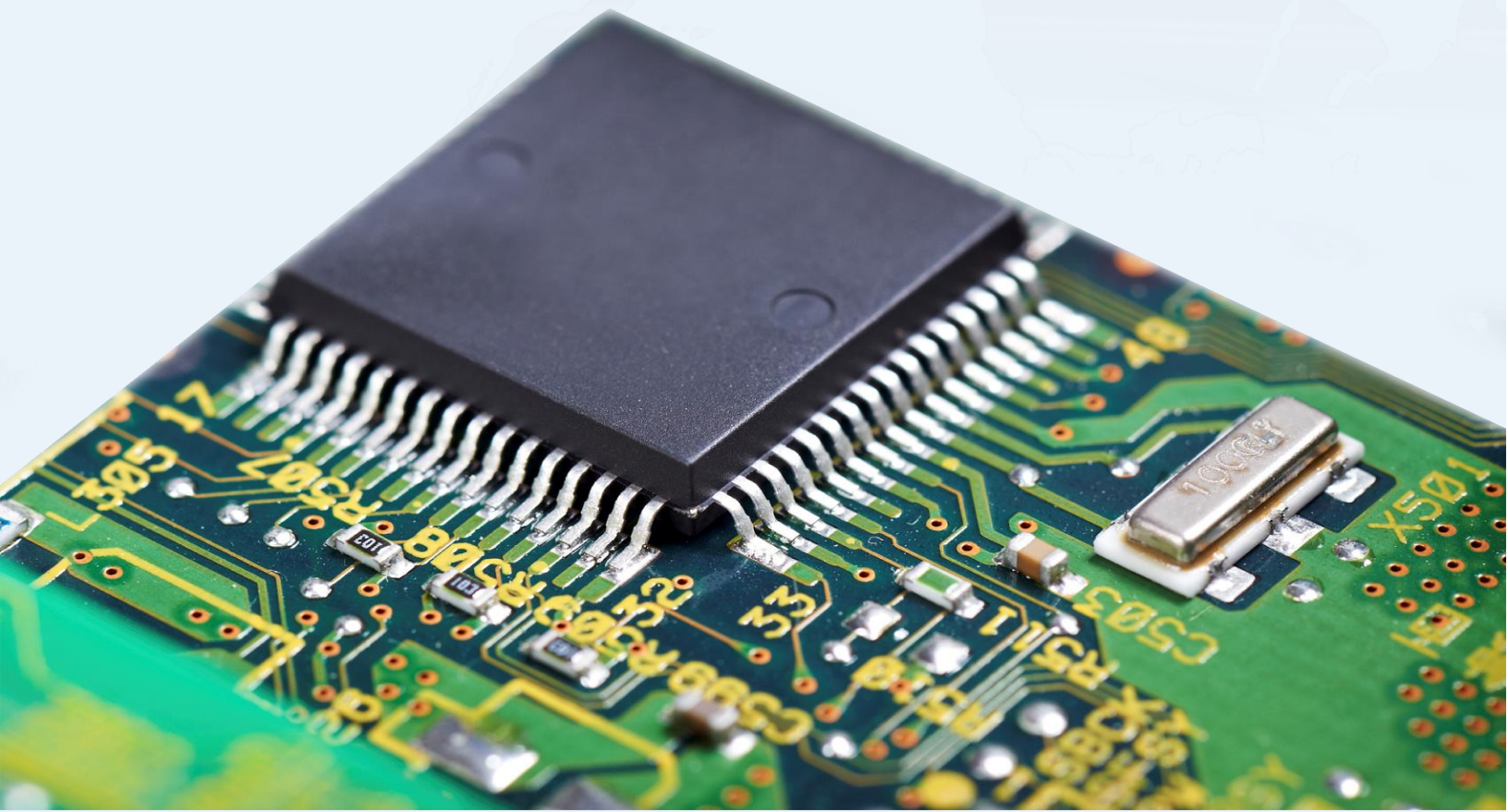# GLOBAL EAS ANTENNAS MARKET

2016-2020

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Executive summary

2015 MARKET SIZE **$312.8** MILLION	**2020 MARKET SIZE** **$375.3** MILLION
2016 MARKET GROWTH RATE **3.33%**	**2020 MARKET GROWTH RATE** **4.14%**

Highlights

- In 2015, the global electronic article surveillance (EAS) antennas market was valued at $312.8 million and is expected to reach $375.3 million in 2020, expanding at a compound annual growth rate (CAGR) of 3.71% during the forecast period.

- Checkpoint Systems, a global leader in merchandise availability solutions for the retail industry, is the market leader in the global EAS antennas market. The company accounted for more than 50% of the market in terms of revenue in 2015.

- In terms of revenue from the installation of EAS antennas, North America had the largest share, with 38% in the global EAS antennas market in 2015.

- Rapid growth in the e-commerce industry poses the biggest challenge to the future growth of the EAS antennas market.

This report presents a detailed study of the current scenario and growth prospects of the global EAS antennas market for the period 2016-2020. It considers 2015 as the base year and forecasts the market value through to 2020. To calculate the market size, the report considers revenue generated from the installation of EAS antennas at the retail outlets of end-users.

PART 02:
Scope of the report

The report also categorizes the market on the following basis:

Exhibit 01: Segmentation of global EAS antennas market

Global EAS antennas market

End-users
- Apparel and fashion accessories
- Cosmetics and pharmaceuticals
- Supermarkets and large grocery stores
- Others

Geography
- North America
- Europe
- APAC
- ROW

Source: Technavio

Asia-Pacific (APAC) includes countries in East and Southeast Asia, including Australia and Japan. North America includes the US, Canada, and Mexico. Europe includes countries in Europe such as eastern European countries and countries in Western Asia. The rest of the world (ROW) includes the Middle East, Africa, and South America.

This report presents the vendor landscape and a corresponding detailed analysis of the top vendors in the market. In addition, it contains a detailed discussion of the major drivers influencing the growth of the global EAS antennas market. It outlines the major challenges faced by vendors and the market as a whole, and examines key trends that are emerging in the market.
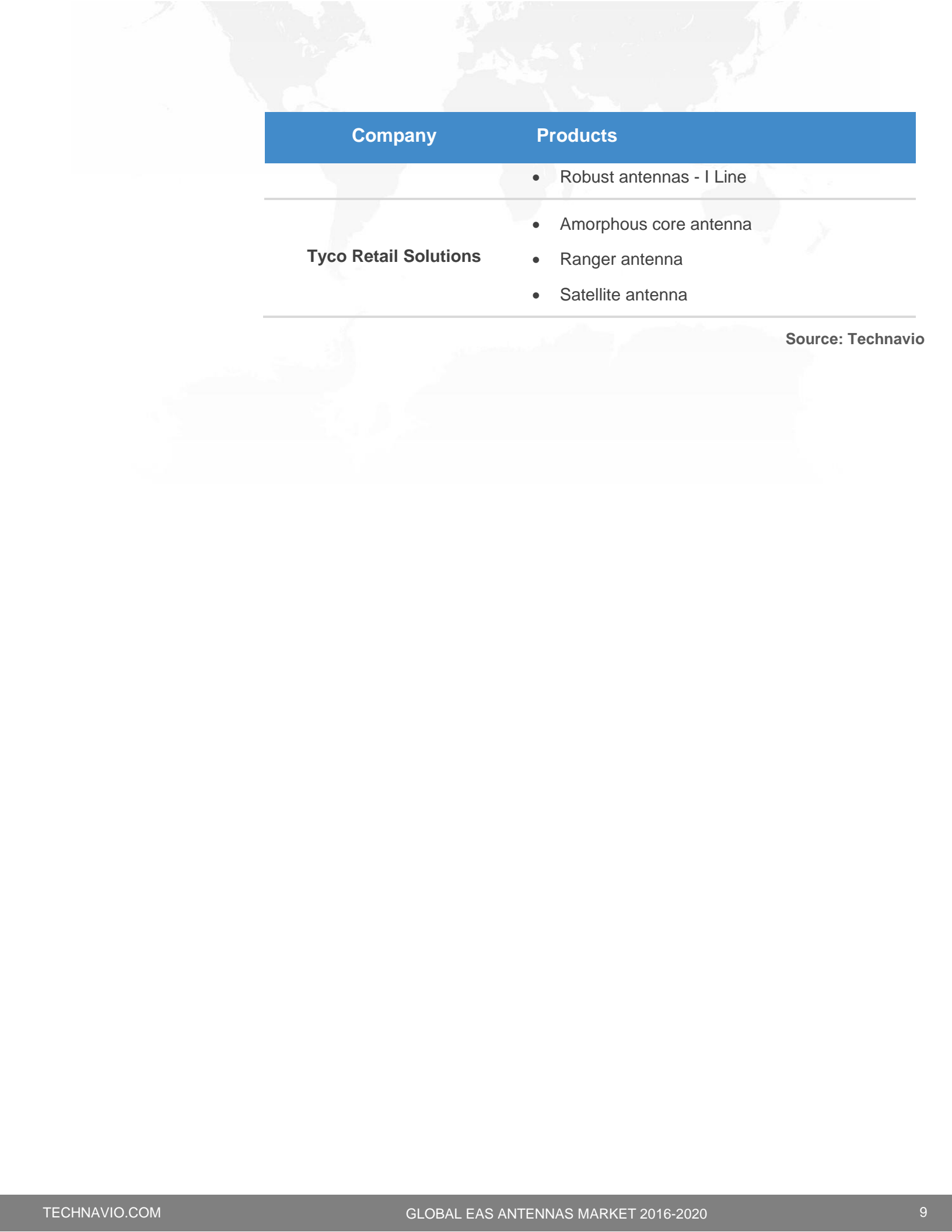
Top vendor offerings

Some of the products offered by major vendors in the global EAS antennas market are listed below.

Exhibit 02: Product offerings

Company	Products
Checkpoint Systems, Inc.	• Classic N10 • Classic plus/QX • Classic trend/PX • Classic street • Classic style • EVOLVE irange P10 • EVOLVE iRange P20 • EVOLVE iRange P30 • EVOLVE iRange G10 • EVOLVE iRange G20 • EVOLVE iRange G30 • EVOLVE exclusive S10 • EVOLVE exclusive E10 • EVOLVE exclusive F10 • EVOLVE MV E10 2.0 • EVOLVE iRange P10 RFID
Nedap N.V.	• Open antennas - Fleureas Line • Transparent antennas - Plexiglass Line

Company	Products
	• Robust antennas - I Line
Tyco Retail Solutions	• Amorphous core antenna
	• Ranger antenna
	• Satellite antenna

Research methodology

This Technavio report is based on the synthesis, analysis, and interpretation of information about the global EAS antennas market collected from specialized sources. Technavio analysts have derived insights using a mix of primary and secondary research with an aim to provide a holistic picture of the market.

