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Utilizing Video Technology to Overcome Challenges in North American Brick-and-Mortar Retail

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1. Introduction

Following a period of turbulent economic and social change, the retail sector across North America is in the middle of a significant transformation. Retailers are focusing on enhancing shopper loyalty through improved customer experience, embracing smarter technologies to streamline operations, cutting losses, not just by tackling shrinking, but by concentrating on other costs such as staff turnover and employee performance, and better integrating their online operations with brick-and-mortar stores.

The advancement in video surveillance technology means affordable solutions have a vital role in each area. CCTV can now be used for much more than just surveillance. It is easier to operate and can provide coverage of an entire store or distribution center, eliminating blind spots. Video systems are now among a retailer's most powerful business intelligence tools.

Those systems integrators who understand this will be able to benefit from a sector that boasts real business potential. As of May 2022, the US economy had added jobs for 17 consecutive months. As a result, this is fantastic news for retailers who have a long queue of consumers ready to spend with them.

2. A long run of economic challenges

The last decade has thrown numerous economic challenges at countries worldwide, and North America is no different. The financial crash of 2008 had significant consequences, and the U.S. government policy of "Protectionism" under the Trump administration led to increased reliance on products manufactured in the US rather than imported from abroad.

For the retail sector, reduced disposable income encouraged consumers to look toward budget brands rather than high-end items. The rapid proliferation of online shopping provided more choices for customers but often tied them down to subscription-based services.
Those retailers that were quick to notice the trends have pivoted to a hybrid model and have reaped the rewards accordingly.

As the 2020s began, pandemic lockdowns, supply chain stress, and geopolitical instability added to renewed economic pressure.

By the middle of 2022, the outlook had become even more uncertain, with rising inflation across North America.

Bouncing Back in Post-COVID Times

Yet the brick-and-mortar retail sector had also proved to be resilient. It's also a political priority for central and local governments to try to support shopping hubs as a part of the fabric of modern-day society and a tax revenue generator, rather than let them fall into neglect and criminality.

And where consumer demand has changed, retailers and local authorities are keen to adapt. Post-pandemic, footfall is rising faster in some locations than others. For example, malls across North America have evolved into visitor attractions, helping bring people back to shops, malls and main street following the COVID-19 pandemic. A February 2022 report from Statista projected that retail sales in the U.S. will reach $5.35 trillion by 2025, rising from $4.85 trillion in 2019.

Department stores continuously innovate to encourage consumers to return in person; some stores even organize fashion shows to entertain shoppers while they walk the aisles. A shopping trip becomes a day or night out for couples, friends, and families.

Out-of-town shopping malls and retail chains also provide more flexible purchasing options, including online in-store and in-store pick-up, building customer loyalty with a new focus on customer experience (CX), and increasing convenience by opening smaller stores for longer hours. They have also invested in new ways to protect staff and improve working conditions, boost efficiency, reduce losses and become more competitive.

Video technology is critical in supporting resilience and the ability to evolve continually. The latest-generation solutions also offer compelling new benefits to help retailers positively impact the bottom line.

3. Getting On Top of Retail Shrink

In addition to dealing with this rapidly changing economic landscape, today's retailers still face the age-old threats to profitability posed by an internal and external shrink. According to the National Retail Federation's (NRF) 2021 Retail Security Survey, retail shrink hit a high of 1.6% in 2019 and held steady through 2020.

Overall, retail shrink is trending sharply upward. The results of a 2020 NRF survey show that losses from theft, fraud, and other retail shrink factors rose nearly 22% from 2018 to 2019. Interestingly, the NRF also found that Organized Retail Crime did not slow down during the pandemic. It cost retailers an average of $719,548 per $1 billion in sales in 2020, a slight increase over 2019. Today, security managers, loss prevention, and profit protection managers are dealing with a wide array of shrink challenges ranging from staff and return fraud, internal theft, deceptive self-scanning, Organized Retail Crime gangs, steal-to-order rackets, and shoplifting, through bogus injury claims.

