

The involvement of employees in retailers' operational departments in loss prevention in distribution logistics

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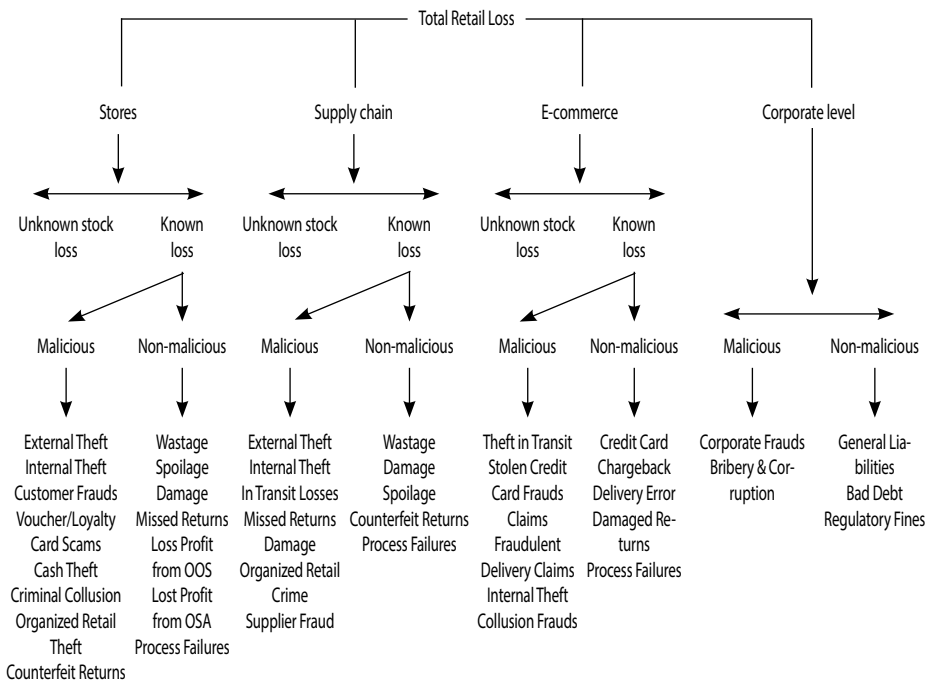
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Introduction

A retail chain plays a crucial role in distribution logistics, representing the final step that transfers products from distribution centres to the customer via stores, handling inventory management, transport, and last-mile delivery to meet demand efficiently and profitably. Shrinkage in retail chains negatively impacts their financial performance and customer buying behaviours (Figiel et al., 2020). The concept of 'Total Retail Loss' (TRL) (Beck, 2016) presents the complexity of loss in retail chains, as well as the challenges associated with developing a loss-prevention policy. TRL includes elements that are not considered in the loss-prevention strategy of the supply chain examined here, such as natural disasters, so the author has limited the scope of the study accordingly (Figure 1).

