Enhancing Retail Security: A Smarter Way to Reduce Losses and Improve Efficiency

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1. Executive Summary

Reducing losses in retail extends beyond preventing theft — it involves optimizing operations, enhancing efficiency, and ensuring a seamless shopping experience. Retailers today face a range of challenges, including shoplifting, fraud, long checkout times, and inefficient allocation of resources. Traditional security systems are no longer sufficient to address these evolving demands.

The AxxonSoft Retail Solution integrates advanced video surveillance with AI-powered analytics to enhance security, minimize shrinkage, and improve operational performance. The software enables real-time monitoring, proactive threat detection, accelerated incident investigation, intelligent data collection, and comprehensive reporting. These capabilities provide retailers with actionable insights to drive store performance while maintaining a safer shopping environment.

Supported by Intel's hardware accelerators, AxxonSoft's solution delivers high-performance video analytics, offering a scalable and cost-effective approach suitable for retail businesses of any size. This whitepaper outlines how the AxxonSoft Retail Solution is redefining security and operational excellence in the retail sector.

2. Introduction: The Evolving Landscape of Retail Security

As e-commerce expands and consumer expectations continue to evolve, brick-and-mortar retailers must adapt to maintain their competitive advantage. A critical component of this transformation is the ability to provide a secure, efficient, and customer-focused in-store experience. To achieve this, retailers are increasingly investing in advanced technologies that address modern security challenges, reduce losses, and improve overall customer satisfaction.

AxxonSoft's intelligent video surveillance solutions — powered by artificial intelligence and integrated with Intel's state-of-the-art technologies — equip retailers with the tools necessary to handle their tasks. By leveraging real-time data and advanced analytics, retailers can not only prevent theft and fraud but also optimize store layouts, manage queues, and deliver a seamless shopping experience that meets the expectations of today's consumers.

3. Key Challenges in Retail Security

3.1 Fraud at the Checkout

Fraud at the checkout is one of the primary sources of financial losses for retailers. It can involve individual customers, employees, or collusion between employees and customers. Errors at the point of sale (POS) also contribute to revenue loss.

Challenges:

- Difficulty in identifying fraudulent transactions.
- Employee theft through voided transactions, barcode spoofing, fake returns, skip scanning, change stealing, etc.
- Lack of integration between video surveillance and POS data.

Solution:
AxxonSoft's video surveillance system integrates with POS systems to cross-reference transactions with video footage. This allows for the detection of cashier errors and fraudulent activities, such as voided transactions, incorrect scanning, or unauthorized discounts. Suspicious activities can be flagged for review by security personnel.

3.2 Shoplifting Prevention

Shoplifting is a persistent challenge, particularly for high-value items. While traditional surveillance systems provide some level of deterrence, automated detection of theft remains a challenge.

Challenges:

- Inability to track stolen goods automatically.
- Difficulty in identifying perpetrators in crowded environments.
- High false alarm rates when using video analytics, which leads to inefficient security responses.

Solution:
AxxonSoft's intelligent search capabilities streamline theft investigations by identifying individuals who picked up items from the shelves but avoided scanning them at checkout. Additionally, the system provides detailed close-ups of suspects, enabling security personnel to focus on individuals who may require heightened attention during future visits.

3.3 Supplier Interaction and Inventory Shrinkage

Losses can occur during the unloading, acceptance, and stocking of goods due to supplier fraud, employee collusion, or simple human error.

Challenges:

- Difficulty in tracking inventory shrinkage cases.
- Lack of visibility into unloading and acceptance processes.
- Limited accountability for discrepancies in stock levels.

Solution:
By integrating video surveillance with inventory management systems, AxxonSoft solutions provide comprehensive evidence of each stage of the supply chain. Analyzing video footage linked with QR/barcodes allows businesses to quickly locate recordings of specific items or packages, enabling them to identify patterns of shrinkage and determine when and where losses occur.

3.4 Asset Protection and Internal Security

Securing storage areas and preventing unauthorized access to high-value assets is crucial for reducing shrinkage and improving overall security.

Challenges:

- Difficulty in monitoring access to storage and restricted areas.
- Lack of real-time alerts for unauthorized access or suspicious activity.
- Potential for insider theft, as employees with access privileges can misuse their permissions.