Therefore, retailers and systems integration must collaborate to identify the best technology partners to help them strategically target these threats and realize a rapid return on investment (ROI) by improving loss prevention; often, a security survey or surveillance pilot will reveal gaps in security and unforeseen vulnerabilities.

The Right Cameras Can Cut Losses and Blend with Store Aesthetics

The latest video solutions have been refined to precisely target specific challenges, a wide choice of camera models that feature on-board failover, active tampering alarms, WDR and IR are available to blend with the aesthetics of every outlet – including luxury jewelry, high-end designer fashion, cannabis dispensaries, pharmacies, and convenience stores – providing excellent coverage and evidential footage in all lighting conditions without impacting on the customer experience.

Panoramic or fisheyes enable comprehensive surveillance of shop floors, showrooms, and aisles, providing comprehensive area coverage free of blind spots, making it easier to identify and tackle shrink and theft, investigate incidents, and see activity right to the periphery of every scene.

Discreet mini-domes and bullets can be focused on high-value items, cash desks, returns counters, and stock rooms, deterring shrink, sweethearting, and fraud. High-definition pinhole cameras also offer a discreet option for luxury jewelers and high-end fashion as they can be invisibly blended into displays of designer watches, precious gems, and expensive clothing items.

Traditional fixed lens cameras and PTZs placed at entrances, exits, and parking areas are ideal tools for deterring crime and increasing protection for vehicles and drivers. These cameras can also be leveraged for car parking management and gathering business intelligence through AI-powered license plate recognition and video analytics.

Advances in computing at the edge and the evolution of ever more useful edge AI cameras, have provided retailers with the advantage of positioning cameras at strategic points in and around stores to close gaps in security and simultaneously deliver essential customer and in-store intelligence.

For big-box stores and department stores that want visible deterrence, today's more capable cameras will support the easy and effective use of public display monitors at store entrances and spot monitors in staff areas back-of-store, including stock rooms and loading bays.

Easy-to-use VMS and optional federation services also give store managers the tools they need to improve operations locally while allowing centralized loss prevention teams to oversee and control a growing list of functions remotely: managing investigations; searching and reviewing recorded activity; reconciling and checking transaction data with video footage; conducting system health checks, and handling real-time tasks such as granting remote access to service teams and deliveries out-of-hours.

And for managers who need the ability to work on the move, mobile tools and apps make it easy to handle all these critical surveillance tasks, helping to watch over activity at multiple branches and stay in control remotely.

4. Protecting Against Store Violence

While loss prevention has long been a concern for security managers, they are increasingly prioritizing the growing risk of verbal and physical assaults on shop workers and the growing threat of active shooters and other serious violence. This concern was highlighted even more as front-line staff came under pressure during pandemic lockdowns.

The 2021 National Retail Security Survey from the NRF stated that 82% of the loss prevention professionals surveyed believed that active shooter incidents are more likely to occur than they were five years ago and ranked as the most pressing threat facing retail organizations.

Unsurprisingly, this has become a priority issue for many retailers not just because of high-profile incidents such as the Buffalo shooting but because there is less confidence in the speed and effectiveness of a police response unless an incident involves serious violence. Retailers are also aware of the negative impact on staff morale, absence, turnover, and hiring, which significantly increases operating costs.

Video innovations are helping to address the issue, with practical solutions including high-definition image capture that allows faces to be identified; assured chain of evidence integrity, using watermarking technology, optimizing the deterrent value of recorded video; body-worn cameras; two-way audio enabling warnings to be issued remotely via cameras and integration with PA systems and audio devices.