Market research methodology

Primary research

- Vendor briefings
- Interviews with industry experts and centers of influence
- Telephone and online surveys

Secondary research

- Proprietary tools and databases
- Company reports and publications
- Webinars and podcasts
- Industry journals and publications

Qualitative analysis

- Drivers, challenges, and trends
- Vendor analysis

Quantitative analysis

- Market size and market share
- Statistical models

Top-down approach

Bottom-up approach

Economic indicators

Technavio has conducted a detailed study of the global economic conditions and other economic indicators to assess their impact on the current global EAS antennas market conditions and to make informed predictions about future market scenarios.

Microeconomic indicators → Mesoeconomic indicators → Macroeconomic indicators → Data collection and analysis

PART 04:
Introduction

Key market highlights

Key customer segments
• Apparel and fashion accessories
• Cosmetics and pharmaceuticals
• Supermarkets and large grocery stores

Key market challenges
• Rapid growth of e-commerce
• Availability of low-cost substitutes
• Advanced retail theft techniques

Key market drivers
• Rising need to prevent retail shrinkage
• Growth of retail sectors in developing countries

Key market trends
• Adoption of source tagging
• Increased spending on retail security systems
• Growing adoption of dural tags
• Integration of RFID in EAS tags

Retail shrinkage has led to significant financial losses for many retailers on a global scale. The retail industry has expanded significantly over the last few decades. Shoplifting techniques have also advanced in these years, as thieves are exploiting technology to steal products smartly. This has prompted many retailers to adopt highly sophisticated anti-shoplifting systems such as EAS technology in order to safeguard their products from theft.

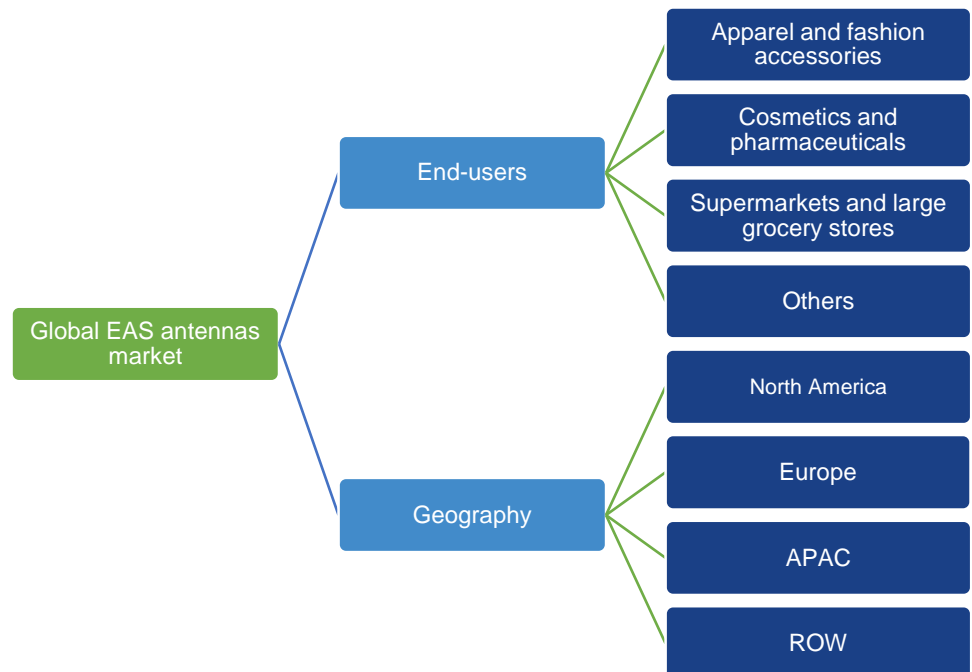A store using EAS technology installs an antenna at the store entrance. The antenna contains an RF electronic circuit board system, which detects any electronic security tags or soft labels that pass by it. An alarm goes off when a tagged merchandise item is taken out of the store without that tag being deactivated or removed at the checkout counter.

EAS systems include EAS devices and EAS tags such as disposable, reusable, and benefit denial tags, as well as deactivators and detachers. EAS tags are one of the

important security products used to prevent shoplifting or the theft of books from libraries. These tags are fixed to merchandise or books, and are removed or deactivated by clerks when the item is purchased or checked out.

Exhibit 03: Workflow of EAS antenna
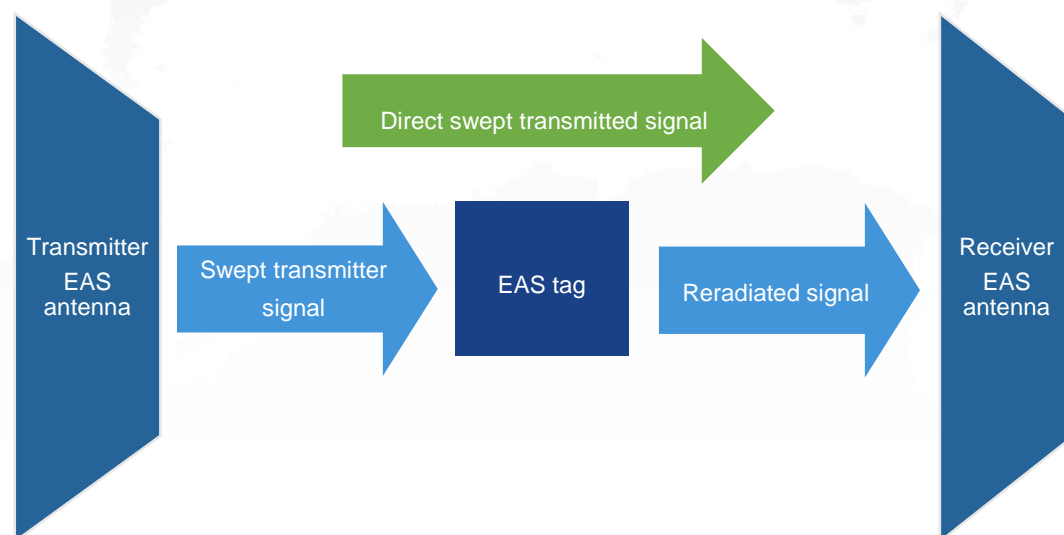
The above exhibit illustrates how an EAS system works. An EAS tag, when passed through an EAS system, responds to a specific frequency emitted by a transmitter antenna, which is present in one pedestal of the entry or exit gate. An adjacent receiver antenna, the other pedestal, picks up the response from the EAS tag and processes the tag response signal. It triggers an alarm when the response matches a specific criterion. The width between the two gates or pedestals can be up to 80 inches. EAS tags employ multiple tagging technologies including RF, electromagnetic, acousto-magnetic (AM), and microwave.

EAS systems

EAS systems are used to prevent theft in retail outlets. They include three components:

- EAS antenna
- Deactivator or detacher
- Electronic tag

EAS antenna

This passive device is placed at the exit of retail outlets to detect the tags. The antenna system triggers an alarm if any item passes through it without the tag being removed. It includes a transmitter and a receiver to sense the frequency of the tag.

EAS installation for a particular store depends on factors such as the size of the entrance opening, type of door entrance, and merchandising plan. Three different types of EAS antenna installations are transceiver, single aisle, and multi-aisle.

Transceiver EAS antennas

Transceiver EAS antennas are single antennas that function as creators of a magnetic field as well as input receivers from that field. EAS systems that deploy these antennas are the least expensive and are used in stores with small doorways. These antennas are available for both AM and RF EAS systems.

Multiple-antenna EAS systems

The most common type of multiple antenna EAS system is the single aisle dual antenna EAS system, which uses more than one antenna to form an aisle through which a customer exits the store. One of the antennas is a transmitter and the other is a receiver. A low-frequency electromagnetic field is created between the antennas to trigger an alarm if unpurchased store merchandise passes through them.

Deactivator or detacher

A deactivator or detacher is used to remove the tag from an item when bought. Once the tag is removed, the item can pass through the EAS antenna without any alarm.

Electronic tag

An electronic tag is a strip or plastic case made of either amorphous metal, ferromagnetic material, non-linear diodes, or any LC tank circuit. This tag is attached to the stock items in a store. If any customer walks out of the store without removing the tag at the detacher, an alarm is triggered.

Evolution of EAS technology

2000: Ultra-high-frequency Gen 2 RFID emerged. This is a more cost-effective viable option and a new basis for developing RFID systems that can function within the band of 860-960 MHz.

1980: AM EAS technologies emerged. These are reliable tags used within stores or at manufacturing sources to safeguard all types of retail sectors and different goods. This is a better version of RF technology.

1960: Microwave, magnetic, and RF EAS were introduced. These hardware-based, mono-digit detection systems were made for some specific retail outlets to prevent retail shrinkage.

Source: Technavio

Types of EAS systems

Exhibit 05: Types of EAS systems

- Magnetic systems
- AM
- RF
- Microwave
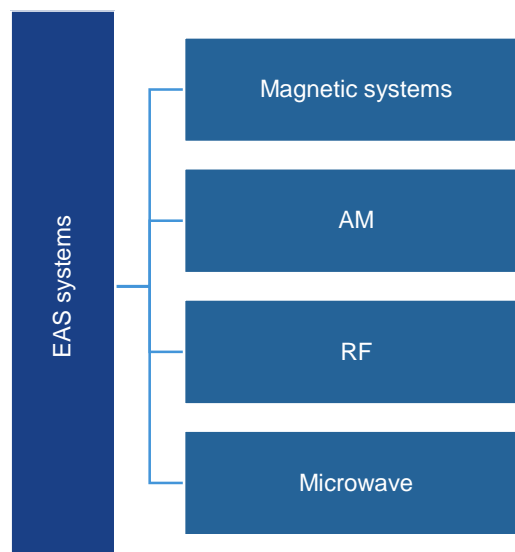
EAS systems

Source: Technavio

Magnetic or magneto-harmonic

A magneto-harmonic EAS system consists of tags made from strips of an amorphous metal. An amorphous metal is a metallic material in which the orientation of all atoms is random without any order. When this tag is magnetized, all atoms are aligned in one direction and when demagnetized, the atom again takes the random form. Detection of the tag is achieved with both a transmitter and a receiver, which work on frequency harmonics. The transmitter detects the ferromagnetic material and sends signal to the receiver, which raises the alarm. Deactivation of these tags is done by magnetization of the tag and activation requires magnetization. Due to the capability of the system to reactivate and deactivate these tags, it is preferred in libraries.

AM systems

An AM EAS system is also known as a magnetostrictive EAS system. The tags used in this system are similar to those used in a magnetic EAS system, but are slightly thicker. Magnetostriction is a property of ferromagnetic material that causes it to change shape when subjected to a magnetic field. In this EAS system, the transmitters deployed at the exit of retail outlets send signals at a frequency of 58 kHz periodically. This transmitted frequency causes vibration in the tag that continues even after the signal is stopped. When an item to which the tag is attached is brought to the detector or the antenna of the EAS system, the receiver detects the frequency generated by the vibration of ferromagnetic material present in the tag. If the signal generated through the vibration matches with the frequency of the receiver, an alarm is triggered. AM EAS systems are cheaper and have better accuracy than magnetic systems.