Solution:
AxxonSoft's access control integration enables real-time monitoring of entry points in warehouses and restricted zones. By linking access events with video footage, businesses can identify exactly who entered specific areas and whether they removed any items. Additionally, burglar alarms combined with video verification enhance response efficiency.

3.5 Store Management and Customer Experience

Optimizing store layouts and understanding customer behavior is key to improving sales and operational efficiency.

Challenges:

- Limited data on shopper movement and behavior.
- Difficulty in identifying high and low traffic areas and optimizing product placement.

- Inefficient queue management, leading to customer dissatisfaction.

Solution:
AxxonSoft's heat mapping, visitor counting, and queue detection tools provide retailers with insights into consumer behavior. These analytics help optimize product placement, improve store layouts, and streamline customer service by dynamically adjusting staffing based on foot traffic and queueing trends.

3.6 Additional Security Considerations

Retail security extends beyond the store interior. Parking control and fire safety are critical aspects of a comprehensive security strategy.

Challenges:

- Improper parking and traffic congestion in retail parking lots.
- Inefficient emergency response due to lack of real-time monitoring.

Solution:
AxxonSoft's license plate recognition (LPR) and parking management solutions help regulate vehicle access and promptly identify incorrect parking. Fire alarm systems integrated with video surveillance and analytics enable early detection of smoke and flames, allowing for rapid and more accurate response to emergencies.

4. AxxonSoft's Role in Transforming Retail Security

Security challenges extend beyond traditional shoplifting and fraud. Retailers need intelligent solutions to protect assets, streamline operations, and enhance customer experience. AxxonSoft's AI-driven security technologies provide a comprehensive approach, integrating video surveillance, analytics, and automated event response.

4.1 Smart Video Surveillance with Flexible User Rights Management

AxxonSoft's flexible surveillance architecture allows businesses to monitor single stores or entire retail chains from a centralized hub or multiple remote locations. The system supports distributed surveillance with a scalable infrastructure, ensuring real-time visibility across all retail zones. Store managers, security personnel, marketing and logistics teams benefit from role-based access with secure desktop, mobile, and browser-based monitoring.

4.2 Cash Transaction Monitoring & Reporting

Retail fraud and errors at checkout points can significantly impact revenue. AxxonSoft's cashier operations supervision pairs video feeds with point-of-sale (POS) data, allowing instant review of transactions, voided sales, and refund patterns. It also helps ensure compliance with work rules and faster resolution of disputes. Advanced reporting tools generate insights into suspicious activities, helping retailers mitigate losses and improve accountability.

4.3 Retail Analytics for Smarter Operations

Understanding customer behavior is crucial for optimizing store layouts and improving service. AI-based retail analytics offer:

- **Visitor counting:** Accurate tracking of foot traffic to assess store load and performance.
- **Heat maps:** Visualizing customer movement data (visitor numbers/time spent) to identify areas with varying traffic levels.
- **Queue detection:** Monitoring checkout lines in real time and analyzing historical data to improve staff allocation and prevent bottlenecks.

A centralized reporting system enables management to access detailed analytics on each store operation.

4.4 Logistics & Inventory Control

Efficient supply chain management is critical to preventing stock discrepancies. AxxonSoft's technology enables:

- Real-time monitoring of loading and unloading processes.
- License plate recognition for tracking delivery vehicles.
- QR/barcode scanning to synchronize inventory with video documentation.
- Incident investigation tools to address stock mismatches and reduce losses.

4.5 Parking Management & Security

Retailers often face improper parking and congestion in high-traffic areas. AI-powered parking management solutions enhance security by:

- Recognizing vehicle license plates for entry/exit tracking.
- Providing intelligent search functions based on car model, color, zone, and movement direction for incident investigation.

- Sending real-time alerts for incorrect parking, ensuring compliance with store policies.

4.6 Seamless Integration with Security Systems

AxxonSoft's AI-powered video management platform integrates seamlessly with access control and burglar alarm systems, offering:

- Video synchronization with access and break-in events for enhanced security.
- Real-time detection of unauthorized access to restricted areas.
- Employee attendance tracking and automated work-hour monitoring.