Analytics-driven detection tools such as queue and overcrowding monitoring allow automatic verbal reminders, reducing the likelihood of confrontation between customers and staff. And discreet, wearable lone worker devices or personal alarms that connect easily with video management software or network video recorders (NVRs), plus fixed panic buttons with associated beacons and sirens positioned internally and externally, are all ensuring improved in-house incident response and protection for staff inside as well as those at particular risk when opening and closing stores.
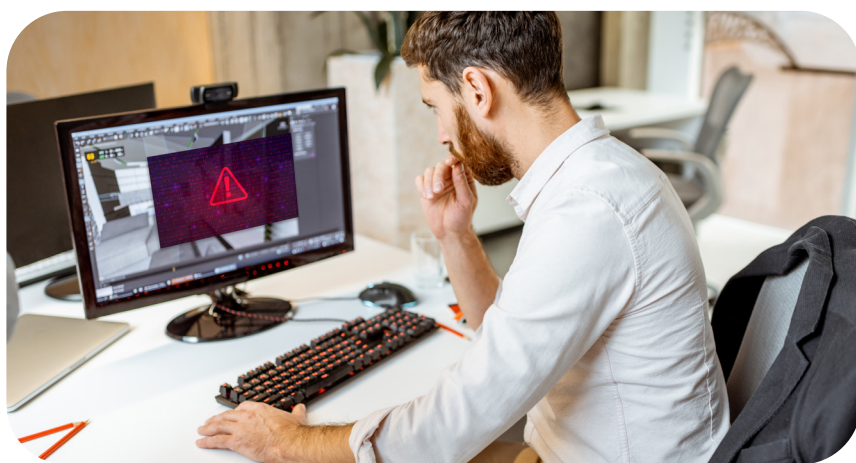
This threat escalation is not exclusive to physical security; cybercrime is also high on the list of priorities. The surge in online shopping has increased cybersecurity threats; online fraud is now a significant issue for all retailers. Ensuring that when it comes to any network technology, including physical security devices, cybersecurity is now at the forefront of a security and loss prevention professional's mind.

5. Gaining Value from Affordable AI-Powered Video Analytics

Affordable and easy-to-use deep learning and AI-assisted analytics are now available tools for major retail chains, out-of-town malls and department stores, and small retailers.

For example, analytics no longer need dedicated, top-of-head cameras to function and instead leverage existing cameras. This means users can double the benefit from their cameras deployed in standard locations. They can gain enhanced safety and security, plus a competitive advantage with business intelligence.

Closing gaps in security and intelligent loss prevention

For improved loss prevention in larger stores, malls, and parking areas: AI-powered analytics tools include intrusion, object & loitering detection, all of which can take pressure off busy monitoring teams by reducing false alarms and triggering automated alerts when security intervention is most needed.

Analytics are also making it easier to review recorded footage, with the ability to search for events, objects, and people, and to pinpoint irregular transactions thanks to integration with data from barcode scans, and point of sale (POS) systems, with the latest end-to-end video systems often replacing up to two or three separate systems and eliminating the clutter of hardware at checkouts and cash desks.

In practical terms, analytics tools speed up investigations, cutting the time it takes to find footage of interest from hours to minutes. They are also helping to track down missing children in crowded stores or malls. And can be an essential tool in helping to reduce human error, which is a significant contributor to shrink, through their ability to retrieve and review events rapidly. For example, errors at checkouts and cash desks, fraudulent returns, self-scanning theft, poor stock handling, incorrect pricing on merchandise and displays, and failure of staff to adhere to agreed protocols.

Processors inside edge AI cameras are now powerful enough to run analytics locally, while still encoding and streaming without the need or cost of upgrading software. This capability is now available even with lower cost 5MP domes and bullets. Once retailers are ready to upgrade to edge cameras, they will deliver faster insights and better security, while overcoming bandwidth constraints and storage burdens. Rather than using AI-functionality and tools within VMS, larger retailers are demanding onboard functions powered by the same highly accurate, deep-learning algorithms, including object, loitering, line cross, crowd detection, object removal, and facial recognition.