RF systems

The tags used in RF EAS systems are LC circuits, which are made up of an inductor and a capacitor. The resonance of the tags can take place anywhere between 1.75 MHz and 9.5 MHz, which is detected by the receiver and an alarm is raised. The deactivation of these tags is done either by punching a hole in them or submitting them to a strong electromagnetic field that exceeds the breakdown voltage of the capacitor and partially destroys it.

Microwave systems

In a microwave-based EAS system, diodes are used as tags. Diodes conduct electric current only in one direction. The antennas kept at the exit of the store generate two types of signals. One is emitted at low frequency of 100 kHz field and the other is generated at the microwave range of frequencies. The tag acts as a mixer and combines both the frequency signals into a new signal called a modulated signal. When this tag is brought near the exit antennas, the modulated signal produced by a tag matches with the detector and raises an alarm. Microwave systems are costly and are mostly used in the apparel and fashion accessories segment.

Retail shrinkage statistics

Shrinkage is defined as an unaccounted for loss of store inventory or a reduction in the earnings of a business due to theft. The four major categories of shrinkage are employee theft, customer theft, systematic or operational errors, and supply chain losses and others (such as vendor fraud). Employee theft accounted for the largest share of retail shrinkage worldwide in 2015.

Retail shrinkage statistics by geography

Exhibit 06: Retail shrinkage statistics by geography 2015

Source: Technavio

Retail shrinkage in North America

In 2015, 44% of retail shrinkage in North America was due to theft by dishonest employees. The region also experienced an increase in theft by customers due to highly organized retail crime, which affected the overall revenue of the retail sector.

Exhibit 07: Retail shrinkage in North America by category 2015
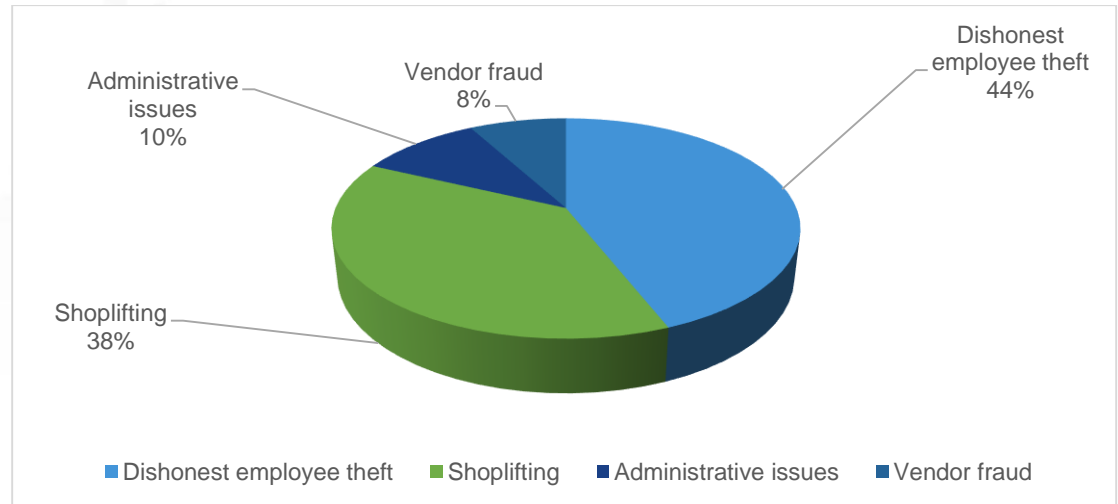
The employee theft segment was closely followed by shoplifting, which made up 38% of incidents, administrative issues with 10% of incidents, and vendor fraud with 8%.

Adults in the 18-30 age group constitute more than 40% of shoplifters in the US, followed by people in the 30-45 age group. This high involvement of the young generation in shoplifting activities is more prevalent in North America.

Retail shrinkage in ROW

In 2015, countries in ROW such as Brazil and Argentina, as well as the Middle East, suffered the highest shrinkage due to shoplifting, which constituted 34% of incidents, followed by vendor fraud with 30%.

Exhibit 08: Retail shrinkage in ROW by category 2015
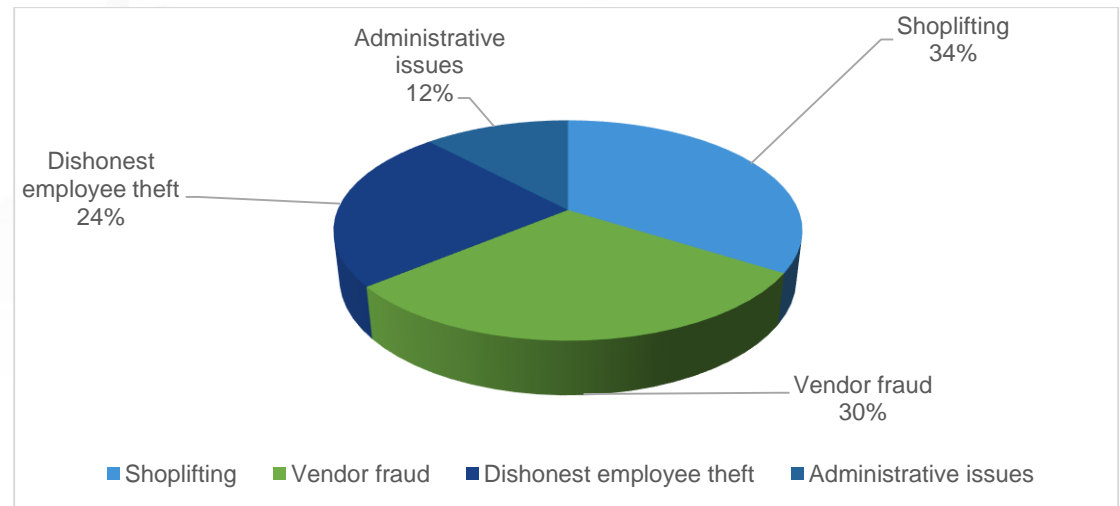
Employee theft accounted for 24% of the shrinkage because many seasonal or part-time workers might not feel highly invested in the company and therefore feel less guilty about stealing merchandise. Administrative issues constituted 12% of overall retail shrinkage.

Retail shrinkage in APAC

In 2015, 43% shrinkage of retail shrinkage in APAC was due to high-level shoplifting activities, with China having the highest shrinkage rate among the countries in APAC.

Exhibit 09: Retail shrinkage in APAC by category 2015
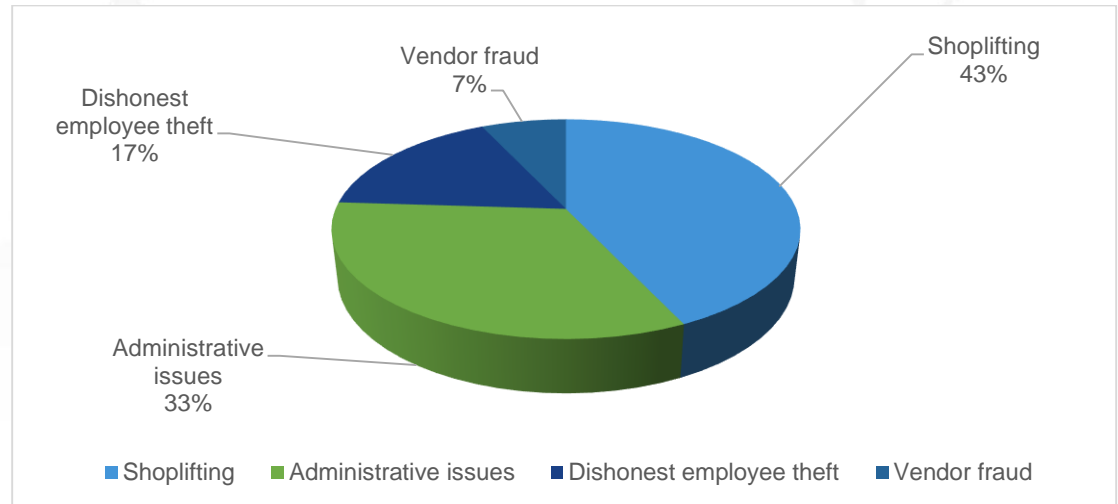
Source: Technavio

Administrative issues accounted for 33% of shrinkage in 2015, followed by employee theft at 17% and vendor fraud at 7%. The majority of shoplifters in APAC are in the 18-45 age group. Japan is an exception to this, as the shoplifters here are distributed almost equally among all age groups. In Japan, teenagers below 18 years form the largest group involved in shoplifting, which accounted for 24% of retail shrinkage in 2015.

People in the 18-30 age group formed the largest group of shoplifters in Australia, China, and Hong Kong. Shoplifting was the major reason for shrinkage across retailers, except supermarkets and non-grocery stores where administrative issues were the leading factor.

Retail shrinkage in Europe

In 2015, 38% of shrinkage in retail outlets in Europe was due to shoplifting activities. Administrative issues accounted for 25%, followed by employee theft with 22% and vendor fraud with 15%.

Exhibit 10: Retail shrinkage in Europe by category 2015
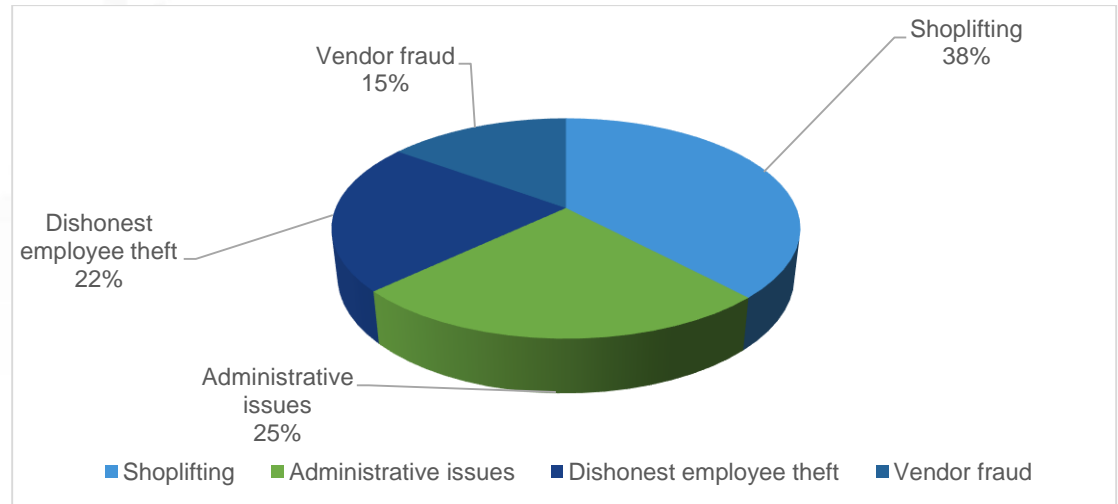
Source: Technavio

In Europe, more than 60% of shoplifters are in the 18-45 age group. Low income and the desire to lead a luxurious lifestyle are major factors for shoplifting in this region. Shoplifters below 18 years of age accounted for a significant share of shoplifting shrinkage in Finland and Russia. In Austria, shoplifters over 60 years of age accounted for the largest share of shrinkage.

