and levels in the organization (FoodCo Sweden, 2023). We could thus investigate how this sustainability performance measurement system is used by employees to define appropriate food waste levels and motivate employees to work towards reducing food waste. Third, recognizing the importance of addressing food

waste, the company has taken several steps to meet its ambitious goal of reducing food waste by 50% by 2025 (FoodCo Sweden, 2023). For example, the company has implemented a program to donate unsold food to local charities, among which Stadsmissionen, and has a set donation target of 250kg per store. In addition, the company introduced a new program in 2022 to discount products with close best-before dates (FoodCo Sweden, 2023). This was first started in the bakery category and is now being rolled out across more product categories. Through this new discounting program, the goal is to reduce food waste as much as possible, which, however, will likely decrease the company's donation level. Understanding how the trade-off between the donation and discounting programs is being managed across departments also provides an interesting venue to study the intersection between performance measurement and sensemaking.

To summarize, FoodCo's prominent place within the Swedish food retail industry, and more specifically its positioning as a discount retailer, combined with its proactive approach towards food waste mitigation, offer a compelling setting for an analysis of the intersection between sensemaking and performance measurement systems. Moreover, this study offers insights into how a performance measurement system can be leveraged by employees across different departments and organizational levels.

3.2.   Data Collection

At an initial stage, one preliminary unstructured interview was conducted through Teams with the Head of CSR to get an initial understanding of the food waste management challenges the company faces. It is pertinent to note that food waste management was selected as the research topic following the challenges articulated by FoodCo and the authors' area of interest. In addition to the preliminary interview, several emails were exchanged with the Head of CSR. The purpose of these interactions was to introduce the thesis project, gather information about FoodCo and its food waste management strategy, and identify appropriate respondents for future interviews. Detailed notes were taken during this interview.

In a second phase, two online interviews were conducted with the Head of CSR and one of the CSR Managers at FoodCo to refine the research topic. The selection of interviewees then followed a snowballing effect, starting with the respondents suggested by the Head of CSR interviewed in the initial stage. A total of 16 semi-structured interviews were conducted with employees across different hierarchical levels and departments within the organization to obtain a comprehensive understanding of how food waste is perceived (see Appendix B and Figure 1). An additional interview was conducted with the Swedish Food Retailers Federation, also known as Svensk Dagligvaruhandel (Svdh), which represents the food retail sector. The organization's mission is to promote a sustainable and competitive grocery market in Sweden (Svdh, 2023). The insights were used to better understand the dynamics within the food retail industry in Sweden and to inform our interview guide, and thus not included in the empirics. The interview sample was

meticulously chosen to incorporate operational departments, such as purchasing, controlling, logistics, supply chain, sales, and district managers, as well as top management, such as the CFO/Board of Directors and the Head of CSR, to ensure a complete picture. All interviews were conducted via Microsoft Teams with a standard duration of 45 minutes to 1 hour. Before recording and transcribing the interviews, participants provided their consent to respect GDPR rules. All interviews were conducted in English, except for one conducted in Swedish, but further translated. Both authors were present in all interviews to facilitate dynamic discussions, ask pertinent follow-up questions, and ensure a dependable interpretation of the answers.

As the aim of this study is to understand how employees in an organization use SPMS to make sense of the challenges inherent to food waste management, it was vital for us to understand the underlying thoughts, perceived feelings, and opinions of the interviewees. To achieve this objective, a semi-structured interview guide was used, supplemented by open-ended questions (see Appendix C). The first interviewees requested for the questions to be sent beforehand to get an understanding of the general topics to be covered. As such, a document detailing the focus of the study and including 4-5 broad questions to be asked was sent before each interview. More detailed questions were not included to get as honest responses as possible and to get employees' reactions on the spot. Furthermore, at the beginning of each interview, it was reminded that the purpose of the study was to understand how employees in different departments and levels at FoodCo use the SPMS to make sense of the food waste management strategy. After a few interviews, we also started to stress that the objective was not to evaluate employees' performance on food waste, nor to make any judgment on whether FoodCo had a "good" food waste management strategy. Whenever considered needed, follow-up questions based on employees' previous answers were asked. The discussions were tailored to suit each interviewee's level in the organization and departmental focus.

3.3.   Data Analysis

Following the guidance of Scapens (1990), we undertook a preliminary review of the theory to develop an initial understanding of the types of evidence that should be sought throughout the interviews' transcriptions. Instead of questioning the reliability and validity of the information divulged during the interviews (Scapens, 1990), the emphasis was on understanding how the interviewees framed the information. As such, any discrepancies, or inconsistencies in the information provided, that were not congruent with the facts or information shared in previous interviews, were also deemed valuable insights.

Understanding how employees managed the trade-offs inherent to food waste management and how they used the SPMS in their daily operations helped us to identify the meanings and senses employees ascribed to FoodCo's food waste management strategy (Weick, 1995). As such, the points of view and interpretations of the

organizational actors' discourses became the basis for the first order (elements of interviewees' accounts and key meaning systems). We gave priority to the understanding of events and contexts given by the employees who experienced them (Clark et al., 2010). We thus described, in employees' own words, the challenges they faced when managing food waste. From there, we developed second-order interpretations (themes and concepts) based upon the relevant first-order data, theoretical concepts drawn from the SPMS and sensemaking literature, and our interpretations of other relevant contextual issues – among which the specific dynamics of the food retail industry. This led us to, for instance, identify three interpretive schemes that employees adopt when discussing the importance of food waste management, which we refer to as the "internal business case scheme", "external competitive scheme" and "social impact scheme" (see Appendix A for a definition of each scheme).

In line with the findings of Giorgi (1975), that only unprejudiced descriptions in the form of interview transcripts can provide access to the meanings of experiences of participants, we systematically transcribed each interview. All the data revealing pertinent insights to address the research question were collected in a document, along with annotated comments. A comprehensive analytical process ensued, involving the identification of overall themes and related sub-themes. Adopting the same interview structure for all interviews facilitated the process of identifying second-order interpretations. Comparing the interviews enabled us to analyze how the position, background, and personal interest of employees played a role in how they perceived and made sense of FoodCo's food waste management. We attempted to make theoretical generalizations, notably by generalizing theories to explain the observations shared during the interviews (Scapens, 1990). During the writing of the case study, interpretations of the empirics were persistently compared and discussed.

4. Empirical Analysis

In this section, we apply the theoretical concept of sensemaking as a lens to analyze the empirical data. Specifically, Section 4.1 examines the role of SPMS in making sense of the company's food waste management strategy. Section 4.2 discusses how employees and various departments in the organization make sense of the paradoxes associated with food waste management. Section 4.3 investigates the impact of a perceived lack of control on the sensemaking of food waste performance. Finally, Section 4.4 analyses the sensegiving tools used across the company to facilitate collective sensemaking.

4.1.   Making Sense of the Food Waste Management Strategy

The issue of food waste spans various departments and hierarchical levels within FoodCo, necessitating broad involvement. Yet, each department has its own business-as-usual KPIs. Examining the food waste KPIs at FoodCo can help in understanding the coordination of diverse departments towards a shared objective. Empirical evidence demonstrates how food waste KPIs serve as an individual, departmental, and organizational sensemaking tool, aiding employees in comprehending FoodCo's food waste management strategy.

4.1.1. Unify Employees Behind a Common Goal

An analysis of the empirics highlighted that employees' personal values and department focus play a key role in influencing how they make sense of food waste management. Throughout the interviews, it became clear that each business department has its own KPIs and respective goals to meet. As one of the sales managers explained: "*every department has its main goals closer to themselves than the whole*". Thus, an interesting accountability and ownership dynamic of KPIs comes into play when investigating how food waste management plays across different departments. Food waste management appears to be part of peripheral goals employees need to work towards, which may be separate from their departmental goals.

While the departmental focus may impact how food waste management is prioritized, individuals' personal beliefs and values appear to play a part in influencing how they make sense of food waste. One of the supply chain managers mentioned that "*it could be like the food waste is a side product for some employees*" further explaining that the reason why she was putting a focus on food waste is that she is "*interested in food waste and think it's a very interesting topic*".

To the question of where the main challenges to integrate food management lie, one of the purchasing managers replied to harmonize the different departmental goals together. Thus, a key obstacle to overcome is bringing every department together to work towards

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FoodCo's overall food waste goal when each department may have its own respective goals to meet. KPIs have been mentioned as key facilitators to help departments understand the importance of working together to reduce food waste and to provide them with the means to achieve it.