Making The Most of Actionable Intelligence and Improving the Customer Experience

Analytics are also unlocking valuable business intelligence for retailers in new and exciting ways. For example, people counting and heatmapping tools allow managers to examine activity patterns by time and day and to see trends over extended periods, including weekly, monthly, and seasonal. This understanding was once the domain of large grocery retailers and department stores with statisticians or acquired locally through years of personal knowledge of stores and customers. Today it can be viewed at-a-glance, with management reports steering decision-making at head office and local branch levels, empowering store managers and their teams. This doesn't just improve sales but staff engagement and morale too.

Retail staff can use new insights to build more positive customer experiences. Heatmapping tools reveal customer dwell time, and show how shoppers move around stores, allowing displays to be improved and 'dead zones' to be made better use of, while understanding and improving the way customers interact with floor layouts, displays, and merchandising.

Analytics allow automated real-time queue monitoring, so that staff can be more quickly deployed to where they are most needed. And occupancy monitoring can highlight where areas frequently become overcrowded in a way that might detract from the shopping experience. With health and safety top of mind post-pandemic, it also helps stores stay on top of cleanliness with layouts without causing pinch points.

6. Affordable and reliable storage

Increasingly, regulations require the footage to be stored for extended periods – usually 30-90 days in the U.S., but this can vary from state to state.

As a result, retailers are looking for the most practical and affordable compliance options and technology that will keep their storage and bandwidth burdens low.

It's worth remembering that not every store, even across the same retail chain, will have access to high internet speeds. Many also share bandwidth with other mall tenants, meaning that networks can easily be overloaded handling critical sales transaction data. Free Wi-Fi also helps retailers target customers with new product suggestions and promotions via loyalty and shopping apps, yet it can also take up limited bandwidth.

This makes a separate VLAN and NVR-based approach to recording the most popular option, and the advantages become more compelling as budgets tighten. Those with low hard-drive (HDD) failure rates are popular for hard-working and dusty retail environments. Built-in PoE switches eliminate additional hardware and offer efficient cabling methods. Compact models that can be fixed to counters and walls are ideal for smaller stores with confined spaces.

The latest cameras and NVRs also benefit from dual H.265 and H.264 codec as standard, which overcomes the pitfalls of older compression standards, including jerky images and slow and frustrating live view, retrieval, and playback. Using dual codec combined with advanced compression technologies, means retailer users can choose to use H.264 for live view and playback and save up to 60%-70% on their data storage and bandwidth compared with older systems.

With simultaneous live, record, playback, backup, and remote operation, they are well proven as the most robust and cost-effective foundation for any scale of the retail surveillance operation, from four to eight channels up to enterprise-level solutions encompassing a limitless number of devices.

Finally, it's worth noting the continuing rise of deep-fake technology and the growing risk of video evidence tampering; it's vital to demonstrate the integrity of captured footage. NVRs, which give retailers designed-in protection through watermarking techniques, provide reassurance that video evidence is not open to legal challenges.

7. Designing systems for assured compliance

Video solutions now make it easy to comply with regulations and standards in different jurisdictions fully. For example, video systems in high-end retail settings and cannabis dispensaries need to comply with increasingly stringent video capture and storage rules. Similar standards are often applied by financial institutions, especially since the proliferation of convenient, contactless tap-to-pay values is increasing the risk of fraud.

High-definition cameras positioned correctly are likely to act as an effective deterrent, while NVRs and compression technology no longer need to increase costs significantly.

User-friendly VMS with metadata search tools makes investigations much faster – minutes, not hours or days; dynamic privacy masking and redaction tools make it practical to comply with data protection requirements when exporting footage for third-party investigations or use as evidence.

It's also prudent for retailers to plan for tightening compliance rules, even where regulations do not yet exist. While only legally enforceable for U.S. retailers that form part of national supply chains or receive federal loans, NDAA compliance influences standards for every organization working in the sector. In addition, the Secure Equipment Act of 2021 will require the Federal Communications Commission (FCC) to establish rules on authorizing equipment that poses an unacceptable risk to national security. This means choosing NDAA-standard video technology is a sensible benchmark for retailers operating within often complex supply chains.