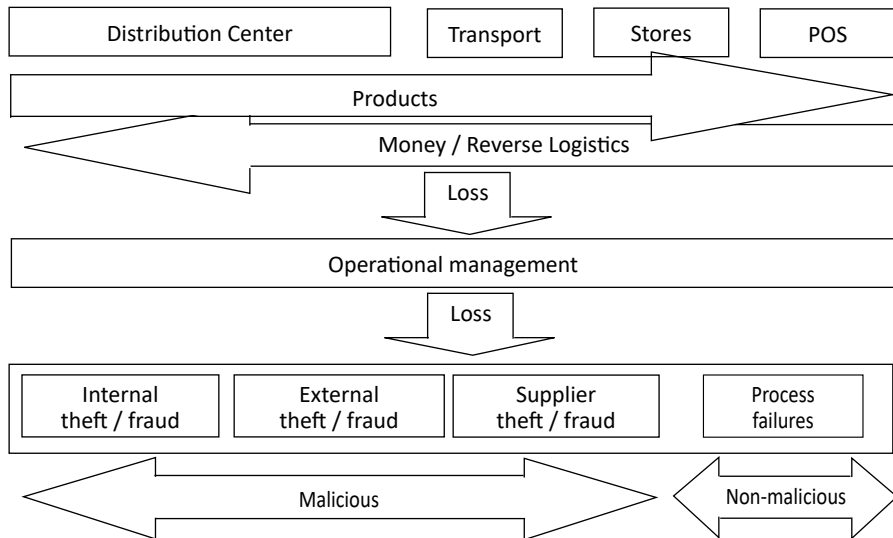
Figure 1. Total Retail Loss



Source: own work, based on: Beck, 2016; Figiel et al., 2020.

According to the Centre for Retail Research (Bamfield, 2008) shrinkage is the term generally used in the retail industry to measure ‘inventory losses from crime and waste’, expressed here as a percentage of retail sales. To systematize research in this area, Efficient Consumer Response (ECR) adopted the following definition (Beck, 2004: 3): shrinkage is a combination of inter-company fraud, process failures, internal theft and external theft. Loss is defined as the difference between the recorded quantity of goods and their actual quantity, where the discrepancy arose from internal theft, external theft, supplier fraud or process errors (Beck, 2002: 11–12). A similar definition can be found in the literature in Polish (Fertsh, 2006: 2008): ‘stock loss is the loss of inventory occurring in the supply chain or in a store, which is a result of errors, theft, fraud, etc.’ (Figure 2).

Figure 2. Shrinkage in distribution logistics (retail chain), excluding corporate losses



Source: own work, based on: Beck et al., 2002: 27; Figiel et al., 2020.

To systematize the concept of shortage/loss, it should be noted that shortage is the quantitative difference between the actual and recorded state of goods, while loss is the value of the missing goods. The amount of loss is calculated by multiplying the number of missing products by their price. In this article, the author adopts the definition of loss proposed by the ECR, which allows for the interchangeable use of the terms loss and shrinkage.

In the realities of operational management of retail chains, stock losses are divided in several ways. The first of them is: known and unknown loss (Beck et al., 2002: 30).

- known stock loss: shrinkage that we know has occurred (we can identify the goods, their location and the time of their occurrence). Examples include products past their expiry date, physically damaged or destroyed goods, etc.;
- unknown stock loss: unexplained discrepancies in inventory (shrinkage) that cannot be defined (when, where, or sometimes even the type of missing product). They are most often the result of crimes. This type of loss is usually discovered during routine inspections, such as inventory counts.

Another division of losses accepted by academic communities and business is divided into two categories:

- non-malicious shrinkage: these are losses of products or monetary value within the supply chain that occur as a result of unintentional actions, without the intention of generating them. They are most often caused by non-compliance or improper process design (Figiel et al., 2020: 13–16).

- malicious shrinkage: damage to products or monetary value in the supply chain that was caused by the perpetrator intentionally, through his or her knowing action (Figiel et al., 2020: 20,25).

It is worth noting that non-malicious losses are typically less dynamic than intentional losses, and therefore more susceptible to preventative action (Beck, 2002: 10). This makes it easier to identify and implement measures to counteract their causes. In the case of intentional losses, countermeasures will aim to deter potential perpetrators or discourage them from committing an act that results in a loss.

It should be pointed out that one element of a loss-prevention policy common to the above-mentioned types of losses (non-malicious / malicious) is the implementation of preventative actions, which are primarily aimed at hindering or preventing losses by monitoring¹ pre-defined people, processes, goods and places at a specific period of time².

Retail chain vulnerabilities

The purpose of a supply chain is to deliver goods from the manufacturer to the end user. Therefore, it can be assumed that risk itself in the supply chain occurs in the form of any event that may affect the movement of materials and disrupt the planned flow of goods (Waters, 2011: 7). The specific nature of risk in a supply chain is the transfer of the consequences of an event occurring in a single link to other entities. The essence of this is that each link is exposed not only to its own risk, but also to the consequences of negative incidents occurring in other links in the same chain. 'The value of the supplier-recipient relationship is influenced by the excellence of the business partners' actions, because the effects of disruptions occurring in one of them may affect the other party or reach further in the supply chain. It is extremely important to shape the awareness of its participants as to the importance of risk issues' (Wieteska 2012: 76–125). Therefore, even if the individual risk of each part of supply chain is low, the cumulative effect of several hundred, or even several thousand, links concentrated in large organizations becomes significant (Waters, 2011: 49).