4.1.2. Food Waste KPIs to Operationalize Food Waste Management

FoodCo has set food waste objectives, such as reducing food waste by 50% by 2025, which then need to be broken down into smaller sub-goals to operationalize the strategy across different departments and regions in Sweden. Throughout the interviews, it became clear that employees perceive food waste KPIs to play a central role in operationalizing the food waste strategy and setting a clear plan to meet the company's overall food waste objective.

> "We have this plan for 2025 to minimize food waste by half and if you don't know which direction you're going, you can't reach your goal. We can use the KPIs to see where we must put our focus. I would say the KPIs are leading us in the right direction." –Supply Chain Manager

Food waste KPIs help to steer people in the right direction and thus are instrumental in supporting the collective sensemaking process around food waste. Without the KPIs, the food waste objective would be perceived as "*a big fluffy number (that) doesn't really say anything*" (Purchasing Employee). Food waste KPIs thus appear to provide meaning to the company's overall food waste objective.

Furthermore, all employees interviewed stressed that working towards reducing food waste requires the collaboration and alignment of different departments. In this regard, the standardization logic of KPIs appears to serve as a crucial alignment mechanism. In the quote below, a supply chain manager highlights the importance of KPIs in providing a common ground and language for everyone to work together.

> "So that's also why we tried to have all the KPIs in the same way, so everyone knows exactly what to expect and what to do, and how to investigate all the different goods." –Supply Chain Manager

On top of operationalizing the company-wide food waste objective, KPIs also seem to act as enablers as they allow employees to measure the direct impact of their actions. KPIs' importance became even more apparent when discussing the discounting program introduced in 2022 to encourage customers to buy products with short best-before dates. This new initiative coming from the headquarters (HQ) was adopted quickly by some stores in Sweden, and that before the HQ established a performance measurement system to monitor the initiative. As a result, the controlling department received several complaints from employees being unable to measure the impact of their actions.

> "I feel like the most important thing or the most questions that we get at controlling at least, is how we are supposed to be able to follow how much food waste we can save from this new program when we don't have this information. They (employees) really, really want these KPIs. They want to work with them, and it makes their job easier because they can see why we have so much food waste." –Controller

Without KPIs, employees seem to struggle to assess the success of the new discounting program. In the words of one of the sales managers, it is "*frustrating that (FoodCo) doesn't have a monitoring system in place*", especially in such a "*KPI-driven company*".

On top of serving as a collective sensemaking tool, food waste KPIs also play an important role in shaping an individual's understanding of how his/her work can impact food waste. One of the purchasing managers interviewed stressed that KPIs help connect her actions with the overall food waste management objective by showing "*the different actions (she) can take with (her) products to reach this goal.*" In an organization as large as FoodCo, it can be easy to get lost in the big picture and not understand the impact of one's contribution on meeting company-wide objectives.

> "For example, we have too much food waste on milk. Some are feeling like - okay, nothing I do will affect the food waste because my impact is so small. - But still, everything counts." –Purchasing Employee

Thus, food waste KPIs serve as enablers by bridging the overarching food waste objective to individuals and fostering their sense of accountability for their respective KPIs.

The enabling nature of food waste KPIs is therefore visible from a collective sensemaking standpoint, whereby different departments come together to understand how they can contribute to decreasing food waste, but also from an individual sensemaking standpoint, as employees need to understand how their daily job ties in with the bigger picture.

4.1.3. Food Waste KPIs to Facilitate Sensemaking within Departments

Furthermore, food waste KPIs facilitate collective sensemaking not only by aligning departments but also by aiding the sensemaking process within each department. The food waste measurement system collects financial and operational data that enables departments to make sense of food waste management at their group level, based on their respective expertise and access to relevant information.

> "I think that's the reason that sales looks very much on numbers and logistics looks very much in the warehouses. It's so many different areas that we have expertise in and it's very hard to think the same way when we don't have the knowledge in every area." –Sales Manager

Employees in different departments have different expertise and thus work with different types of information. The food waste KPIs act as enablers as food waste (1) can be measured in kilograms, (2) analyzed through the write-offs in kilograms, money, and percentage out of the total turnover, but also (3) evaluated by looking at donations. By accommodating the information needs of each department, food waste KPIs enable the sensemaking process at group level.

Although non-financial KPIs are used by certain departments to operationalize the strategy, it did appear that the emphasis was rather on financial KPIs. According to one of the supply chain managers, employees seem to better connect with those.

> "The economic part of food waste is one of the three pillars (of sustainability). And that's also the one that people always talk about because that's something that everyone can understand." – Supply Chain Manager

Likely, financial metrics are more easily understood due to their alignment with the company's focus on maximizing sales. This focus on financials in turn seems to shape employees' sensemaking of what food waste is, in other words, either a cost to the company or a societal challenge to address. Thus, this raises a larger inquiry into how to comprehend the trade-offs associated with food waste management.

4.2. Making Sense of the Paradoxes Inherent to Food Waste

Food waste management and the focus on finance – be it profitability, sales, or costs – were identified by employees as two overarching conflicting goals at times. As such, applying a sensemaking lens is critical to understand how employees across the organization manage such trade-offs. To analyze how employees manage the challenges of food waste management, we categorized their views along three different interpretive schemes: an "internal business case scheme", an "external competitive scheme", and a "social impact scheme". Those schemes appear to be influenced both by employees' departmental focus and personal beliefs, and they in turn impact the way employees work with KPIs.

4.2.1. Trade-offs Inherent to Food Waste Management

Two main trade-offs inherent to food waste management at FoodCo were identified: (1) balancing maximizing profitability with minimizing food waste and (2) managing food waste either by selling it at a discount, donating it, or throwing it away.

Balancing Profitability and Food Waste Reduction

During the interviews, it became evident that most employees recognized a food retailer's primary objective to be selling products. To achieve this goal and maximize turnover, employees emphasized the importance of product availability and full shelves. However, as a controller pointed out, maximizing turnover can result in higher food waste, due to the risk of over-ordering. Thus, the objective of maximizing turnover may contradict that of minimizing food waste, as exemplified in the quote below.

> "Of course, it could be a challenge for us to have these goals and then the overarching goal to reduce food waste. Because of course, we want to sell as much as possible and especially now when consumers are really having a tough time and coming into our stores, we don't want the shelves to be empty." –Purchasing Manager

Yet, profitability is also contingent on effective cost management. Food waste is thus an interesting issue to examine as it encompasses environmental, social, and financial costs. Therefore, reducing food waste has a compelling business rationale in the first place. Employees in the finance, purchasing, sales, and logistics departments acknowledged the

economic cost of food waste. Some highlighted that the goal was to eliminate food waste as much as possible, while others adopted a more pragmatic approach by stating that eliminating it completely was neither feasible nor desirable.

> "From experience, we should have some food left. In the end, we don't want you to enter a FoodCo store 10 minutes before it closes and see that there is no milk, no fruits, no bread, because we were afraid of ordering too much." –CFO and BoD

The objective is thus to achieve an optimal equilibrium between maintaining an adequate level of food inventory for sale purposes and minimizing the adverse effects of food waste. Striking the "right balance" was regularly referred to by employees.

Managing Discounts and Donations

A second trade-off between food waste and financials was revealed when analyzing how food waste is being managed. At the warehouse and store level, food waste can be handled in three ways, namely, discounting close-to-expiry products, donating them to charities, or throwing them away. In the finance, purchasing, and sales departments, it was very clear that FoodCo first wants to sell its products at full price, then at a discounted price, and lastly donate them. Nonetheless, a sales manager identified discounting products and donating to charities as conflicting goals at times.

> "The CSR department can be asking, why aren't you donating? There might be a problem in the stores, and if so, of course we look into that. But it might also be that they're selling everything, and then there's no problem." –Sales Manager

The more products sold at a discount, the fewer products are available for donations. This presents a challenge, as different departments may have a conflicting understanding of how to manage this trade-off. The sales manager for instance stressed that "*the CSR department, they want us to donate, but we want to sell*." Various departments may handle trade-offs in food waste management differently, making it interesting to investigate the different forces influencing sensemaking.

4.2.2. Frames Adopted to Make Sense of Trade-offs

By investigating employees' sensemaking processes of the food waste management trade-offs, it became evident that employees' departmental focus and personal beliefs influence how they reason about the importance of food waste management. Specifically, three interpretive schemes were used to make sense of trade-offs: an "internal business case scheme", an "external competitive scheme", and a "social impact scheme".