4.7 Additional Safety Measures

To further enhance security, retailers can deploy:

- Fire and smoke video detection in warehouses, sales floors, and parking areas.
- AI-driven video search tools to streamline forensic investigations.

By implementing AxxonSoft's intelligent security solutions, retailers gain more than just protection — they optimize efficiency, reduce shrinkage, and improve customer satisfaction. In an era where data-driven decision-making is key, AI-powered security is the competitive advantage that modern retailers need.

5. Boosting Video Analytics Performance with Intel® Products

Video analytics is a resource-intensive process that demands significant computing power. For instance, when the number of cameras exceeds 10–20, building a cost-effective AI-powered video surveillance system becomes nearly impossible without dedicated AI accelerators. To optimize performance and ensure efficient video analytics, AxxonSoft has partnered with Intel to leverage its cutting-edge accelerators and specialized tools.

5.1 Intel® Distribution of OpenVINO™ Toolkit

The Intel® Distribution of OpenVINO™ Toolkit is a powerful solution designed for computer vision applications. It enables workload distribution across Intel® hardware, including accelerators, to maximize performance. AxxonSoft integrates this toolkit into its AI analytics tools to enhance neural network inference capabilities, ensuring faster video processing.

5.2 Intel® Quick Sync Video

Intel® Quick Sync Video is a built-in technology available on Intel® processors that provide hardware-accelerated video decoding. By offloading video decoding tasks to the GPU, this technology significantly reduces CPU load on both servers and client devices. This results in improved efficiency and performance for video analytics and playback.

Benefits of Client-Side Hardware Video Decoding:

- **Faster Decoding Times:** Reduced latency for smooth video playback.
- **Scalability:** Client devices can display more camera feeds or operate on lower-performance hardware without compromising quality.

Benefits of Server-Side Hardware Video Decoding:

- **Higher Capacity:** Servers can handle more concurrent video streams while delivering higher resolution and better performance.
- **Cost Efficiency:** More cameras can be connected to a single server, reducing hardware costs and simplifying maintenance.

By leveraging Intel® products and technologies, AxxonSoft delivers high-performance, value-added solutions that meet the demands of modern video analytics. These innovations ensure scalability and efficiency, empowering businesses to achieve their operational goals.

6. Protecting Retail Operations at Gas Stations: Challenges and Smart Solutions

Gas stations are no longer just fuel stops; they have evolved into multifunctional service centers, offering retail shopping, food services, and vehicle maintenance. However, their open nature, high customer turnover, and cash-based transactions make them vulnerable to security threats such as theft, fraud, and unauthorized fuel dispensing. AxxonSoft Solutions provide advanced security and operational efficiency tools tailored to address these unique challenges.

6.1 Key Security Challenges at Gas Stations

- **Fuel Theft and Drive-Offs:** One of the most significant issues for gas stations is the risk of customers fueling their vehicles and leaving without payment.

Traditional surveillance systems often fail to prevent such incidents in real time.

- **Cash Register Shrinkage:** Convenience stores at gas stations face losses due to employee misconduct, including fraud and cash register errors. These issues are exacerbated by the large number of daily transactions, making manual monitoring impractical.
- **Employee Compliance and Monitoring:** Ensuring adherence to operational procedures, preventing internal theft, and optimizing service efficiency necessitate remote monitoring across all stations.
- **Traffic and Queue Management:** Peak hours create congestion, increasing the likelihood of accidents, disputes, and customer dissatisfaction.
- **Vandalism and Unauthorized Access:** Gas stations operate around the clock, making them vulnerable to nighttime break-ins and vandalism.

6.2 AxxonSoft's Intelligent Security Solutions for Gas Stations

AxxonSoft Solutions leverage AI-driven video analytics and integrated security systems to mitigate risks and enhance operational control.

1. Automated License Plate Recognition (ALPR) for Fuel Theft Prevention

AxxonSoft's ALPR system automatically captures and analyzes vehicle license plates as they enter the gas station. If a vehicle is flagged in a database of previous offenders, the fuel pump is switched to prepaid mode, preventing further losses.