Risk is not distributed evenly across time, space and location. Nor is it distributed evenly across products and processes etc. within the supply chain. Individual locations, products, processes, and even people are significantly more vulnerable to loss than others (Figiel et al., 2020: 30–31). A useful tool for obtaining a real picture of losses is the 'hot' concept (Beck, Chapman, 2003: 16), which assumes that certain elements in the supply chain – places, products, processes, and people – are more susceptible to generating losses than others. Identifying them is the basis for preparing and

¹ Providing CCTV (Closed Circuit Television), applying EAS (Electronic Article Surveillance), changing processes, etc.

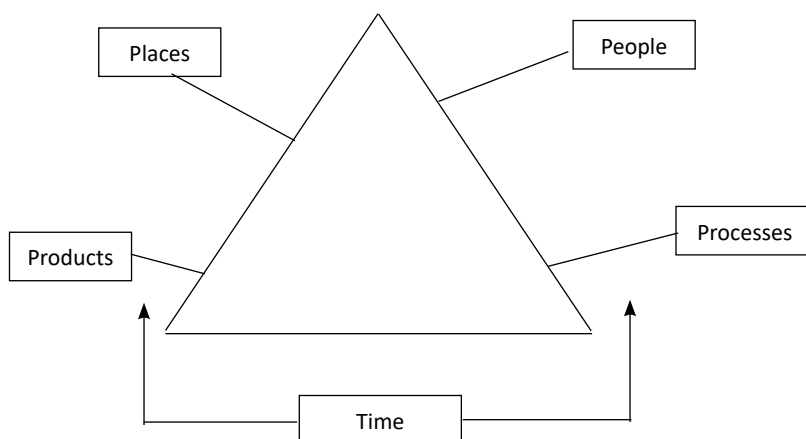
² An example of such action is the "hot concept", described later in this article.

implementing preventative measures (Figiel et al., 2020). As a result of this research, the author of this article has 'enriched the essence of the hot concept with an additional element (the time of loss generation) (see Figure 3).

This proposal (including the time element in the concept of 'hot') is based on scientific data, business news and unpublished results of research conducted by the author.³ These sources indicate that losses in retail chains increase during specific seasons, such as holidays (Pannell, 2019; Bamfield, 2014: 30, 52, 60–61), festivities (Figiel et al. 2020: 44; Bamfield, 2014: 30, 38, 52, 60–61), the back-to-school period (Bamfield, 2014: 30, 38, 61), and even sales promotion activities (Carter, 1995: 57–64; Carter et al., 1995: 81–82).

In most retail chains, dedicated departments are responsible for implementing loss-reduction activities, including utilizing the 'hot concept'⁴. These activities are supported by other organizational units⁵ that, as part of their operations and identified threats (hot elements), implement the initiatives defined in the loss-prevention policy (Beck et al., 2003: 7).

Figure 3. 'Hot' concept



Source: own work, based on Beck, Chapman, 2003: 16.

Previous research, conducted primarily by academics in Poland (Liber, Szczepankiewicz, 2012: 111–122) and Western Europe (Beck et al., 2002; Beck et al., 2003;

³ In the past, the author worked for leading retailers and led numerous loss-prevention projects, where "hot time" was identified as a key factor in reducing losses, e.g. having worked for TESCO PLC, the author held the posts of Corporate Security Manager (Poland), Fraud Prevention and Security Manager (Poland, Czech Republic, Slovakia), Central Europe Corporate Security & Resilience Manager (Poland, Czech Republic, Slovakia, and Hungary).