First, an "internal business case scheme"**,** which emphasizes financials, was regularly cited to explain the trade-offs between (1) maximizing turnover and minimizing food waste, and (2) discounting products over donating. In the words of one of the purchasing managers: "*no one wants to have food waste because of commercial reasons*". Employees from the sales, finance, and purchasing departments, all mentioned the business-oriented nature of FoodCo to emphasize the need to focus on turnover.

> "In the end, it's all about finance. You need to if you want a business in 30 years from now, even more with selling food. It's part of the business plan and it must be, otherwise FoodCo won't have work to do in the next coming years." –CFO and BoD

Employees whose daily operations are centered on managing costs and revenue all emphasized the importance to drive sales, thus adopting an "internal business case scheme". This interpretive scheme was also highlighted by one of the controllers when discussing the discounting program's impact on food waste management at FoodCo. The employee mentioned that the food waste performance measurement system was critical to communicate the economic impact of food waste, by enabling employees to grasp how much money was saved by discounting food instead of discarding it. On the other hand, the CSR department did not mention once the costs associated with food waste or the focus on maximizing sales. They also never used the term "write-offs" when discussing food waste management, which may be explained by their focus on promoting environmental and social welfare, instead of focusing on financials. Employees' departmental focus thus seems to impact how they manage trade-offs.

Furthermore, to justify FoodCo's food waste management, employees also adopted an "external competitive scheme" and referred to descriptive and injunctive norms. Several interviews revealed that FoodCo's strong focus on food waste management reflects a wider strategic shift in the industry and is also expected from the company due to its size.

> "Food waste is such an important topic for everyone. Basically, I bet if you would speak to our competitors, they would say the same thing, reducing food waste. It's something that the industry has decided I think at a really high level." –Purchasing Manager

> "We are the biggest food retailer in Europe and the fifth in the world. So, we do have an impact and we must make a difference because we are so big that we need to be top in class on this topic." –Sales Manager

Employees thus also made sense of FoodCo's focus on food waste management by looking at the company's external environment and explaining how that shapes the organizational strategy. Yet, this "external competitive scheme" was also used to advocate for keeping products with higher write-offs than usual. One of the purchasing managers provided an example to illustrate this. He shared that they had a product that was selling well but had a high write-off rate. This was because the supply chain could only order the product with a specific minimum volume, which resulted in excess inventory and ultimately waste. However, the purchasing manager further explained that it was decided to keep the article in stores, as otherwise customers would *"be pissed and go to a competitor."* Hence, a purchasing manager's job also involves understanding what products are available in other stores, making daily operations influence the way he makes sense of the trade-offs.

Nevertheless, focusing solely on the "internal business case" and "external competitive schemes" overlooks the strong support among FoodCo's employees for reducing food waste. Throughout the empirics, it appeared that employees have an intrinsic motivation to work towards food waste reduction due to the positive impact it has on society.

Employees across most departments justified the company's focus on food waste management notably by mentioning the benefits arising from donations, which we refer to as adopting a "social impact scheme".

> "We're not sad if we need to write something off, because we know that most of those goods go to people that need it more than we do (…). It's negative for FoodCo that we write off and that we make mistakes in terms of money, but it's also positive for society since we donate a lot." – Logistics Trainee

One of the warehouse managers commented that he could *feel pride also knowing that when (they) donate, goods don't go to waste*. Feelings and emotions were particularly stressed by employees when discussing food waste management. As such, personal beliefs also seem to shape employees' use of the social impact frame.

> "You want to find employees who are personally interested in having a sustainable world and that whole part is a little bigger than just money and numbers." –Store Manager

The above quote illustrates that considering people's interests is crucial for understanding how trade-offs are managed. The "internal business case scheme" and "external competitor scheme" are not enough to make sense of food waste management's importance at FoodCo.

Although employees make sense of the trade-offs by using an "internal business case scheme", an "external competitive scheme", and a "social impact scheme", their interpretations are not homogeneous across departments. Yet, employees seemed to have a common understanding of how to manage food waste in practice. The "internal business case scheme" is interesting, as it was used by employees to advocate for maximizing turnover but also for minimizing the costs associated with food waste. Employees within operational and more "finance-focused" departments all adopted the "internal business case scheme" but also mentioned the societal benefits arising from donations. The fact that employees referred to multiple interpretive schemes to make sense of the trade-offs shows that they understood the need to balance turnover and work towards food waste reduction. They thus adopted a pragmatic approach to food waste management.

4.2.3. Accountability and Ownership of KPIs

Departmental accountability, which was mentioned in Section 4.1 of the empirical analysis, is important to further explore here as it shapes how employees work toward decreasing food waste. For instance, in the sales department, which coordinates the food waste strategy at the store level, the food waste KPI used is write-offs. Thus, although both donations and the new discounting program work towards decreasing food waste, sales and store managers are more entitled to focus on the food-waste reduction initiative which directly impacts the write-off KPIs used by their department.

> "Before that, we just threw everything out or donated it. Now that we can actually sell it instead, but to a lower price, it is helpful for the stores with their write-offs and it's helping them with their real KPIs." – Sales Manager

This clear accountability towards specific goals can explain why employees in different departments may make sense and manage trade-offs differently. For instance, the purchasing department is mostly accountable for the margins on products. This may explain the following statement from one of the purchasing managers: "*I also get that it will probably never be like the number one priority from a buyer's perspective*". When asked to clarify the statement, the manager acknowledge that employees within the purchasing department investigate the write-offs, but they are not accountable for the performance on this KPI. On the other hand, the CSR department prioritizes donations as they are accountable for the performance of this food waste KPI.

Employees need to work with different objectives and may prioritize some over others, which may lead the trade-offs to be managed differently across departments. In addition to managing trade-offs, the food retail industry and food waste management are marked by complexity and uncertainty, thus adding an additional layer to the challenges employees need to make sense of.

4.3. Making Sense of the Complexity and Uncertainty of Food Waste Management

According to the interviewees, the intricate and dynamic nature of the food retail sector poses a significant challenge to control food waste KPIs. The perceived uncertainty and lack of control can, therefore, be suggested as one of the key reasons why sensemaking is necessary to understand the performance of food waste. The interviews revealed that FoodCo's employees adopt various sensemaking mechanisms to understand what constitutes an appropriate level of food waste performance.

4.3.1. Perceived Lack of Control over Food Waste Performance

Uncertainty inherent to the food retail industry and its impact on food waste KPIs

The empirics revealed that employees believe uncertainty to be tightly linked to the competitive nature of the food retail industry, as retailers are constantly vying for an edge in price, innovation, and market share. The uncertain factors that shape the industry, such as changes in customer demand and competitor strategies, significantly impact food waste management at FoodCo.

As highlighted by one of the purchasing managers, monitoring competitors' strategies is a key aspect of FoodCo's operational approach, and adjustments to plans are often made in response to external developments: "*We are looking at our competitors every day. If I see that Willys is going down in milk prices, then we must go down as well.*" This constant monitoring allows FoodCo to stay ahead of the competition and adjust its plans in response to external developments. However, those industry dynamics are also perceived by employees to hamper their ability to anticipate and control food waste. Employees

interviewed mentioned uncertain environmental conditions, such as weather patterns, as elements that have a significant impact on consumer behavior and purchasing habits. For example, weather conditions such as rain or snow can impact consumer mobility and their willingness to travel to grocery stores, which in turn can affect sales, inventory levels, and the amount of food waste.

> "This week it has been raining a lot. People don't want to go and shop. Then you can see that you have a little bit more food waste." –District Manager

The specific market dynamics and uncertainty inherent to the food retail industry create variability and thus a feeling of lack of control over the food waste performance among employees. This perceived feeling of uncontrollability influences how the performance measurement system is in turn set and used by the top management. The CFO stressed that the uncertain environment in the food retail industry creates challenges when it comes to setting incentive systems.

> "If you have an incentive system for store managers and other people in the organization, it should according to me be simple. You must understand why you get the bonus (…) and what do I have to do to get there? We tried it. It was a simple KPI, based on the turnover. But then we discovered that it's not as easy as it sounds (…). There are so many things that happen on the way that makes it really tricky to have an incentive system, especially for store managers. There's so many things happening around, that they can't do something about, so it's not fair." –CFO and BoD

Even though a financial bonus system may be an effective way to motivate employees, the management is aware of the external uncertainties and dependencies that affect the perceived ability to control and decrease food waste. As a result, the company decided to suppress the incentive system it had set in place for store managers. In addition, the perceived lack of control was also used by one of the logistics managers to explain why no strict targets are set for write-offs at the warehouse level: "*We cannot work for something that we are not in control of*". To mitigate this perceived lack of control, KPIs have stretched targets. Thus, targets are seen as means rather than ends.