Shoplifting was the major reason for shrinkage in supermarkets and cosmetic retailer outlets in 2015, accounting for more than 70% of losses due to shrinkage. Electronics and retailers dealing in sports goods incurred most of their losses from dishonest employees.

Retail shrinkage by store type

The graph below indicates that discount stores, pharmacies and drug stores, and stationery shops reported the highest shrinkage rates worldwide in 2015. The major reason for the high shrinkage is small, easily concealed items that are usually kept for open displays. Such items have large re-sale value and can be used for personal use.

Exhibit 11: Global retail shrinkage by store type

Discount shops — 2.54%
Pharmacies and drugstores — 2.26%
Stationery shops — 1.52%
Jewelry shops — 1.49%
Pet shops — 1.42%
Sports goods stores — 1.18%
Supermarkets and grocery retailers — 1.15%
Apparel stores — 1.05%
Home improvement stores — 0.98%
Non-grocery retailers — 0.96%
Hypermarkets — 0.92%
Beauty specialist retailers — 0.82%
Toys and games stores — 0.73%
Electronics and appliance retailers — 0.62%
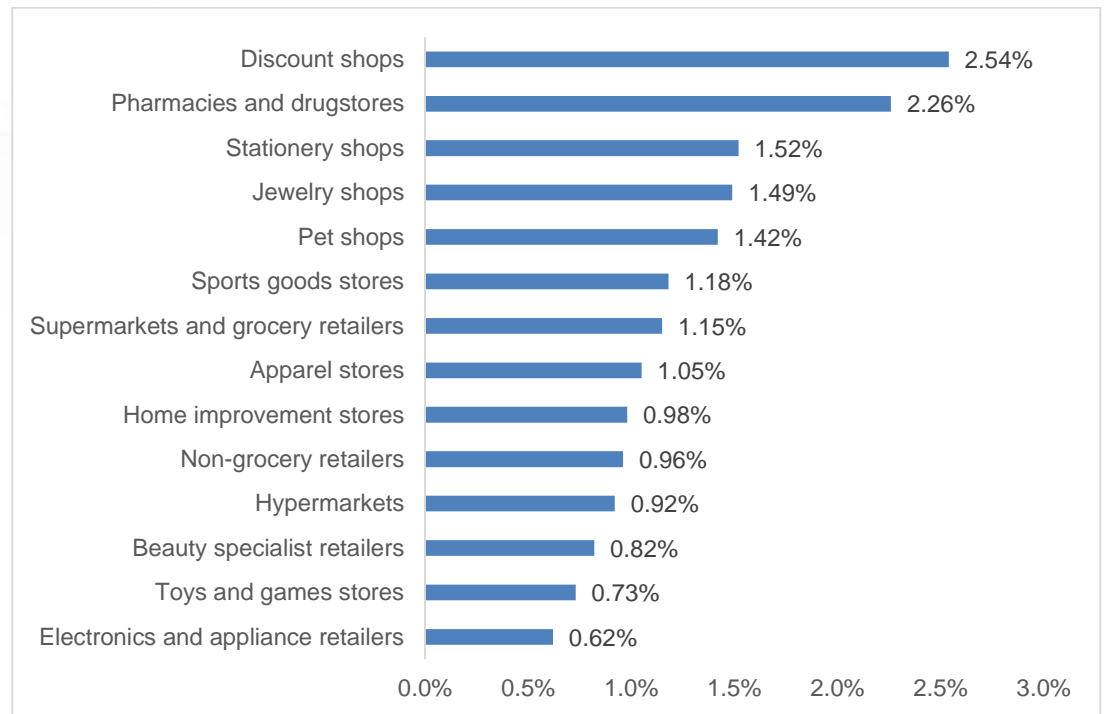
Source: Technavio

To prevent unwanted losses, retailers usually deploy one or more loss prevention systems in their retail outlets. Such systems help retailers cut down on losses and ensure better revenue generation and profits.

Loss prevention

Loss prevention is a practice employed by retailers to minimize loss and increase profits. Most losses are incurred by retailers primarily from customer theft, employee theft, administrative errors, supply chain losses, and other factors such as dummy cartons. To prevent loss, retailers are aggressively increasing their spending on loss prevention systems, of which the EAS system is the most vital.

Exhibit 12: Retailer spending on loss prevention systems 2015
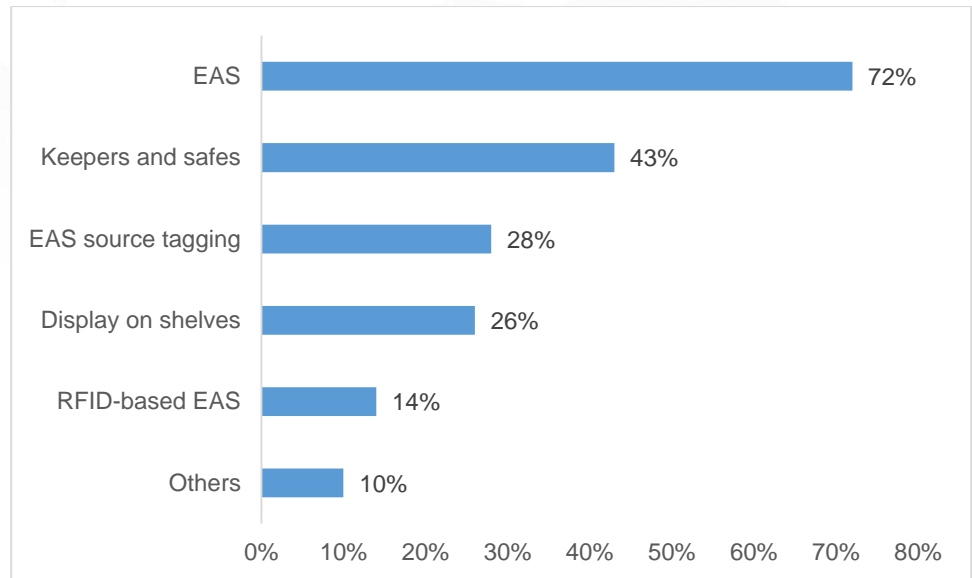
Source: Technavio

Multiple large-scale retailers such as Walmart, Woolsworth, and Target deploy more than one loss prevention solution to minimize losses incurred due to shrinkage.

Market overview

The EAS antennas market has transformed rapidly over the last 50 years. Established players such as Checkpoint Systems, Nedap, and Tyco Retail Solutions are changing the overall market demand for EAS-based systems. Some small and regional vendors are present with small market shares. The threat of new entrants is low for this market, as the dominant players hold a significant share of the entire market. The bargaining power of customers is moderate, as they have limited branded options. There are many suppliers for original equipment manufacturers. Therefore, the original equipment manufacturers have the power to set the price of raw materials, making the bargaining power of suppliers low. However, the market experiences stiff competition due to the availability of substitutes for EAS antennas such as radio-frequency identification (RFID) labels, CCTV cameras, and even security guards for smaller retail outlets.

PART 07:
Market
landscape

Market size and forecast

The global EAS antennas market was valued at $312.8 million in 2015 and is expected to expand at a CAGR of 3.71% during the forecast period to reach $375.3 million in 2020.

Exhibit 13: Global EAS antennas market 2015-2020 ($ millions)
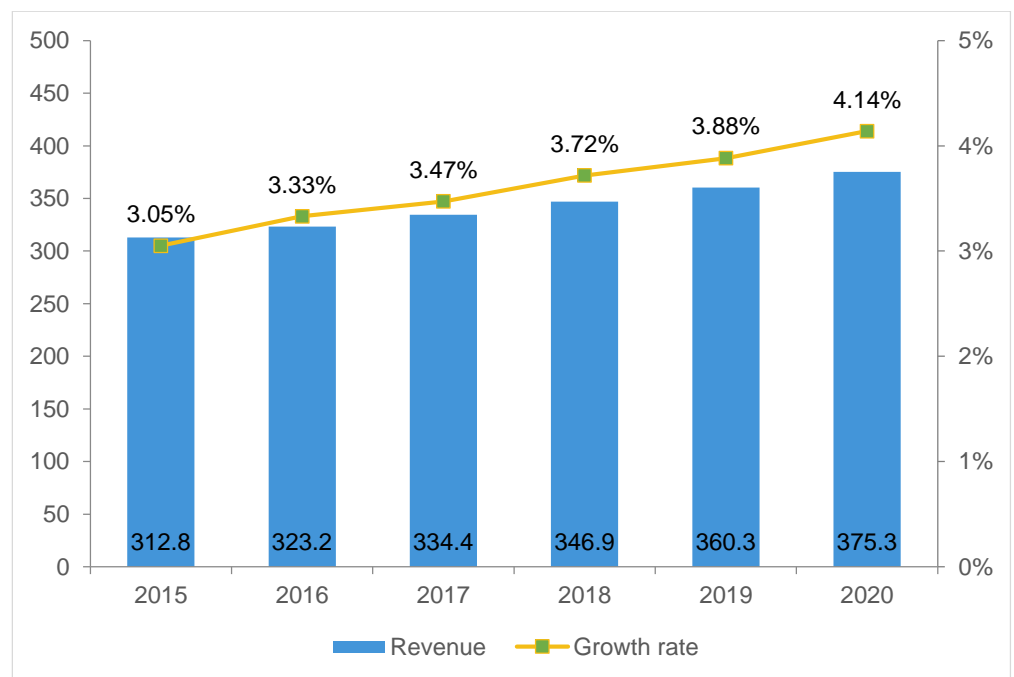
Source: Technavio

The potential market size for EAS antennas is more than $1 billion and it will continue to increase during the forecast period. Over $3 trillion of retail revenue is at risk for the top 200 US and EU retailers. However, in 2015, EAS antennas penetrated only 40% of the retail market. The EAS antennas market has immense opportunity to grow with the increasing penetration of these devices in the retail outlets. Most retailers are adopting EAS technology not just for stock management but to intensify their omni-channel tactics. The ongoing transformation from a single store to multi-retail stores in developing countries such as India, China, and Brazil has increased organized retail crime (ORC) in these countries, leading to a wider adoption of EAS antennas by retailers. Technavio expects the EAS antennas market to grow at a steady rate during the forecast period owing to increasing awareness of EAS antennas and their benefits by many end-users worldwide.