⁴ In retail chains, these organizational units have different names: security, loss prevention, audit, control, etc.

⁵ HR, H&S, logistics, purchasing, legal department, IT, etc.

Beck, Chapman, 2003; Beck, Peacock, 2009; Beck, Chapman, 2020) has focused on analyzing the collaboration between individual organizational units within the retail network (supply chain) to reduce losses. They did not include an attempt to establish possible connections between the position of operational departments' employees in the organizational structure⁶, their personal responsibility for losses, or the possibility of obtaining information that may be of significant importance for the preparation and implementation of a loss-reduction policy.

Taking the circumstances into account, as well as the need to address the research gap, the following research question was adopted: Is there a relationship between the position within a retail chain's organizational structure from which an employee is involved in loss reduction and the ability to obtain information necessary to develop a loss-prevention policy?

These circumstances are particularly significant due to the ongoing optimization of employment in retail chains, which is generally associated with reducing staff in support departments⁷ and/or outsourcing loss-prevention processes. Given the facts mentioned above, the following assumption was made in the research:

Hypothesis: There is a relationship between the position within a retail chain's organizational structure from which an employee is involved in loss reduction and the ability to obtain information necessary to develop a loss-prevention policy.

Research methodology and key findings

This article presents some of the results of a research project conducted by the author on the supply chain of a product that, according to global data, generates some of the highest shrinkage (hot product) in the FMCG sector.

The complexity of FMCG supply chains, including their high susceptibility to losses, distinguishes entities operating in this industry from other retail chains. The FMCG sector is characterized by significant product differentiation⁸, high sales volume, low margins and a variety of distribution channels. The specificity of this sector is also determined by the need to store and transport goods⁹ under strictly defined conditions¹⁰ (e.g. cold chain supply), as well as the very frequent movement of products. These factors lead to the need to integrate processes and operations across

⁶ Organizational units that are not directly responsible for the level of loss.

⁷ Security, loss prevention, audit, control, risk management, etc.

⁸ FMCG retail chains offer up to 250,000 SKUs for sale. Managing such "mass of goods" between manufacturers, distribution centres and retail chains clearly requires collaboration across the supply chain.

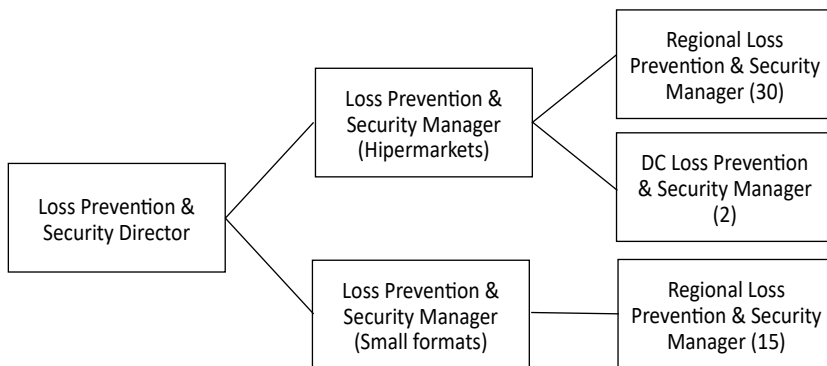
⁹ Transport management in the FMCG sector is a complex process. As exemplified by the study results, the LPS Department of the international retailer taking part in the research collaborates with approximately 400 transport companies, some of which are sole proprietorships.

¹⁰ An example would be the delivery of a kind of cheese to the retail chain participating in the research: a long supply chain and a luxury product, susceptible to improper storage conditions. In the case of interruption e.g. delivery time slots problems, supplier fraud, food spoilage, etc., it is almost impossible to meet customer satisfaction (needs) by offering alternative products.

the entire supply chain to prevent losses.