Dependencies on internal and external actors

On top of the perceived uncertainty inherent to the food industry, employees rely on external actors and other departments to work towards reducing food waste, which exacerbates their perceived lack of control over the food waste performance.

Throughout the empirics, employees within the logistics and sales departments highlighted that FoodCo's food waste performance was dependent upon the work of external actors. For instance, delays in supplier deliveries can contribute to increased write-offs and food waste.

> "If you have 10% write-offs, that means that 10% of what we ordered from the supplier gets thrown away, and that's of course terrible. For example, if I agree with a supplier that the cheese should come within 50 days, so that we have 50 days to sell the product, and they are giving me a delay of 40 days, then I must decide - Should we keep it? Should we force the supplier to come

up and take it back? And of course, we always try to actively sell the articles, even though they are delivered with bad dates." –Purchasing Manager

In addition, interviewees also mentioned that FoodCo donates to non-profit organizations, such as Stadsmissionen, who subsequently donate or sell the products to individuals in need at a reduced price. When being asked how the company was working to meet its donation target of 250kg per store, two employees stressed that the volume of donations from FoodCo was first dependent upon the write-offs' level, and further reliant on the ability and capacity of Stadsmissionen to retrieve the items. As such, the food waste performance is dependent upon Stadsmissionen.

> "There are so many different actors in the whole chain and so many things that can happen that is really hard to control food waste." –Purchasing Manager

Not only is the company's level of food waste dependent on the actions of external actors, but also specific departments. For example, sales and store managers are heavily reliant on departments such as purchasing, supply chain, or logistics, to manage food waste. A district manager raised concerns about her inability to control food waste in the stores as there are various steps along the way that impacts it – such as the number of goods received from the warehouses, the quality of the products, or the duration of best before dates, which are factors she cannot influence: "*We receive something in our stores, but we can't decide the amount ourselves, and I think that is a big challenge.*"

4.3.2. Mechanisms Used to Make Sense of Food Waste Performance

Comparison of different KPIs

As mentioned previously, the food retail industry is characterized by a high level of ambiguity and uncertainty, resulting in a perceived lack of control over the food waste performance. To mitigate this, employees resorted to different comparison mechanisms and used a broad set of information. Throughout the discussions, employees always combined and compared different KPIs to explain the food waste performance at FoodCo. For instance, the level of write-offs was analyzed in conjunction with the level of turnover.

> "You can see if this is at a reasonable level or are they higher in write-offs compared to a similar store with the similar turnover." –Sales Manager

Similarly, the level of write-offs was also analyzed together with the donations' level to have a complete picture of the food waste performance. This was also done to assess whether stores have an appropriate donation level, as donations depend on the amount of products which has not been sold in the first place.

> "I follow up with the stores and see if they actually donate the amount we have set and if they haven't, then I could compare the write-offs in the different areas of food." –Sales Manager

As exemplified in the quote above, the sales manager makes sense of the donations' level by looking at the write-offs. If the level of write-offs is high but food donations are low,

it indicates that a larger chunk of the food was wasted, and store managers may not have appropriately handled food waste. Furthermore, it was regularly mentioned throughout the interviews that to have a complete picture of the write-offs, one needs to look at it in terms of weight and cost. Some expensive products may be light, while heavier products may cost little to the company.

> "Sometimes we write off a large amount of something that's very cheap and therefore it doesn't stick out in comparison to other articles, and sometimes it's the opposite. Something that's very heavily may have a low value, and therefore we can't just measure in weight or just measure in money." – Logistics Trainee

By comparing KPIs, one can get a more complete picture of the state of food waste at FoodCo. These comparison mechanisms help employees to make sense of what an "appropriate" level of food waste is. Hence, the food waste KPIs help mitigate the uncertainty inherent to food waste management and highlight the dependability between different departments, thus supporting employees' sensemaking of food waste.

Contextualization of the performance across time and space

Given the dynamic and ever-changing nature of the food industry environment, FoodCo uses internal information to make sense of what an "appropriate" level of food waste is. This involves incorporating comparisons with past performance and drawing upon previous experiences to gain valuable insights. Employees usually compare their performance level with a 4 to 5-year average, to gain a more accurate understanding of the current food waste performance.

> "And we compare for every month. Now we look at how much we have of weights each month and we compare it to last year." –Supply Chain Manager

> "We also need to know a bit of background about what happened before when we compare and therefore, we are looking at more years to see what a reasonable number is to set." –Logistics Manager

This approach allows for a more nuanced and context-specific evaluation of performance, which is critical in the context of food retailing. Furthermore, employees also strive to use comparable units of study to make sense of the food waste performance. Warehouses, stores, and products were compared together. For instance, such comparison mechanisms enable employees to make sense of what an "appropriate" level of write-offs is.

> "If you compare the milk articles for example, you may have 10 different types of milk and you see that the average write-offs for the milk are 1%. But then, you have two milk articles that are at 10%. Then you must go into the analysis. What is it? Is it the packaging? Is the price to the consumer too high? How's the delivery logistics and so forth?" –Purchasing Manager

The reliance on internal mechanisms to analyze food waste performance is crucial, particularly in light of the difficulties associated with benchmarking. Interviews have highlighted significant challenges in comparing food waste KPIs among competitors, as there is no standardized measurement approach in the industry. In the words of one of the supply chain managers: *"Someone may have a percentage while other competitors have*

a KPI based on the purchase price, which makes no sense because if the price went up or down it would change the food waste. So, we can't really compare with our competitors". This lack of standardization makes it challenging for FoodCo to compare its food waste performance with that of its competitors. This, in turn, increases the importance for the company to rely on internal information to make sense of whether their performance of food waste is "appropriate".

Consequently, KPIs act as facilitators, as they enable employees to contextualize food waste performance and to alleviate the perceived lack of control arising from the food retailing industry's uncertainty and ambiguity. Nevertheless, it was found that some in-store employees prioritize certain KPIs differently due to their distinct sensemaking processes. Therefore, it is crucial to examine the role of sensegiving in addressing gaps in sensemaking at FoodCo.

4.4. Interplay between Food Waste KPIs and Sensegiving

Throughout the interviews, it became clear that although sensemaking is needed to use the KPIs, and that the KPIs help make sense of the food waste strategy, sensegiving is also instrumental.

4.4.1. Importance of Making Sense of Food Waste Management

During the interviews, one of the key challenges identified was the implementation of the food waste strategy at the store level. Some store managers seem to not grasp the importance of donations. Although store managers have clear KPIs for which they are accountable, such as write-offs and donations, they do not put the same emphasis on both. According to one of the sales managers, some store managers end up throwing food instead of donating it.

> "I would say that the main reason why some stores cheat is as they don't know what we are doing with all these foods that they get ready for donations. They are not aware of every good thing they actually do for other people." – Sales Manager

As illustrated in the quote above, one reason identified behind cheating may be the lack of understanding on store managers' part of how beneficial donations can be to others. Store managers understand the importance of selling products at a discount, as this affects their write-off KPIs. They understand the business logic behind discounting but do not seem to grasp the positive impact they can have through donations. Sensegiving is thus needed to help store managers adopt a social impact frame when making sense of the importance of food waste reduction.

Furthermore, employees working closer with store managers, together with the CSR department, stressed how instrumental it is to get everyone on board.

"I think the most important thing is to encourage everyone and get the whole store involved in that mindset (…). If you get a store where everyone cares about it, I think you reduce food waste quite a bit." –District Manager

To ensure that everyone understands the importance of managing food waste, sensegiving is key. As explained earlier, personal beliefs and values can affect individuals' food waste sensemaking. If employees do not possess a strong sustainability mindset and perceive sustainable practices as requiring additional effort, food waste KPIs will not be enough in shaping their understanding of the importance of food waste management. As such, there is a lower likelihood those individuals will engage with food waste management in the first place.

4.4.2. Corporate Tools Used as Sensegiving Mechanisms

From the interviews, it became clear that sensegiving is anchored around four different levers, namely, education, processes, visual means, and discussions.

Education

First, education was clearly referred to as one of the main levers to help employees make sense of the importance of food waste management, and more specifically donations.