Increased scrutiny of the cyber and national security risks inherent in Chinese tech will likely be forthcoming over the next few years.

This, and the likelihood of tighter standards on cybersecurity being applied more widely in the future, make it sensible to choose equipment with a high degree of assurance against hacking risks. Multi-factor authentication for many retailers is now vital, while mutual authentication of devices, and one-click configuration for multi-site rollouts, also help eliminate common cyber loopholes. Retailers must also ensure multi-layered protection of stored and transmitted data to protect against cybercrime and comply with freedom of information requests.

8. Ensuring a rapid return on investment

Today's video solutions deliver new efficiency advantages to retailers and offer the best TCO (Total Cost of Ownership). With the right solution, video upgrades can easily provide retailers return on investment in the first year.

There are significant advantages to choosing end-to-end solutions – including assured device compatibility and system longevity – and today's accessible plug-and-play technology offerings without needing specialist networking and routing skills. These allow retailers to upgrade their video systems across multiple stores using several regional installers or to move to the latest technology without switching away from their trusted integrators if they prefer not to.

Plug-and-play installation and actual one-click configuration offer significant cost savings during large-scale project rollouts where centralized monitoring is set up for multiple branches; it eliminates the risk of engineer mistakes and project over-runs.

There is also a focus on robust performance and reliability, giving hardware with extended warranties a distinct advantage and offering a more sustainable alternative to the traditional rip and replace model.

Forward and backward compatibility is also important, ensuring that older cameras and associated devices can easily be switched out for newer models. This eliminates the need for complex system upgrades and the cost of decommissioning or the clutter of defunct cameras residing on ceilings and walls, impacting store aesthetics and the overall customer experience. There is a growing focus on health and safety in North America, and retailers are increasingly concerned about real and bogus accident claims. At the same time, footage can prove that store staff are following health and safety laws and mandates, reducing pay-outs and insurance premiums. With retailers under financial and competitive pressure, avoiding technologies with unfair pricing structures and high ongoing costs such as perpetual license fees and maintenance agreements is crucial.

For small and medium-sized stores, it's worth considering solutions that come with the total cost and license-free client software. This will often provide security teams and store staff with all the features and functions they need for adequate surveillance operations, reducing upfront costs and, more importantly, eliminating ongoing operating expenditure.

For large retailers or retail chains that need the enterprise-class functionality to manage an unlimited number of devices and sites, it's important to take a deep dive into VMS pricing structures. It's essential to ensure that retailers can take a modular approach paying for the functionality they need with the ability to integrate off-the-shelf with popular access control, intruder, and life safety systems, without the need for costly integration services, for example.

Federation and critical failover services that protect against various fault conditions should also not be expensive. Retailers need to be cautious of bundled functionality, such as AI-powered analytics, which sees them paying for features they are not ready to use. Looking out for intuitive user interfaces with simple dropdown menus that will also allow authorized managers at local branches to easily find and playback footage without needing specialist security knowledge or training.

Finally, it's important to remember that video is a mission-critical investment for the future of brick-and-mortar retail, not only for large-scale operations but for smaller, local stores too.

Therefore, addressing today's immediate challenges, while planning for the medium and longer term.

Retailers will be best served by VMS, which gives them futureproofing through unlimited scalability, flexibility, and forward compatibility. Look for vendors committed to extended technology portfolios, with product roadmaps that include increased and more intelligent automation tools; and solutions that will make it easy to leverage IoT, from refrigerator sensors to inventory and goods-tracking systems and lone-worker devices.

In essence, today's VMS and video solutions should be designed to reduce costs, enhance customer experiences, increase operational efficiency, and ultimately generate more revenue while ensuring they can continue to help retailers adapt and evolve.

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