The empirical study was planned to encompass 300 current and former managers (various levels) responsible for loss prevention across the supply chain studied here. The research was based on a questionnaire distributed to respondents. 224 completed questionnaires were received, representing 74.7% of the total sample. After analyzing the initial research results, 40 respondents were selected for personal interviews to further elaborate on their responses to selected survey questions. Since the scope of this article concerns distribution logistics, this study utilizes data obtained from respondents who were knowledgeable about this part of the supply chain. The supply chain under investigation featured various organizational forms of loss-prevention units (Figure 4).

Figure 4. Structure of the security and loss-prevention department of one of the retail chains participating in the study



Source: own work based on the author's research in the supply chain covered by the article.

The hypothesis was tested by contingency tables obtained from the summary of respondents' answers to the following questions and the Chi-square test of independence. The author verified that the assumptions of Pearson's chi-square test of independence were met, ensuring that the expected cell frequencies satisfied the minimum requirements (i.e. at least 80% of the cells had expected counts ≥ 5 and no cell had an expected count < 1), thereby warranting the valid interpretation of the statistical results.

Question 1. Please indicate the scope of information analyzed at your institution regarding loss prevention. Please select all applicable answers.

- 1) 'Hot products'.
- 2) 'Hot places'.
- 3) 'Hot processes'.

- 4) 'Hot people'.
- 5) 'Hot time'.
- 6) Other elements (please specify).

Question 2. At which level of your organization's hierarchy does the obligation to prevent losses originate?

- a) Employee.
- b) Department Manager.
- c) Head of Unit (store, DC, etc.).
- d) Regional Manager.
- e) General Manager.
- f) There is no such obligation.

Table 1 compares the level of responsibility for shrinkage to loss-prevention information analyzed.

Table 1. The relationship between the level of responsibility for shrinkage and information analyzed in the field of loss prevention

The relationship between the level of responsibility for shrinkage and:	p value for the Chi-square test of independence	Cramer's V
'Hot products' identification	0,00	0,85
'Hot processes' identification	0,00	0,81
'Hot places' identification	0,00	0,77
'Hot time' identification	0,00	0,31

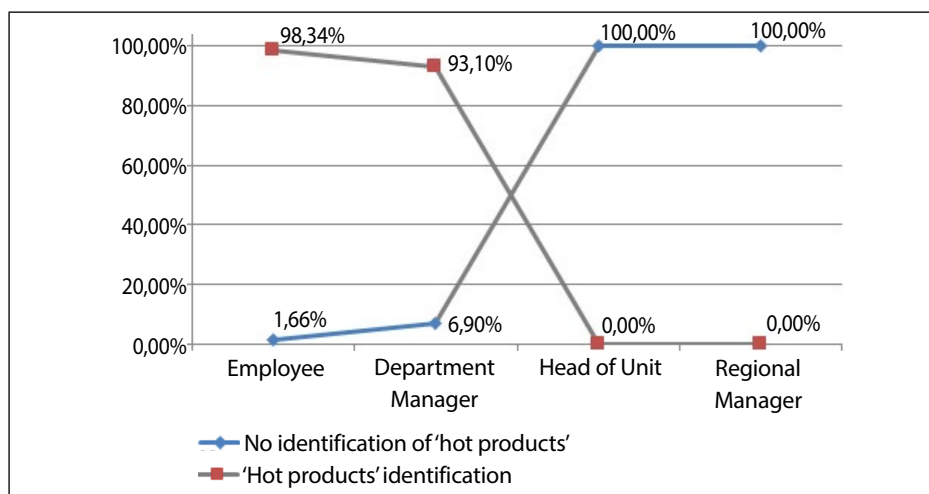
Source: own research.

The first column contains the name of the variables, the second column shows the p value for the Chi-square test of independence, and the third column presents the value of Cramer's V, which gives information about the strength of the relationship between the variables.

A value in the second column below 0.05 indicates a statistically significant relationship between the variables. If a relationship is found, its strength should be assessed, as indicated by the value in the third column. Cramer's V coefficient ranges from 0 to 1, which is mutually closed. Values close to zero indicate a weak relationship, while values close to one indicate a strong relationship between the variables. From several statistically significant relationships, the strongest ones were selected; these are highlighted in the corresponding rows. It should be clearly emphasized that these are strong relationships.