"So, the main goal is to actually educate the stores and get them to understand that the donations are a very important part of the work and the processes in the store (…). It's as important as everything else." –Sales Manager

Employees from the sales, supply chain, logistics, and CSR departments all mentioned education as key. Education can take the form of training and help ensure that employees (1) are aware of their impact, (2) can identify the root causes of food waste, and (3) adopt the right techniques to reduce it.

Processes

Second, processes help shape employee behaviors. As such, they can act as sensegiving mechanisms influencing how employees interact with food waste.

"There are different processes, both composting, donating to churches and (…) discounted prices. I would say, that's what we talk about with all staffs working in stores (…). Processes in stores become natural for all employees to work for food waste." –District Manager

The statement above suggests that the implementation of different processes – be it composting, donating, or discounting – helps employees to internalize the right behaviors regarding food waste management. It also emphasizes the need for ongoing communication and training to ensure that all employees are aware of processes and can perform them efficiently.

Visual sensegiving

Third, several employees emphasized the significance of engaging with external stakeholders and getting a visual understanding of the donation process to comprehend

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the positive societal impact of food waste management. Enabling employees to witness first-hand the positive effects of their work helps them to derive a greater sense of purpose and motivation from their work.

> "And we have been in one of the stores, for example, and when I was there, I got touched very much because when I saw all the people that was shopping in that store and that we have the possibility to help them. I think that two hours of transport cost is very much worth it." –Logistics Manager

> "I think we must highlight the benefits and that you get to see the result of our food waste management. As I said, to show the whole store what we actually donate to the church. Because I think it's easier for the management of the store to understand the importance of food waste management, but we need to get the employees interested who maybe have 20 hours of work then it may require a little more commitment." –Store Manager

Visiting the shops where donations are sent, and seeing the people who are directly impacted by those, strongly influences employees' food waste sensemaking and has been identified as a key sensegiving mechanism by store managers. There is a strong connection between employees' food waste sensemaking and those visits, as explained by one of the purchasing managers: "*Everybody is able to sense the negative effects arising from waste - be it the farmers, the buyers, and the whole chain actually. So, I think that they're quite aware because they've been there.*"

However, one of the CSR managers highlighted that visits to donation centers were recently initiated and have thus not been rolled out for every employee. This is crucial to highlight as it helps to explain the lack of awareness of the importance of donations among some employees. It also supports the emphasis of visual sensegiving as a collective sensemaking tool, as the three employees highlighting the lack of sensemaking in the store also identified visual sensegiving as a key mitigation mechanism.

Discussions and collaboration

Fourth, it was revealed from the interviews that discussions are a key sensegiving mechanism shaping employees' collective understanding of how to manage food waste. FoodCo has undertaken various actions to emphasize interactive discussions across the organization. Five years ago, the CSR department took the lead in establishing a food-waste group consisting of a representative from each department. These representatives are accountable for their respective departments' food waste processes and are required to report their progress to the food-waste group every quarter. Such progress is then discussed across the different departments to improve FoodCo's food waste management. This exemplifies FoodCo's proactive approach towards promoting interdepartmental collaboration and knowledge-sharing, which is key to fostering a collective sensemaking of how to handle the challenges inherent to food waste management.

> "In these meetings, we don't only discuss the KPIs, but also how to work with these KPIs. What is happening within the different departments? What do we do if there's a product that didn't really work?" –Controller

"It's really important that everybody's involved, it can't just be one department." –Purchasing Manager

While the food waste group serves as a platform for departments to align on how to best approach food waste management, informal discussions are also vital sensegiving mechanisms. More specifically, those informal discussions, which take place across departments and hierarchical levels, enable to mitigate (1) the uncertainty inherent to the food industry and (2) the feeling of lack of control employees may experience. In that regard, departments work together to identify the potential triggers leading to increased food waste and align on the appropriate amount of food to order in the first place.

> "Every time we list a new article, like a new cheese, the logistics department can say like: "Do you really think this is going to sell 10 pieces per week? The palette has 200 cartoons, that's going to give us huge write-offs". And that's true. So, they can say; "Please before we list the article, go back and reduce the palette or the number of cartoons". This is a potential discussion we could have between the purchasing department, the supply chain and logistics." – Purchasing Manager

Through discussions, employees can have access to different types of information being held across departments. By sharing information, employees can reduce the perceived lack of control. This is especially critical as food waste management is a highly transversal concept.

Discussions across hierarchical levels also help to mitigate the uncertainty around food waste management. KPIs only reveal numbers, they do not explain why the performance is such. Thus, store managers need to be involved in the food waste performance discussions as they may have insights and knowledge of food waste practices that the KPIs may not tell.

> "They know the stores the best, they know what kind of external factors that are in play. Do they have a competitor right next door? Then they have an external factor that they must consider." – Supply Chain Manager

FoodCo thus recognizes the value of including individuals with relevant expertise and experience in conversations related to food waste management. By leveraging the knowledge and insights of employees from all organizational levels, employees can effectively influence each other's sensemaking of what an appropriate level of food waste is.

5. Discussion

The following section presents an analysis of the empirical findings in light of the theoretical framework presented in Section 2.2. Our study adopts the theoretical lens of sensemaking to gain a deeper understanding of how employees at different hierarchical levels and departments make sense of the challenges inherent to food waste management. Section 5.1 shows how employees' personal beliefs and departmental focus influence the interpretive schemes used to make sense of the importance of food waste management. Section 5.2 highlights the role of SPMS as enablers and details the mechanisms leveraged by employees to make sense of food waste performance. Lastly, we emphasize in Section 5.3 the significance of informal and formal sensegiving in fostering collective sensemaking around the importance of food waste management.

5.1. Cognitive Frames Shaping Sensemaking of Trade-offs

Contribution 1: *We add to current research by emphasizing how employees' personal beliefs and departmental focus affect their use of cognitive frames to manage the trade-offs inherent to food waste management. This in turn shapes how employees interact with food waste KPIs. The study thus answers the call to gain a deeper understanding of how the cognitions, attitudes, and emotions of employees interact with sustainability tensions (Chen et al., 2021; Joseph et al., 2020; Luo et al., 2020; Sundin & Brown, 2017), and to further investigate the role MCS may play in accentuating or resolving such tensions (Argento et al., 2022).*

We know from looking deeper at the paradox literature that cognitive frames are key to constructing and responding to sustainability tensions (Hahn et al., 2014). Throughout the interviews, two trade-offs were identified: maximizing turnover versus minimizing food waste, and disposing of food waste through selling products at a discount versus donating them. In the few studies exploring the managerial cognitive frames used for making sense of sustainability tensions, the business case frame and the paradoxical frame have been the focus (Chen et al., 2021; Hahn et al., 2014; Sharma & Jaiswal, 2018). Those frames have been constructed as mutually exclusive, in the sense that they revolve around how individuals manage the trade-offs between prioritizing financial and sustainability objectives. One can either see sustainability and financials as mutually exclusive and manage the trade-offs by focusing on a business case perspective, or one can see the contradictions yet interdependencies of the trade-offs and work to balance those. In our case, we extend the current literature (Chen et al., 2021; Hahn et al., 2014; Sharma & Jaiswal, 2018), by further explaining how the cognitive frames operate in practice. In this study, employees adopted three different interpretive schemes to make sense of the importance of food waste management: an "internal business case scheme", an "external competitive scheme", and a "social impact scheme".

Our study highlights the significance of employees' departmental focus in influencing the interpretive schemes adopted to make sense of the trade-offs associated with food waste management. For example, employees from departments such as sales, finance, and purchasing, whose daily operations are centered on managing costs and revenue, emphasize the importance of minimizing food waste without compromising profitability. They adopt an "internal business case scheme", which emphasizes profitability and cost minimization, to make sense of the trade-off between turnover and food waste. In contrast, employees from the CSR department, who focus on promoting environmental and social welfare, prioritize donations and employ a "social impact scheme" to motivate the company's food waste focus. Some employees also use an "external competitive scheme" to make sense of the trade-offs, by highlighting how their departmental focus also involved considering competitors' moves. One of the purchasing managers for instance mentioned that although a product may be considered to have high write-offs, if other retailers sell it, then he must order it as well otherwise customers may go to the competition. We thus corroborate Dougherty's findings (1992) that employees' departmental focus shapes their thought worlds and align with the findings of Goretzki and Messner (2016) who identify that individuals' role-specific accountabilities influence their sensemaking process. Employees' departmental priorities thus act as a filter influencing how employees treat information and in turn make sense of trade-offs.