Five forces analysis

Exhibit 14: Five forces analysis

Bargaining power of suppliers
Low

There are a large number of suppliers for original equipment manufacturers of EAS antennas, but they are not the price setters. Original equipment manufacturers have the liberty to shift between suppliers, thus reducing the bargaining power of suppliers.

Threat of substitutes
High

EAS antennas are an effective but expensive solution. Cheaper alternatives are available, such as CCTV cameras, RFID labels, and security guards, and these are deployed in smaller stores.

Threat of rivalry
High

Intense competition exists between Checkpoint Systems and Tyco Retail Solutions to gain the leadership position in the market. The other prominent vendors are trying to capture as big a share as possible of the remaining market.

Bargaining power of buyers
Moderate

Only a few successful and established vendors are present in the market. However, smaller and regional players are also present who cater to smaller retailers. Therefore, the bargaining power of buyers is moderate.

Threat of new entrants
Low

The chances of many startups and large firms entering the EAS antennas market are low, considering the dominance of Checkpoint Systems and Tyco Retail Solutions.

Source: Technavio

Market overview

Exhibit 15: Segmentation of global EAS antennas market by end-user 2015-2020 (% share)

	2015	2016	2017	2018	2019	2020
■ Apparel and fashion accessories	47.16%	47.92%	48.61%	49.30%	50.00%	50.73%
■ Cosmetics and pharmaceuticals	27.72%	28.01%	28.32%	28.62%	28.93%	29.24%
■ Supermarket and large grocery stores	13.22%	12.90%	12.58%	12.25%	11.93%	11.61%
■ Others	11.91%	11.17%	10.50%	9.83%	9.14%	8.42%

■ Others ■ Supermarket and large grocery stores
■ Cosmetics and pharmaceuticals ■ Apparel and fashion accessories
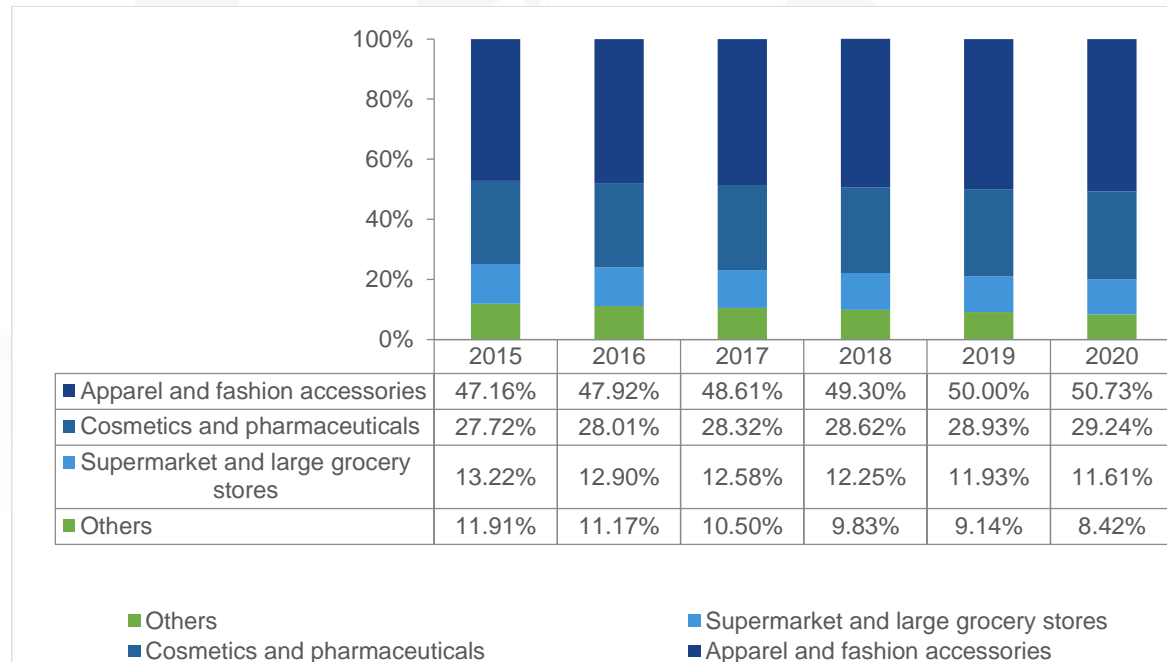
Source: Technavio

The global EAS antennas market is categorized into the following segments by end-user:

- Apparel and fashion accessories

- Cosmetics and pharmaceuticals

- Supermarkets and large grocery stores

- Others

In 2015, the apparel and fashion accessories segment was the largest revenue contributor to the global EAS antennas market, accounting for 47.16% of the market. The main reason for its dominance is the presence of a large number of dedicated retail outlets across the globe. The apparel and fashion accessories segment was followed by cosmetics and pharmaceuticals with 27.72%, supermarkets and large grocery stores with 13.22%, and others with 11.91%.

Apparel and fashion accessories

This segment is growing rapidly. It generated $147.5 million in 2015 and is expected to increase at a CAGR of 5.23% during the forecast period to contribute $190.4 million in revenue to the EAS antennas market in 2020.

Market size and forecast

Exhibit 16: Apparel and fashion accessories segment 2015-2020 ($ millions)
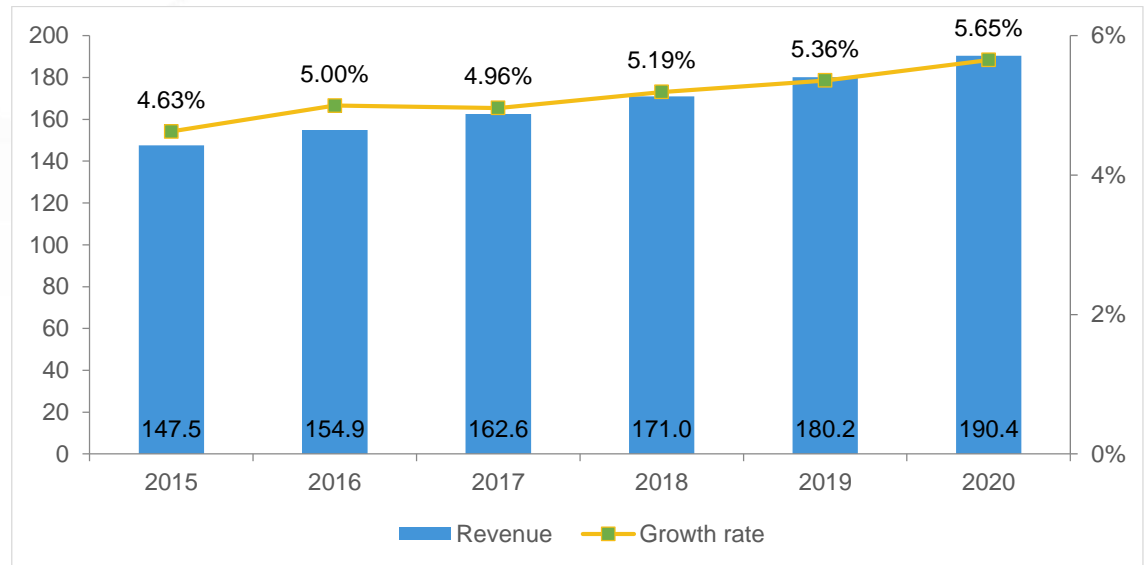
Source: Technavio

Apparel and fashion accessories includes male and female products such as jeans, dresses, shirts, handbags, and jewelry. The installation of EAS antennas has helped retailers concentrate more on customers and prevented shoplifting to a considerable extent in this segment.

Employees in the stockroom with easy access to inventory stock often steal retail goods. To prevent such practices and loss of revenue to the stores, it has become a necessity for apparel and fashion accessory retail outlets to install EAS antennas. The clothes are attached with EAS tags so that on detaching them at the checkout counter, no damage is caused to the garment, even with delicate fabrics. Footwear, fashion accessories, and sports-related clothing were the types of merchandise most vulnerable to theft in this segment in 2015. The segment reported the highest retail shrinkage rate in 2015, with losses of 2.3%. Therefore, the adoption of EAS antennas is likely to increase in this segment during the forecast period.

Cosmetics and pharmaceuticals

The cosmetics and pharmaceuticals segment was valued at $86.69 million in 2015 and is expected to grow at a CAGR of 4.82% during the forecast period to reach $109.7 million in 2020.

Market size and forecast

Exhibit 17: Cosmetics and pharmaceuticals segment 2015-2020 ($ millions)
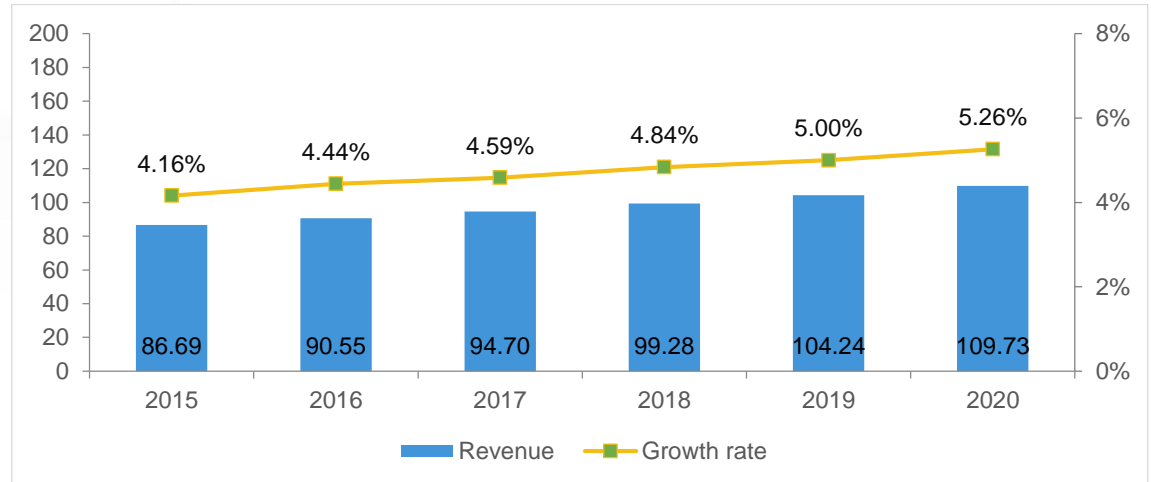
Source: Technavio

The cosmetics and pharmaceuticals segment is more vulnerable to retail shrinkage than other segments, as shoplifters focus more on small, easily concealable, expensive, and branded items. These items include perfumes and face creams as well as pharmaceutical products such as antibiotics, cold and cough medicine, and fever tablets. The segment lost 2.2% of its stock to retail shrinkage in 2015. Therefore, retailers in this segment frequently use EAS antennas to protect their merchandise.

In 2015, razor blades, makeup products, perfumes and fragrances, and over-the-counter drugs for children were the items most vulnerable to theft in this segment. Major growth regions for this segment are Europe and North America. Other regions, such as APAC and ROW, deploy EAS antennas for cosmetics and pharmaceutical outlets on a small scale. Countries such as India, Pakistan, and Sri Lanka have small counters or outlets to cater to this segment. Therefore, there is no scope for installation of EAS antennas in these countries.