Details of the relationship between the level of loss prevention and the identification of 'hot products' (Chart 1).

Chart 1. Relationship between the level of loss prevention and the identification of 'hot products'



Source: own research.

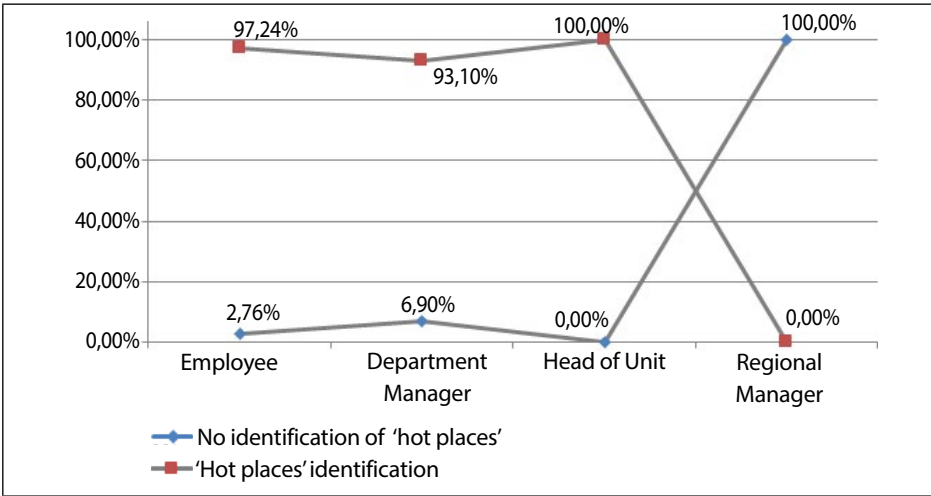
Among retail chains (units), where the level of responsibility for shrinkage begins at the employee, approximately 98% identify the products generating the highest losses, while just under 2% do not analyze this information. Among respondents who indicated that responsibility for shrinkage begins with the department manager, approximately 93% identify the products associated with the highest losses, while approximately 7% do not analyze this information. Among those participants who indicate that responsibility for shrinkage lies with heads of units or the regional manager, none identify the products generating the highest losses.

Details of the relationship between the level of loss prevention and the identification of 'hot places' (Chart 2).

Among companies where responsibility for losses begins at the employee, approximately 98% identify the areas associated with the highest losses, while nearly 3% do not analyze this information. Among respondents who indicated that responsibility for shrinkage originates with the department manager, approximately 93% identify the areas associated with generating the highest losses, while approximately 7% do not analyze this information. Among those surveyed who indicated that responsibility for shrinkage lies with heads of units, 100% of respondents identify the element associated with loss, whereas in cases where the regional manager is responsible for losses, none of the companies identify the areas associated with generating the highest losses.

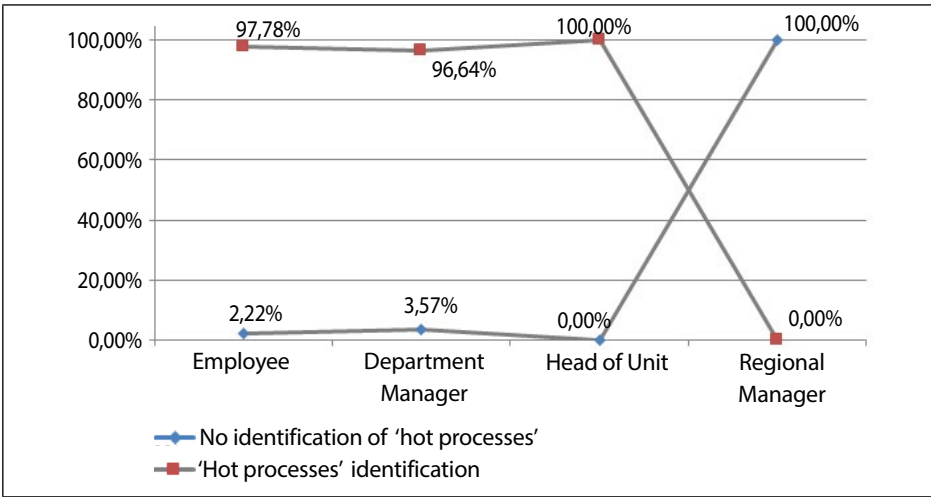
Details of the relationship between the level of loss prevention and the identification of 'hot processes' (Chart 3).