Furthermore, we also discovered that employees' personal beliefs impact how they justify the relevance of working towards minimizing food waste in the first place, and their incentive to donate subsequently. All employees stressed the importance of donations using a "social impact scheme" by explaining the positive impact donations have on people struggling to buy groceries. The importance of "doing good" was closely tied to individuals' personal beliefs. We thus support the findings of Joseph et al. (2020) that individuals' perceptions of tensions are influenced by their priorities and values.

To connect those interpretive schemes back to the cognitive frames explained by Hahn et al. (2014), we found that such schemes help explain how the frames operate in practice. By highlighting how employees overlapped the different interpretive schemes, one can show how the paradoxical frame unfolds in practice. Employees' departmental focus and their personal beliefs influence how they make sense of trade-offs. Although the departments of sales, purchasing, and finance may have been inclined to solely adopt an "internal business case scheme" and prioritize financials, the employees' values also drive their efforts to reduce food waste and adopt a "social impact scheme". The fact that employees combine different interpretive schemes shows that they acknowledge the tensions around food waste management, understand both sides of the trade-offs, but work to strike the right balance between maximizing turnover and minimizing food waste. They thus adopt a pragmatic approach to food waste management.

Yet, adopting a pragmatic approach to food waste management can also be achieved by using the "internal business case scheme" alone. Food waste provides a unique context

for examining sustainability tensions. The "internal business case scheme", which emphasizes profitability, was employed by the CFO to argue both for prioritizing turnover over food waste, as well as for minimizing food waste due to its financial cost. We thus found that the same interpretive scheme can result in different sensemaking outcomes. Therefore, the complex nature of food waste makes it such that similar cognitive frames can also influence sensemaking differently.

Last, the way employees make sense of the trade-offs also influences their interactions with food waste KPIs. Examining employees' interpretive schemes alongside their department KPI accountability can clarify how they navigate trade-offs. Store managers, for example, often prioritize financial dimensions and view food waste through an "internal business case scheme." As write-offs serve as one of their primary KPIs, it becomes clearer why they prioritize the discounting program over donations. Hence, individuals' sensemaking processes shape their approach to handling food waste KPIs.

5.2.   SPMS as Enablers

Contribution 2*: Our study highlights the significance of SPMS in addressing the complexities involved in managing food waste (Wouters & Wilderom, 2008). We emphasize the role of KPIs in enabling employees at various levels and from different departments to comprehend the impact of their actions on food waste management. In particular, the SPMS at FoodCo served as a roadmap, by aligning diverse departmental goals, and providing a common language for collaboration (Ferreira & Otley, 2009; Wijethilake & Ekanayake, 2018). We also underscore the contextualization mechanisms used by employees to make sense of food waste KPIs (Tillmann & Goddard, 2008) – as KPIs alone cannot provide a holistic picture of food waste management. Finally, we extend the work of Jordan and Messner (2012) by demonstrating how KPIs can be mobilized flexibly to account for uncertain factors and mitigate employees' perceived lack of control. This study complements the findings of Egan (2019) by examining how employees utilize accounting, specifically KPIs, to make sense of corporate sustainability. We also answer the call to empirically investigate how different types of information are needed by departments to manage sustainability (Maas et al., 2016).*

5.2.1. Operationalization of Food Waste Strategy

The SPMS, through goal setting and performance measurement, acts as a roadmap for operationalizing FoodCo's food waste strategy (Ferreira & Otley, 2009) and ensuring that the company is aligned (Wijethilake & Ekanayake, 2018). Employees at FoodCo perceived the SPMS as essential for understanding how their work could contribute to the company´s overarching food waste reduction goal. The multitude of actors involved in food waste management can make employees feel disconnected from their impact, but the SPMS provides a clearer understanding of how their actions and decisions contribute to the company's goals. In addition, food waste requires a transversal management

approach with the involvement of different departments, yet each department has multiple distinct goals to meet (Virtanen et al., 2013). Employees emphasized the importance of the SPMS in facilitating collaboration and harmonizing goals, which is key in the context of food waste management. The SPMS provides a common language that employees can use to collaborate effectively. Our study thus corroborates the findings that SPMS provide structure and harmonization by making information more understandable, and organizing activities in a clearly defined way (Lisi, 2015; Tillmann & Goddard, 2008).

The empirical data highlights the importance of employing different measures of food waste to comprehend food waste management (Brancoli et al., 2017). For example, FoodCo adopts various KPIs to gauge food waste, such as write-offs in kilograms and in monetary value, and as a percentage relative to other KPIs like turnover. The utilization of different KPIs allows the various levels and departments to align their daily operations with food waste management (Englund & Gerdin, 2015; Schaltegger et al., 2015). Our findings are thus in line with several other papers, (e.g., Egan, 2019; O'Dwyer & Unerman, 2020; Wouters & Wilderom, 2008), when concluding that SPMS act as enablers to make sense of FoodCo's food waste management strategy.

5.2.2. Contextualization of KPIs

Consistent with the conclusions of Virtanen et al. (2013), we highlight how the lack of perceived control over KPIs can result in challenges for employees to make sense of the performance outcomes of KPIs. We further build on the findings of Virtanen et al. (2013) by proposing that such limitations can be addressed through sensemaking. In the sensemaking process, food waste KPIs serve as a valuable tool, as they facilitate the transfer of information across time and space, aiding in contextualization (Rowe et al., 2012; Tillmann & Goddard, 2008). First, employees contextualized the food waste performance by comparing the food waste KPIs between stores and warehouses respectively. This enabled to identify systematic trends outside of the company's control which could have an impact on the company's performance. Second, employees reflected on their experience with food waste to identify appropriate food waste performance. Third, comparisons across time were also made, where employees analyzed their current performance on write-offs with prior months to make sense of the food waste levels. Fourth, food waste KPIs alone were not enough to provide an accurate picture of the company's food waste management, as the food waste performance is highly dependent upon other factors. For instance, the level of turnover highly impacts the food waste level in kg. As a result, employees combined and compared different KPIs together to make sense of the food waste performance at FoodCo. We thus confirm the findings of Tillmann and Goddard (2008) by showcasing how contextualizing strategies can be employed when situations are characterized by a lack of understanding of what a single number means. Comparable accounting information can enable employees to identify patterns, in turn helping them to reduce ambiguity about the information (Rowe et al., 2012).

5.2.3. Flexible Mobilization of Food Waste KPIs

In line with the findings of Virtanen et al. (2013), it became clear from the empirics that various external factors limit employees' feeling of control over food waste KPIs. The uncertainty inherent to the food industry and the complexities of food waste management lead employees to perceive a lack of control over the performance of food waste KPIs (Virtanen et al., 2013). Yet, performance indicators were still viewed as enabling, as they were perceived as means rather than ends (Jordan & Messner, 2012). KPIs were mobilized in a flexible way, as the company sets loose targets on KPIs with uncontrollable dimensions. In addition, acknowledging the perceived uncontrollability of certain factors, FoodCo made a deliberate choice to suppress the incentive system it initially implemented for store managers. This decision reflects the organization's understanding of the limitations of exerting direct control over uncontrollable factors (Franco-Santos et al., 2012; Jordan & Messner, 2012; Virtanen et al., 2013). We thus corroborate the findings of Jordan and Messner (2012) that incomplete performance indicators can be perceived as enabling if they are handled in a flexible way (Ahrens & Chapman, 2006).

Moreover, the acknowledgment of top management of the presence of uncontrollable elements creates an environment conducive to open discussions and sensemaking regarding KPI performance. Numbers in themselves are not enough to provide a full picture of FoodCo's waste management performance, and require ongoing discussions. This is in line with the findings of Goretzki and Messner (2016) stressing that individuals' understanding of accounting is largely developed through verbal communication taking place through informal or formal meetings. Moreover, we observed that communication across different levels was crucial to prevent the marginalization of sustainability in favor of financial concerns. These informal discussions around food waste KPIs served as a basis for interactive sensemaking (Beush et al., 2022; Weick et al., 2005), which is also coined by Gioia and Chittipeddi (1991) as sensegiving.