Supermarkets and large grocery stores

The supermarkets and large grocery stores segment generated $41.35 million in 2015 and is expected to contribute $43.57 million in revenue to the EAS antennas market in 2020, growing at a CAGR of 1.05% during the forecast period.

Market size and forecast

Exhibit 18: Supermarkets and large grocery stores segment 2015-2020 ($ millions)
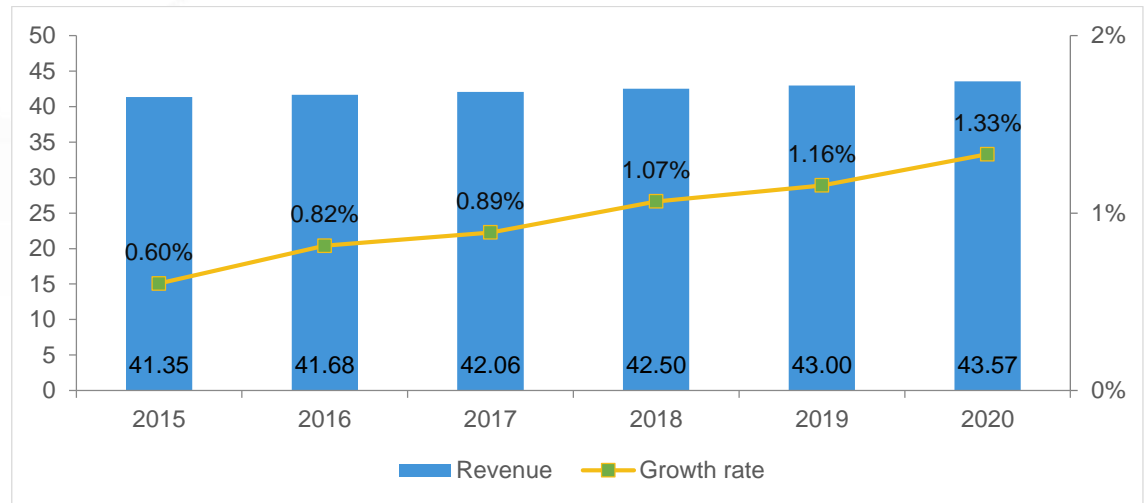
Supermarkets and large grocery stores were among the first retail outlets to adopt EAS systems and antennas. Growing demand for these stores to manage inventory efficiently and prevent theft of all kinds of products is expected to drive the adoption of EAS antennas in this segment.

In 2015, wines and spirits, tobacco, and fresh meat were the items most vulnerable to theft in this segment. With most of the stores in regions such as the Americas, Europe, and APAC already using EAS antennas, the market in this segment has reached its maturity phase. In developing countries such as India, Indonesia, and Malaysia, adoption of EAS antennas is increasing, which will cause this segment to grow gradually during the forecast period.

Others

The others segment contributed a total of $37.24 million in revenue to the global EAS antennas market in 2015. The segment is expected to decline at a CAGR of (3.23)% during the forecast period to generate $31.6 million in 2020.

Market size and forecast

Exhibit 19: Others segment 2015-2020 ($ millions)
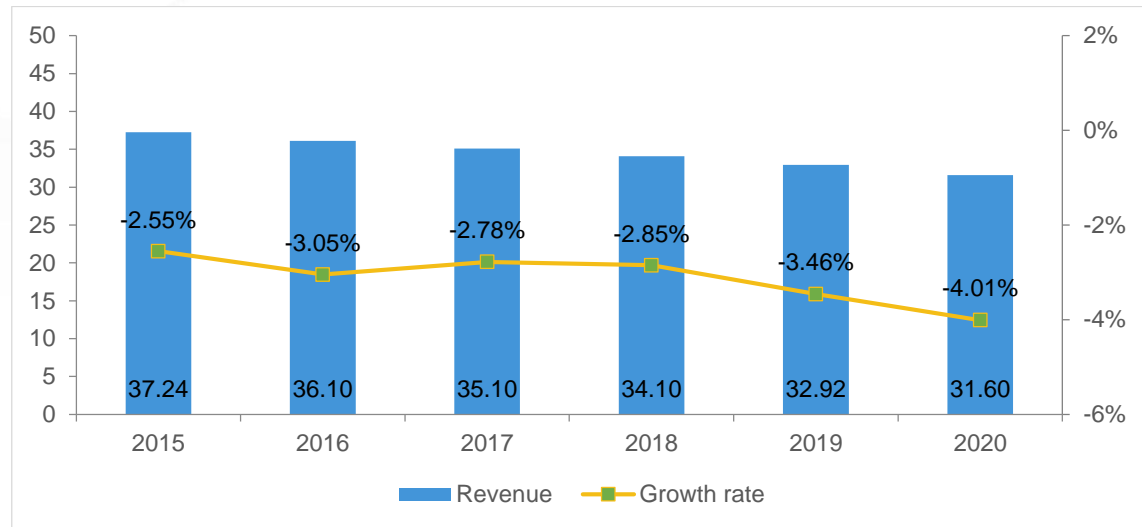
The others segment includes consumer electronics, auto parts, liquor, and meat store outlets. This segment contributes the least to the global EAS antennas market, as many products kept and sold through other retail outlets such as liquor bottles and mobile devices cannot be tagged. Therefore, CCTV and chain alarms are used in such stores instead of EAS antennas.

In 2015, this segment reported a shrinkage loss of close to 2%. The most vulnerable items to theft included mobile device accessories, iPads and tablets, and video games. Even online stores have captured the consumer electronics market, thus reducing the demand for EAS antennas. The others segment is likely to reach its saturation level in terms of revenue contribution to the global EAS antennas market during the forecast period.

Segmentation of global EAS antennas market by geography 2015

Exhibit 20: Segmentation of global EAS antennas market by geography 2015

ROW
8%

APAC
26%

North America
38%

Europe
28%

■ North America ■ Europe ■ APAC ■ ROW

Source: Technavio

Geographical segmentation
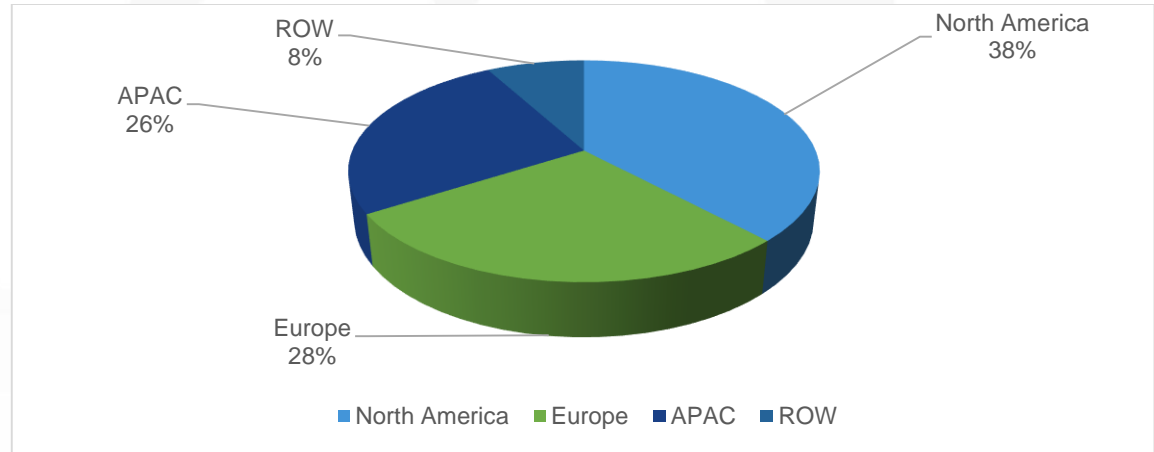
In North America, the US was the first to explore EAS antennas, as the country is an early adopter of new technology. Two major vendors, Checkpoint Systems and Tyco Retail Solutions, are based in the US. As the market penetration of EAS antennas in developing countries is still low, higher demand for these antennas is expected from this region. North America accounted for 38% of EAS antenna installations in the global market in 2015 in terms of revenue. Europe is the second largest revenue-generating region, with notable EAS players such as Nedap and TAG Company based there. Multiple other regional players are also concentrated in this region. Europe accounted for 28% of the market in 2015, followed by APAC with 26% and ROW with 8%.

Segmentation of global EAS antennas market by geography 2020

Exhibit 21: Segmentation of global EAS antennas market by geography 2020

ROW
9%

North America
36%

APAC
27%

Europe
28%

■ North America ■ Europe ■ APAC ■ ROW
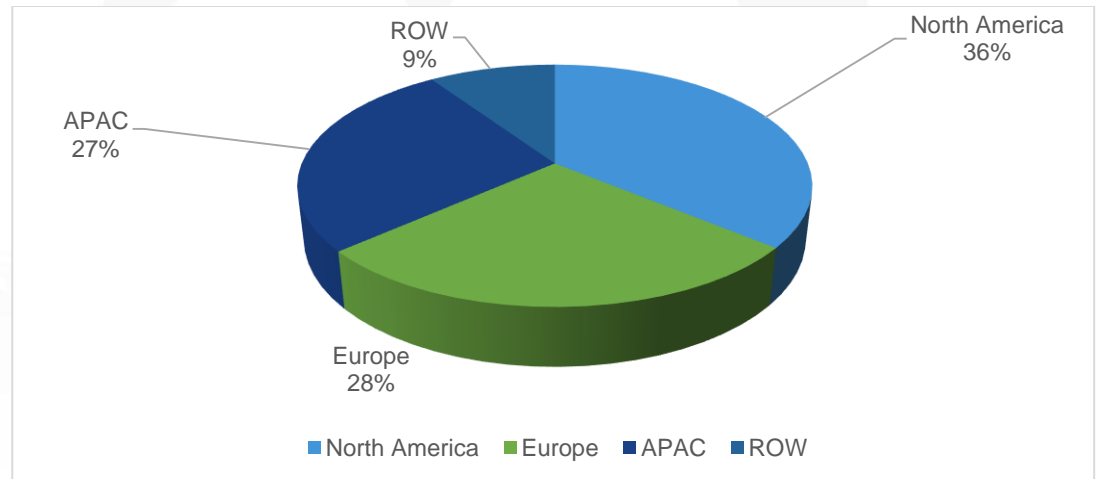
North America will continue to dominate the global EAS antennas market during the forecast period. However, due to the early adoption of EAS antennas in the region, the market here will reach saturation and its revenue share will fall from 38% in 2015 to 36% in 2020. Europe will continue to hold the second position with 28% of the market, followed by APAC with 27% and ROW with 9%. We expect APAC and parts of ROW such as Brazil, Argentina, and the Middle East to experience high demand for EAS antenna installations during the forecast period. This will help the global market grow steadily during 2016-2020.