- Real-time detection of suspicious vehicles.
- Integration with payment and fuel dispensing systems for automated billing.
- Reduction in financial losses from fuel theft incidents.

2. Intelligent Retail Surveillance for Shrinkage Reduction

AxxonSoft's POS supervision system helps detect potentially fraudulent activities such as suspicious transactions and cash register anomalies.

- Integration of video with POS data for transaction verification.
- Automatic flagging of unusual cash register activity.

3. Queue and Traffic Flow Optimization

Congestion at fuel stations can deter potential customers and increase risks of vehicle collisions. AxxonSoft's smart analytics optimize queue management by:

- Detecting the number of people in queueing areas.
- Counting vehicles entering the gas station to identify peak hours throughout the day and schedule staff accordingly.

4. Vandalism and Intrusion Detection

Gas stations require robust security against unauthorized access, especially during late hours. AxxonSoft's intelligent surveillance system offers:

- Real-time human/vehicle detection and perimeter alerts.
- Connection to remote monitoring centers for 24/7 surveillance.

6.3 Future-Proofing Gas Station Security

The implementation of AxxonSoft's intelligent security solutions at gas stations not only enhances safety but also improves operational efficiency and customer experience.

With AxxonSoft Solutions, gas stations can transform into secure, data-driven service hubs, reducing losses while improving operational control and customer satisfaction.

7. Case Studies

7.1 Enhancing Retail Security for Super Food Holding

Super Food Holding, a leading retail group in Peru, required a unified security solution to address inefficiencies in managing multiple video surveillance systems. They implemented AxxonSoft's solution to standardize security operations across multiple stores, improving efficiency and ensuring compliance with workplace safety regulations. The advanced AI-driven system enabled real-time monitoring, proactive fraud prevention, and enhanced customer experience through intelligent analytics.

7.2 Advanced Video Analytics at Convém Supermercados

Convém Supermercados, a prominent supermarket chain in Brazil, leveraged AxxonSoft's video analytics to bolster security and operational efficiency. The solution included people counting, heat mapping, and LPR, which allowed the company to optimize store layouts, prevent theft, and enhance checkout efficiency. The AI-powered system provided data-driven insights, improving queue management and marketing strategies.

7.3 Comprehensive Surveillance at Vaal Mall

Vaal Mall, a 50,000m² shopping center in South Africa, implemented AxxonSoft's security solutions to combat organized crime, manage parking security, and improve customer safety. The system's advanced analytics enabled real-time suspect tracking, efficient incident response, and proactive security measures, significantly reducing security threats and enhancing overall safety.

7.4 Smarter Retail: How Deka Store Uses Face Recognition with Axxon PSIM

In 2025, Deka retail store in Ukraine took a big step forward in security and customer insights by implementing a Face Recognition system powered by Axxon PSIM. Deployed at two key locations in-store, the solution improved access control and streamlined operations — showing how intelligent surveillance is reshaping the retail experience across Europe.

7.5 Transforming Gas Station Security in Jiangsu Province

AxxonSoft's hybrid VSaaS solution has revolutionized security for over 150 gas stations in Jiangsu Province, China. A network of 2,200 cameras provides real-time threat detection and remote surveillance, facilitating proactive security measures. With AI-driven features like facial recognition, vehicle counting, and license plate recognition, the system has significantly improved operational efficiency, data accessibility, and threat prevention.

7.6 Ensuring Theft Reduction at Axion Energy Stations

The implementation of AxxonSoft's distributed video surveillance system at twelve Axion Energy Argentina service stations, which combines local monitoring with a central hub, has helped protect products and equipment. The system provides video evidence of thefts, enabling the identification of perpetrators, strengthening security measures, and preventing recurrences.

8. Conclusion: The Future of Retail Security

The retail industry is evolving rapidly, and security is no longer just about preventing theft — it's about creating a seamless, efficient, and safe shopping experience for customers. AxxonSoft's intelligent video security solutions, powered by AI and enhanced by Intel's cutting-edge technologies, are transforming the retail security landscape. By providing retailers with insights into customer behavior, optimizing

operations, and preventing fraud and shrinkage, AxxonSoft is helping retailers stay ahead of the competition and deliver a superior shopping experience.