Chart 2. Relationship between the level of loss prevention and the identification of 'hot places'



Source: own research.

Chart 3. Relationship between the level of loss prevention and the identification of 'hot processes'



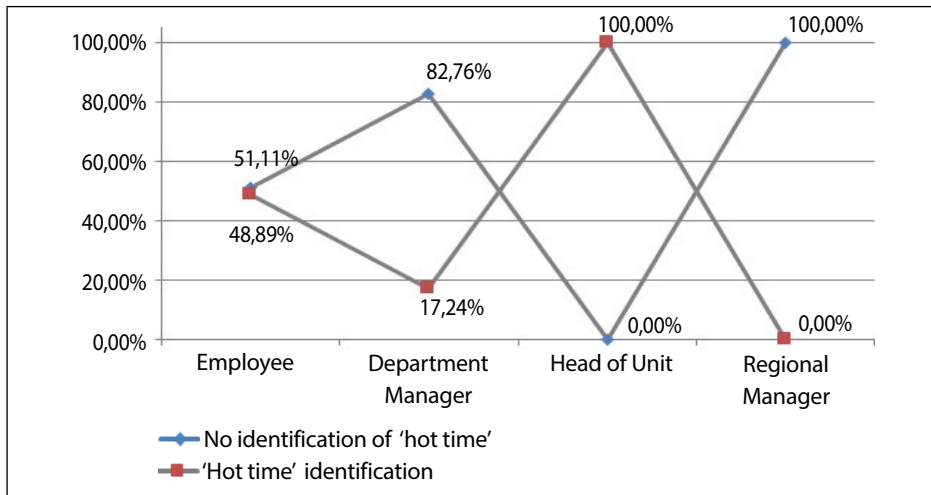
Source: own research.

Among companies where responsibility for shrinkage begins at the employee, nearly 98% identify the processes generating the highest losses, while approximately 2% do not analyze this information. Among respondents who indicated that responsibility for shrinkage originates with the department manager, approximately 96% identify the processes associated with generating the highest losses, while nearly 4%

do not analyze this information. 100% of companies that indicate that the responsibility for shrinkage lies with heads of units identify the element associated with loss, whereas in the case of responsibility for shrinkage at the regional level, none of the companies identify the processes associated with generating the highest losses.

Details of the relationship between the level of loss prevention and the identification of 'hot time' are provided in Chart 4.

Chart 4. Relationship between the level of loss prevention and the identification of 'hot time'



Source: own research.

Among companies where responsibility for shrinkage begins at the employee, nearly 49% identify the time/period in which the highest losses occur, while approximately 51% of respondents do not analyze this information. Among respondents who indicated that responsibility for shrinkage originates at the department manager level, approximately 17% identify the period associated with the occurrence of the highest losses, while nearly 83% do not analyze this information. 100% of companies that indicate that the level of responsibility for shrinkage lies with heads of units identify the element associated with loss, whereas in the case of responsibility for shrinkage at the regional level, none of the entities identify the time/period associated with generating the highest losses.

Conclusions

The research results confirm the correlation between the variables studied here. The level at which loss prevention is required in distribution logistics has a significant

impact on the type of information necessary to prepare and implement current and long-term loss-prevention policies. The survey results revealed an interesting picture: the potential responsibility of regional and top-level managers for shrinkage does not result in the collection of the information identified in the 'hot concept'.