EAS antennas market in North America

The EAS antennas market in North America generated $118.9 million in 2015 and is expected to increase at a CAGR of 2.59% during the forecast period to contribute $135.1 million to the market in 2020.

Market size and forecast

Exhibit 22: EAS antennas market in North America 2015-2020 ($ millions)
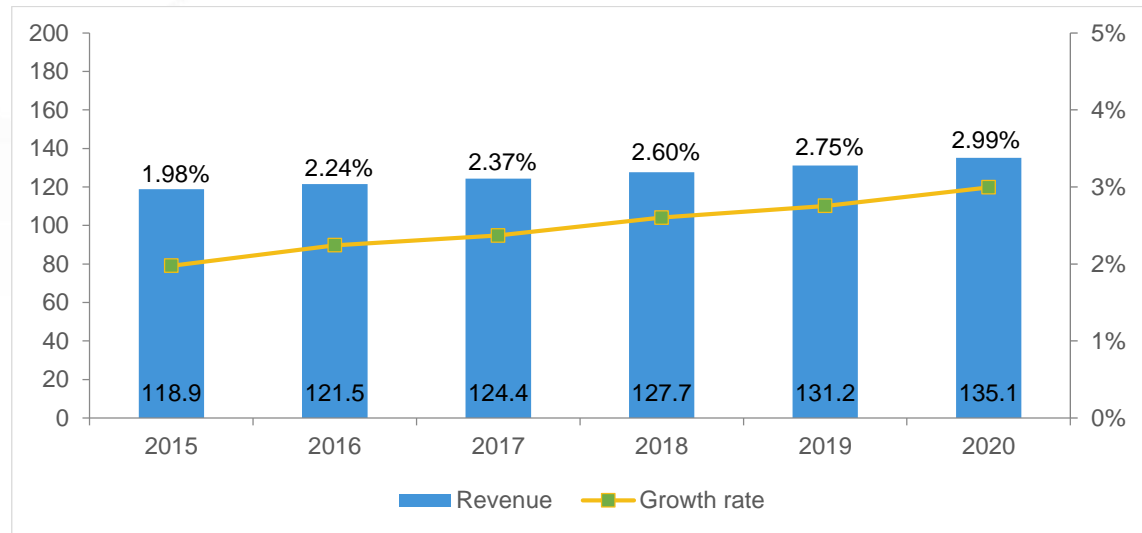
Though shrinkage in North America has decreased since 2013, the region records the highest shrinkage rate worldwide due to its high concentration of retail stores. As the US was an early adopter of EAS technology for loss prevention, it manages to curtail its losses due to shrinkage to a considerable extent every year.

However, more than 50% of the retail outlets in North America are without an EAS antenna. In addition, most of the major retail players in the market such as Walmart, Costco, Walgreens, and Target are already using this technology. Therefore, the EAS antennas market is reaching saturation level in this region and is expected to experience the slowest growth compared to other regions during the forecast period.

EAS antennas market in Europe

The EAS antennas market in Europe generated $87.58 million in 2015 and is expected to increase at a CAGR of 3.41% during the forecast period to contribute $103.6 million to the market in 2020.

Market size and forecast

Exhibit 23: EAS antennas market in Europe 2015-2020 ($ millions)
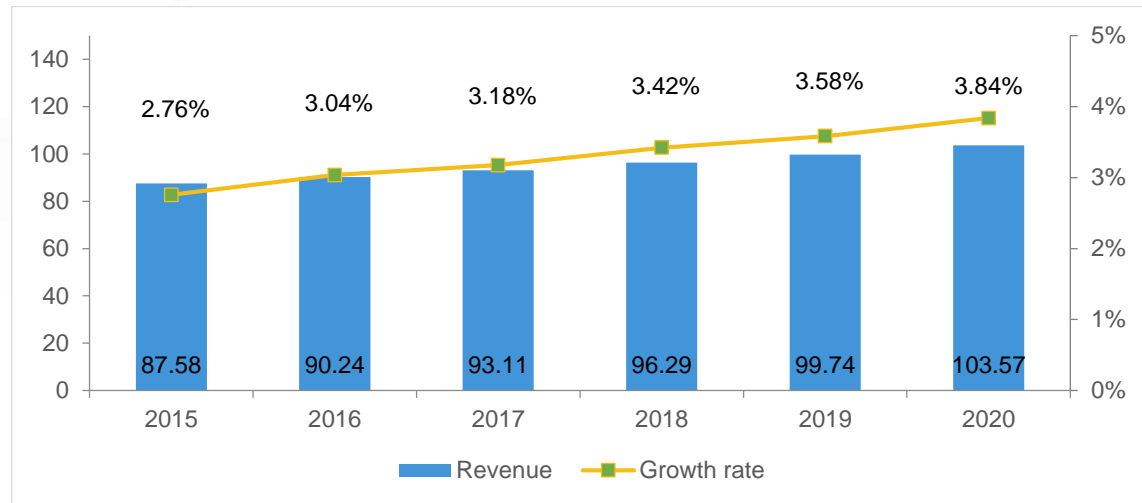
Europe reported an average shrinkage rate of 1.12% in 2015, which is the lowest across all the regions in the world. In Germany, retailers have deployed EAS antennas even for low-end products. This has helped improve visibility of losses and identify the sources of shrinkage. Smaller countries such as Poland and Turkey have also started investing in EAS antennas since 2013.

Due to weak economic conditions in Europe since 2009, retailers have started investing more in loss prevention systems to improve revenue and profit margins. Most of the countries in Europe have increased their loss prevention spending since 2013. This initiative will help the region grow modestly in terms of EAS antenna installations during the forecast period.

EAS antennas market in APAC

The EAS antennas market in APAC was valued at $81.33 million in 2015 and is expected to reach $102.8 million in 2020, growing at a CAGR of 4.8% during the forecast period.

Market size and forecast

Exhibit 24: EAS antennas market in APAC 2015-2020 ($ millions)
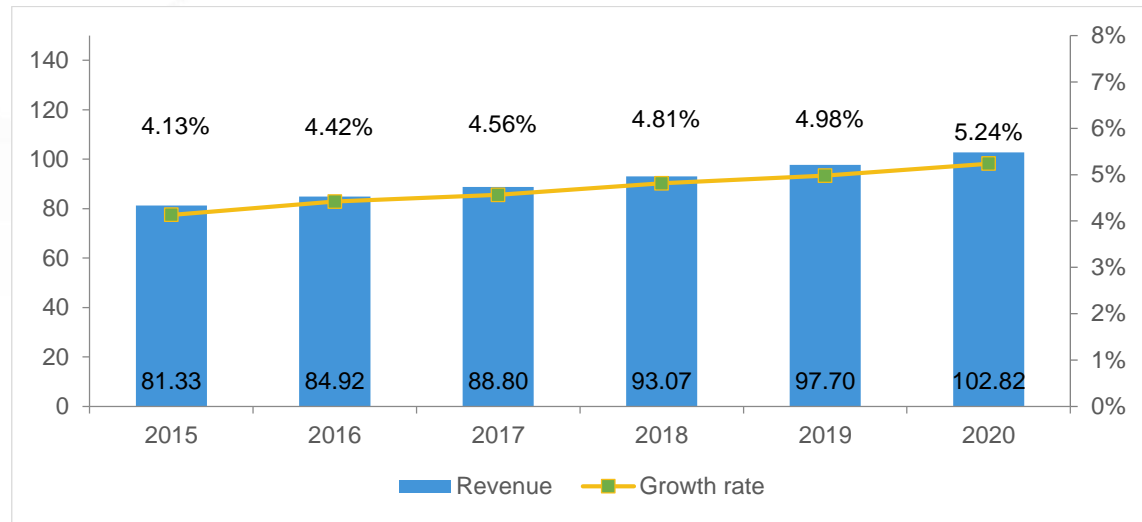
APAC reported a 1.21% loss due to shrinkage in 2015, with China posting the highest shrinkage rate among all countries in the region. Other countries such as Japan, Australia, and Hong Kong have shown improvements in reducing retail losses to a significant extent. In Australia, shrinkage has been reduced due to improved customer service and internal staff training.

China has spent more on EAS antennas and other loss prevention systems compared to previous years. However, the country still experienced high shrinkage in 2015 due to an increase in organized retail crime incidents in the country. However, we estimate that increased spending on EAS antennas by retailers will have a positive impact and reduce shrinkage during the forecast period. Most countries in this region are spending more on EAS antennas and systems. This will make the region grow at a consistent rate during 2016-2020.

EAS antennas market in ROW

The EAS antennas market in ROW was valued at $25.02 million in 2015 and is expected to expand at a CAGR of 6.18% during the forecast period to reach $33.77 million in 2020.

Market size and forecast

Exhibit 25: EAS antennas market in ROW 2015-2020 ($ millions)
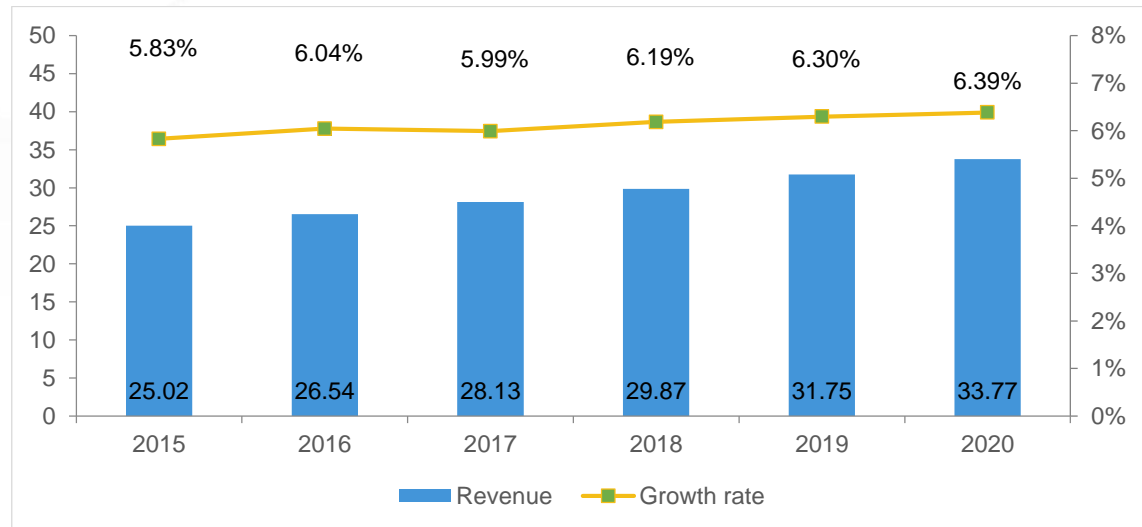
The countries in ROW such as Brazil, Argentina, Mexico, as well as the Middle East, posted a high shrinkage rate of 1.27% during the forecast period. Mexico recorded the highest shrinkage rate in this region.