5.3.   Importance of Sensegiving for Collective Sensemaking

Contribution 3: Our findings emphasize the pivotal role of informal sensegiving, resulting from the collaboration between different departments, and more formal sensegiving activities, such as visits to donation centers and educational programs, in fostering collective sensemaking around the importance of food waste management (Egan, 2019; Gioia & Chittipeddi, 1991). Sensegiving is used by the management to ensure employees understand how their actions impact food waste. Our investigation of interdepartmental collaboration answers the call of Maas et al. (2016) to empirically examine how SPMS facilitate discussions among departments. While our research centered on the food retail industry and the complexities arising from external uncertainties and dependencies related to food waste, the concept of sensegiving holds relevance beyond this context, emphasizing its universal applicability to diverse sustainability concepts (Weick et al., 2005).

5.3.1. Sensegiving as Part of Daily Operations

The social interactions and discussions between departments help employees to make sense of challenges arising from uncertain contexts (Goretzki & Messner, 2016; Tillmann & Goddard, 2008), which was confirmed in this study. Discussions can be seen as sensegiving mechanisms (Gioia & Chittipeddi, 1991) occurring naturally in the daily operations at FoodCo, as those help shape employees' mutual understanding of how to manage food waste trade-offs. In line with the findings of Anand and Barua (2023), FoodCo emphasized the significance of continuous collaboration between different actors to foster knowledge sharing and improvements (Goretzki & Messner, 2016). For instance, the purchasing department has ongoing discussions with the sales and logistics teams to define the appropriate amount of food to order from suppliers to maximize turnover yet minimize food waste. Different departments thus influence each other's sensemaking processes, stressing the importance of social skills in sensemaking (Weick, 1995) and highlighting how collective sensemaking is also a corollary to sensegiving (Gioia & Chittipeddi, 1991; Maitlis & Lawrence, 2007). Our findings align with the perspectives of Brown et al. (2015) and Egan (2019), by emphasizing the critical role of middle managers' sensemaking in the process of sensegiving to other groups in the organization. In the context of this study, the understanding of the importance of food waste management was present at higher- and middle levels in the organization, which facilitated a more cohesive and aligned sensemaking process.

5.3.2. Sensegiving to Foster Collective Sensemaking

The different interpretive schemes adopted by employees could have created fragmented sensemaking regarding how to manage the trade-offs involved in food waste management. However, FoodCo has implemented several more "formal" sensegiving practices to foster ongoing collective sensemaking (Gioia & Chittipeddi, 1991). First, the CSR department acknowledged that employees may have specific allegiances towards their departmental KPIs, which may impact how they balance the trade-offs between reducing food waste and increasing turnover. As such, CSR established a food-waste group gathering departments to regularly discuss and share knowledge on food waste reduction. This initiative serves as a means of sensegiving and sensemaking, as it facilitates effective communication and provides a space for people to address the challenges inherent to food waste. Second, FoodCo employs visual sensegiving as a strategy to emphasize the significance of donations at the store level and foster collective sensemaking regarding the importance of food waste reduction. This is achieved by arranging visits to donation centers, allowing employees to witness firsthand how their actions can positively impact individuals facing financial difficulties. Notably, the approach of visualizing the tangible outcomes represented by the numbers, particularly the substantial quantity of wasted food, seems to be a powerful sensegiving tool to enhance employees' sensemaking of food waste management.

The empirics further revealed that sensegiving, through the organizational processes, the food waste group, education, and visualization tools, serves as a mechanism to mitigate the perceived lack of control over the food waste performance. By enabling employees to comprehend how their daily actions contribute to the broader objective of reducing food waste (Ferreira & Otley, 2009), it instills a sense of control and ownership over food waste management (Giuliani, 2016). Therefore, we found that sensegiving plays a crucial role in bridging the gap between perceived control and food waste outcomes.

While Voronov (2008) underscores the limits of sensegiving, by showcasing how it may suppress alternative interpretations of reality and restricts participation in the sensemaking process, our study does not corroborate such findings. Instead, we demonstrate that sensegiving can be used as an effective tool to fill in the gaps of sensemaking (Maitlis & Lawrence, 2007). During interviews, some employees emphasized how visits to donation centers helped them understand the value of donations, echoing the findings of Tillmann and Goddard (2008) on the importance of education in sensegiving. From the empirics, store managers mentioned that lower-level employees had a harder time grasping the social impact aspect of food waste, thus highlighting the need for a deeper understanding of the importance of donations among individuals in lower-level positions. Store managers were said to mostly view food waste through the lens of the business case frame (Hahn et al., 2014). Both top and middle managers emphasized that education and awareness programs aiming to emphasize the importance of prioritizing food waste practices at the store level are key, thus underscoring the importance of sensegiving to achieve collective sensemaking.

6. Conclusion

*In Section 6.1, we provide an overview of (**1**) our three main contributions, namely (**a**) highlighting the forces shaping employees' cognitive frames and showing how they influence employees' sensemaking of trade-offs and handling of KPIs, (**b**) emphasizing the potential of KPIs as facilitators for addressing food waste management complexities, and (**c**) underscoring the significance of informal and formal sensegiving mechanisms to foster collective sensemaking, and (**2**) we elaborate on the practical implications of our findings. In Section 6.2, we present the limitations of this paper, followed by Section 6.3 in which we propose areas for future research.*

6.1. Main Contributions and Practical Implications

In conclusion, our study aimed to investigate the ways SPMS are utilized by employees to address the challenges of food waste management. By answering the following research question: *how are food waste KPIs implicated in employees' sensemaking processes of the challenges inherent to corporate food waste management?,* we add to the literature on organizational sustainability and the role of accounting tools in supporting food waste management.

Our study contributes to the literature in three key ways. First, we explore how personal beliefs and departmental focus influence employees' use of cognitive frames to manage the trade-offs involved in food waste management, thus adding to the understanding of how employees' cognitions, attitudes, and emotions interact with sustainability tensions (Chen et al., 2021; Joseph et al., 2020; Sundin & Brown, 2017). We demonstrate that sensemaking plays a critical role in shaping how employees interact with KPIs. Second, we highlight the potential of SPMS as facilitators for addressing the complexities of food waste management (Wouters & Wilderom, 2008), particularly how KPIs enable employees from different hierarchical levels and departments to comprehend the effects of their actions on food waste management (Ferreira & Otley, 2009; Wijethilake & Ekanayake, 2018). Third, we emphasize the significance of informal and formal sensegiving mechanisms to foster collective sensemaking around the importance of food waste management (Egan 2019; Gioia & Chittipeddi, 1991). By doing so, we also highlight the limits of KPIs in acting as enablers, as they alone are not enough to ensure that employees work towards food waste reduction.

The practical implications of our study are significant for companies seeking to effectively manage food waste or other sustainability-related activities. Our findings suggest that recognizing and managing paradoxes related to sustainability can promote organizational learning and dynamic implementation of sustainability at different levels. This study highlights the importance of top and middle management in fostering continuous and coordinated dialogue with employees to develop collective sensemaking.

Furthermore, the use of SPMS can facilitate discussions between different departments and help unify diverse departmental goals behind the company-wide food waste reduction objective. Finally, our study highlights the importance of sensegiving mechanisms, such as educational programs and visits to donation centers, to ensure that employees understand the importance of their actions in reducing food waste. Those sensegiving mechanisms can help align employees across the organization on understanding the social and financial implications of food waste. This can in turn help when discussing the trade-offs between maximizing turnover and minimizing food waste, as employees understand both ends of the spectrum. The practical implications of our study are not limited to the food retail industry, as the concepts of sensemaking and sensegiving hold relevance in other contexts marked by uncertainty and ambiguity (Weick et al., 2005). Our findings have wider implications for sustainability practices in uncertain environments and can aid in comprehending the role of SPMS in mitigating such challenges. The findings can further be used to understand what tools employees may use when KPIs are perceived as incomplete. As such, companies can use the insights from our study to effectively manage sustainability trade-offs across various industries and operational contexts.

Before addressing the limitations and future research avenues, we would like to leave the reader with one quote:

> "That's how life works. It's not only to live, sometimes you can get sick, and you can't do anything about that. You cannot control that. Of course, you can eat well. You can work out and so on and still get sick. So, this is the same with the write-offs. You have your KPIs. You have some rules, you have procedures you need to follow. But this is how we can control it the most. You need to talk to other people to try to find a solution and improve KPIs." –Purchasing Manager

This analogy implies that, just as individuals cannot control every aspect of their health, companies cannot avoid write-offs, i.e., food waste, despite their best efforts. However, by following specific guidelines, implementing KPIs, and collaborating with other departments, the impact of write-offs can be mitigated to some extent. The statement showcases the value of communication and collaboration in understanding and working with KPIs to reduce food waste.