The best results in this regard are achieved by imposing loss-prevention obligations on employees, department managers and heads of units. In this case, we obtain complementary information on all elements of the 'hot concept', excluding knowledge about those individuals that generate the highest losses.

The reason for the lack of analysis of information regarding 'hot people' in the supply chain reviewed here was identified during interviews with selected respondents. The research results indicate that loss reduction in retail chains is primarily focused on implementing preventative measures. The identification of 'hot people' is, in most cases, a result of monitoring previously identified processes, products and places within a specific period of time¹¹. Typically, this type of information is obtained in two stages: firstly, as a result of the analysis of specific risk elements ('hot concept'), secondly, the implementation of the loss-prevention policy tailored to the pre-identified threats.

Based on these findings, the author makes targeted recommendations for the implementation of the loss-prevention strategy and proposes that the effectiveness of operations be measured not only by what risks are controlled, but also by how controls interact to prevent, identify and respond to the main causes of losses. One of the most frequently applied strategic approaches is the Deter, Detect, Delay, Deny, Defend, and Defeat methodology. To overcome these challenges, it is necessary to implement a comprehensive loss-prevention strategy, which could be based on the principles of ISO 18788:2015¹², ISO 31000:2018¹³, or ISO 28000:2022¹⁴. However, in such cases, shrink-reduction initiatives should consider various solutions, especially the research findings presented in this article as a new and universal loss-prevention tool.

¹¹ 'Hot people' are not usually analysed directly (except when caught red-handed) because of various factors. First of all GDPR (General Data Protection Regulations), which strictly stipulate how personal data is processed, e.g. those of offenders. Secondly, in loss-prevention activities, especially malicious shrinkage reduction, the most preventative actions are based on the 'theft/fraud triangle', which indicates that theft / fraud occurs when three elements coincide: pressure (need), opportunity (weak controls), and rationalization (justifying the act). This is used to identify risks and prevent theft / fraud by focusing on reducing opportunities through internal controls on 'hot' processes, places, products, in, but not only, 'hot' time. Due to the confines of the article, the author has limited himself to only a partial explanation of the issue of how to analyze 'hot people', which depends on many elements, e.g. types of losses (malicious, non-malicious), perpetrators (customers, employees, suppliers, Organized Retail Rings), and the loss-prevention policy, always tailored to pre-identified risk as well as vulnerabilities.

¹² Management system for private security operations — Requirements with guidance for use.

¹³ Risk Management.

¹⁴ Supply Chain Security.

The proposed loss-prevention tool results from the circumstances that ISO standards show only the 'bigger picture' of management, which has to be detailed (pinpointed) in day-to-day operations to ensure that loss-prevention activities are correctly applied in 'hot elements', at each echelon in an organizational structure, across distribution logistics.

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The involvement of employees in retailers' operational departments in loss prevention in distribution logistics

Abstract

This article explores shrinkage in retail chains, the main causes of their occurrence and selected methods for analyzing information in order to develop a loss-prevention policy. This paper presents the research methodology and findings on the relationship between the employee's position within retailers' organizational structures and their involvement in loss reduction, and the ability to obtain information necessary to develop a loss-prevention policy. The paper fills a research gap in this area; to date, no research on this topic has been conducted in Poland (Europe).

Keywords: supply chain, retail chain, shrinkage, loss, risk management, loss prevention

Author Contributions

Conceptualization: J.L.

Methodology: J.L.

Formal analysis: J.L.

Investigation: J.L.

Resources: J.L.

Writing – original draft: J.L.

Writing – review & editing: J.L.

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Informed Consent Statement

Not applicable.

Data Availability Statement

All relevant aggregated data generated and analysed during this study are included within the article. The raw datasets (individual survey responses and interview transcripts)

are not publicly available due to Non-Disclosure Agreements (NDAs) and to ensure the anonymity of the participating managers and the confidentiality of their organizations.

Declaration of Generative AI Use

No artificial intelligence tools were used in the preparation of this manuscript.

Acknowledgments

Not applicable.

Conflict of Interest

Janusz Liber declares no conflict of interest.