6.2. Limitations

We acknowledge that our paper is subject to some limitations. First, to understand FoodCo's food waste management and the sensemaking processes unfolding to address its inherent challenges, we conducted interviews on a national scale, and hence all interviews were held via Microsoft Teams. However, it is important to acknowledge that conducting interviews digitally may be considered a limitation when adopting sensemaking as a theoretical lens. The absence of face-to-face interactions and non-verbal cues during the interviews could have affected the depth of understanding and the ability to capture subtle nuances of participants' sensemaking processes. Second, the sample size of interviewees could be expanded to include a larger number of employees and

perspectives, as this can provide a more comprehensive basis for discussion and enhance the robustness of the findings. Last, our paper provides insights on how individuals from different organizational levels address the sustainability paradox. However, it offers limited insights into how those at the lower levels make sense of sustainability. Also, although this paper explores the collaboration between individuals and departments in managing food waste, it is important to note that we did not have the opportunity to directly observe how this collaboration played out in practice, such as during meetings, in stores, at warehouses, etc.

6.3. Future Research

The paper suggests avenues for further research on sensemaking and sensegiving in food waste management and other operational settings, based on the limitations and findings of this study. These areas of research aim to enhance our understanding of the complexities and challenges associated with food waste management.

First, as mentioned in the limitations, this paper focused on all levels across the organization, but with limited participation of in-store employees. Hence, it would be interesting to conduct research with a larger emphasis on lower-level employees to uncover their sensemaking processes of the different goals to meet and their decision-making processes related to food waste management. Examining the perspectives of store employees, who have direct exposure to food waste and operate in the supply chain stage where the most food is wasted, could reveal valuable insights and identify potential barriers or opportunities for waste reduction efforts.

Second, another promising avenue for future research is to explore companies with varying degrees of sustainability awareness among employees. Such a comparative approach can shed light on the impact of awareness on the sensemaking process. Additionally, conducting similar studies in retailer entities across different countries can also show how cultural factors influence awareness and impact food waste management.

Third, while the importance of sensegiving was acknowledged in this paper, it was not the primary focus. Future research should delve deeper into the dynamics and outcomes of sensegiving in sustainability contexts marked by a lack of collective sensemaking. Studying empirically how individuals communicate and influence each other's behaviors can help identify effective sensegiving strategies that align with sustainability goals.

Last, it should be noted that these future research opportunities are not limited to food waste management, but could also extend to other areas within sustainability, such as energy efficiency, water usage, or carbon emissions.

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Appendix

Appendix A. Definitions

BoD: Board of Director

CFO: Chief Finance Officer

CSR: Corporate Sustainability Responsibility

Internal Business Scheme: Referring to the impact of food waste management on profitability and stressing financials

External Competitive Scheme: Referring to the industry and competitive environment

KPI: Key Performance Indicator

MCS: Management Control Systems

PMS: Performance Measurement Systems

Social Impact Scheme: Referring to the positive societal impact arising from food waste management and stressing the "social benefit"

SKPI: Sustainability Key Performance Indicator

SMCS: Sustainability Management Control Systems

SPMS: Sustainability Performance Measurement Systems

Svdh: Svensk Dagligvaruhandel (Swedish Food Retailers Federation)

Appendix B. Interview Details

Department	Role of the Interviewee	Interview number	Format	Length	Date
CSR	Head of CSR	2	Video	45 min 45 min	25th Nov 2022 2nd Feb 2023
CSR	CSR Manager	1	Video	60 min	15th Feb 2023
Finance & Accounting	CFO / Board Member	1	Video	60 min	16th Mar 2023
Finance & Accounting	Controller	1	Video	45 min	17th Mar 2023
Supply Chain	Supply Chain Manager	1	Video	45 min	7th Mar 2023
Supply Chain	Supply Chain Manager	1	Video	50 min	20th Mar 2023
Purchasing	Purchasing Manager Head of Purchasing	1	Video	60 min	10th Mar 2023
Purchasing	Purchasing Employee	1	Video	60 min	15th Mar 2023
Purchasing	Purchasing Employee	1	Video	55 min	16th Mar 2023
Logistics	Warehouse Manager	1	Video	50 min	13th Mar 2023
Logistics	Logistics Trainee	1	Video	55 min	17th Mar 2023
Sales	Sales Manager	1	Video	60 min	15th Mar 2023
Sales	Sales Manager	1	Video	60 min	13th Mar 2023
Operation	District Manager	1	Video	60 min	24th Mar 2023
Operation	Store Manager	1	Video	40 min	12th Apr 2023
External: Svensk Dagligvaruhandel	Head of Sustainability	1	Face-to-Face	60 min	10th Feb 2023

Appendix C. Overview of interview guide design

Theme	Example question(s)	Interest
Background & Departmental focus	What is your role and what are your main objectives within your department?	To get a background of the interviewee, his/her role, and the departmental main goal.
Departmental involvement in food waste management	In your position, how are you involved in food waste management? How does the food waste management strategy affect your role?	Get an understanding of how different departments work with food waste.
Food waste KPIs and targets	What KPIs do you use to manage food waste? And how do you set your targets? How did you develop your waste-management KPIs?	Get an overview of what KPIs are used to monitor food waste and how targets are set within the organization.
Sustainability paradox	Is there a challenge / contradiction between the sustainability KPIs and your financial KPIs? Do you think every department has the same view on food waste management? Which department has the largest impact on food waste?	Examine sustainability and financial performance trade-offs, assess departmental alignment and coordination in food waste management, and explore conflicts and reconciliation between sustainability goals and financial objectives.
Organisational strategy	What are the main critical issues in integrating food waste management practices at a strategic and operational level? How do you discuss food waste management within FoodCo?	Helps identify difficulties that may arise during strategic and operational integration of food waste practices and sheds light on the communication and decision-making.

Figure 1. An illustration of FoodCo's organizational structure
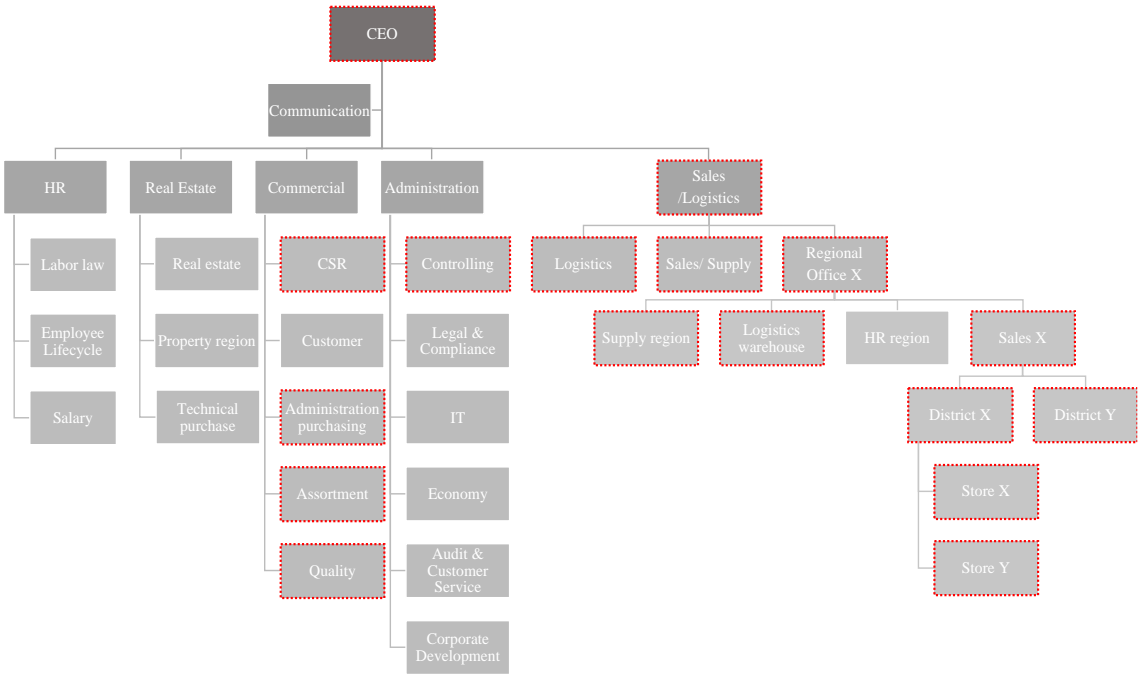
Note: The departments that have been included in the empirical material are highlighted in red.