Cosmetic stores and non-grocery retail stores were the main contributors to retail shrinkage in this region. This increased the need to install EAS systems at multiple outlets across the countries in this region. Most of the countries have realized the importance of preventing losses due to theft and started investing heavily in EAS antennas. We expect this region to experience the highest growth rate in terms of installation of EAS antennas during the forecast period.

PART 10:

Summary of key figures

Exhibit 26: Year-on-year revenue comparison for end-user segments ($ millions)

Year	Apparel and fashion accessories	Cosmetics and pharmaceuticals	Supermarket and large groceries	Others
2015	147.52	86.69	41.35	37.24
2016	154.89	90.55	41.68	36.10
2017	162.57	94.70	42.06	35.10
2018	171.01	99.28	42.50	34.10
2019	180.17	104.24	43.00	32.92
2020	190.35	109.73	43.57	31.60
CAGR				
2015-2020	5.23%	4.82%	1.05%	(3.23)%

Source: Technavio

Exhibit 27: Year-on-year revenue comparison for regions ($ millions)

Year	North America	Europe	APAC	ROW
2015	118.86	87.58	81.33	25.02
2016	121.53	90.24	84.92	26.54
2017	124.41	93.11	88.80	28.13
2018	127.65	96.29	93.07	29.87
2019	131.17	99.74	97.70	31.75
2020	135.09	103.57	102.82	33.77

Year	North America	Europe	APAC	ROW
		CAGR		
2015-2020	2.59%	3.41%	4.80%	6.18%

Source: Technavio

Exhibit 28: Comparison of geographical retail shrinkage by category 2015 ($ millions)

| Retail shrinkage by category	North America	Europe	APAC	ROW
Employee theft	44%	22%	17%	24%
Shoplifting	38%	38%	43%	34%
Vendor fraud	8%	15%	7%	30%
Administrative issues	10%	25%	33%	12%

Source: Technavio

Rising need to prevent retail shrinkage

In 2015, 1.2% of the retail sales losses were due to global retail shrinkage. Retail sales were affected by employee theft, shoplifting, administrative issues, and supplier fraud. Mexico recorded the highest shrinkage rate with 1.7% of the retail sales being affected, followed by the Netherlands with 1.5%. Norway reported the lowest shrinkage rate with 0.75% revenue loss at retail stores due to theft activities, followed closely by Switzerland with 0.76%.

Exhibit 29: Global shrinkage contributors 2015
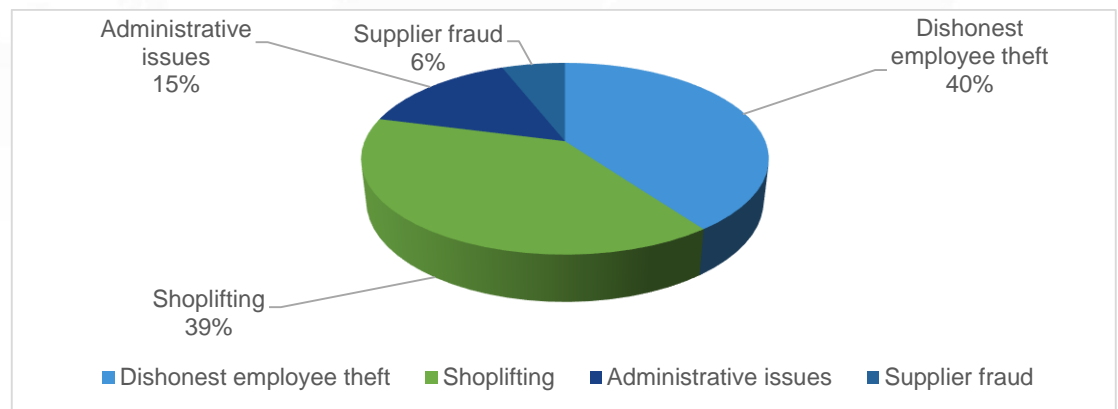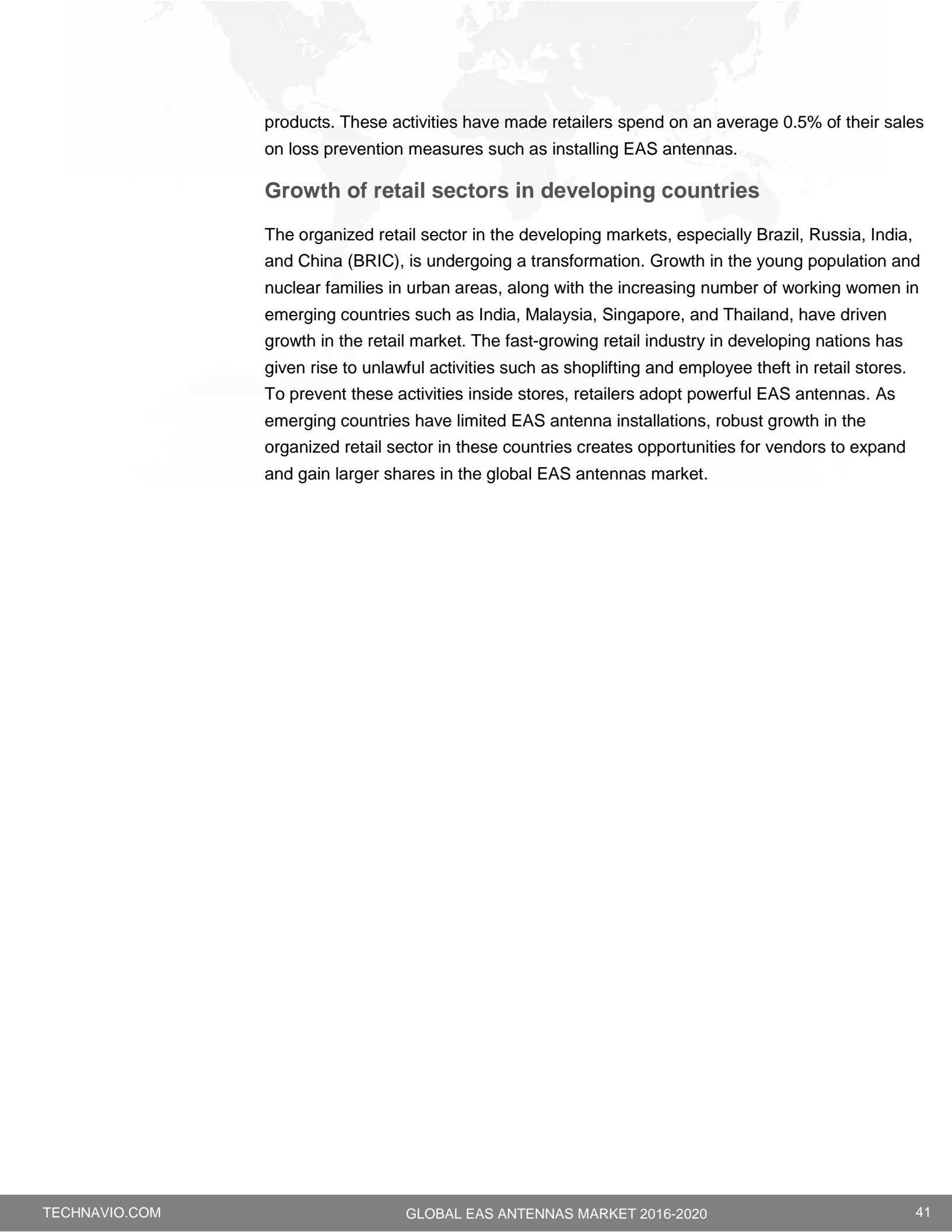
Source: Technavio

Employee theft was the largest contributor to shrinkage globally, followed closely by shoplifting. However, the primary reason for shrinkage can vary across the retail landscape based on retail size, type, and location. For example, North America and Argentina reported lower shoplifting cases and higher employee theft, while in the UK and Brazil, administrative issues were the major cause of shrinkage. The US experienced significant improvement in shrinkage loss, which decreased from 1.48% in 2014 to 1.27% in 2015 amid high adoption of EAS antennas. Therefore, the adoption of EAS antennas increased in retail outlets such as hypermarkets, supermarkets, grocery stores, and apparel stores, which experienced a rise in revenue by preventing theft. Prevention of employee theft and shoplifting is thus the major driver for the global EAS antennas market.

ORC is one of the major contributors to shoplifting in the global retail sector. Organized groups of professional criminals fraudulently obtain merchandise from retail shops and sell it to individuals and retailers through different avenues such as online marketplaces or face-to-face. The global retail industry suffers losses of more than $30 billion annually because of ORC. ORC groups target grocery and drug stores for infant formula, over-the-counter drugs, razor blades, and other high-end health and beauty

products. These activities have made retailers spend on an average 0.5% of their sales on loss prevention measures such as installing EAS antennas.

Growth of retail sectors in developing countries

The organized retail sector in the developing markets, especially Brazil, Russia, India, and China (BRIC), is undergoing a transformation. Growth in the young population and nuclear families in urban areas, along with the increasing number of working women in emerging countries such as India, Malaysia, Singapore, and Thailand, have driven growth in the retail market. The fast-growing retail industry in developing nations has given rise to unlawful activities such as shoplifting and employee theft in retail stores. To prevent these activities inside stores, retailers adopt powerful EAS antennas. As emerging countries have limited EAS antenna installations, robust growth in the organized retail sector in these countries creates opportunities for vendors to expand and gain larger shares in the global EAS antennas market.

Drivers | Impact on key customer categories

PART 12:

Impact of drivers

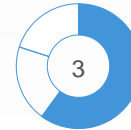| Rising need to prevent retail shrinkage	Apparel and fashion accessories	Cosmetics and pharmaceuticals	Supermarket and large grocery stores
	5	5	5

Growth of retail sectors in developing countries	Apparel and fashion accessories	Cosmetics and pharmaceuticals	Supermarket and large grocery stores
	5	3	4

Source: Technavio

Rapid growth of e-commerce

The rising popularity of e-commerce is a major challenge for the EAS antennas market. The proliferation of personal electronic devices including smartphones, tablets, and laptops is driving growth in the e-commerce industry, as ordering items has become easier. The growing adoption of e-commerce business and increasing penetration of e-commerce websites such as Taobao, Alibaba, Amazon, eBay, Rakuten, Flipkart, Snapdeal, and Groupon are creating challenges for brick and mortar outlets.

The introduction of smartphone applications by e-commerce vendors has further affected traditional shopping, thereby leading to shopping malls being shut down because of high costs of operations and declining customer footfall. This, in turn, affects the EAS antennas market. As the market growth of EAS antennas is directly related to the opening of new retail outlets where antennas are in high demand or in existing retail stores and supermarkets that deploy EAS antennas, rapid growth in e-commerce business is creating a major challenge for the EAS antennas market.

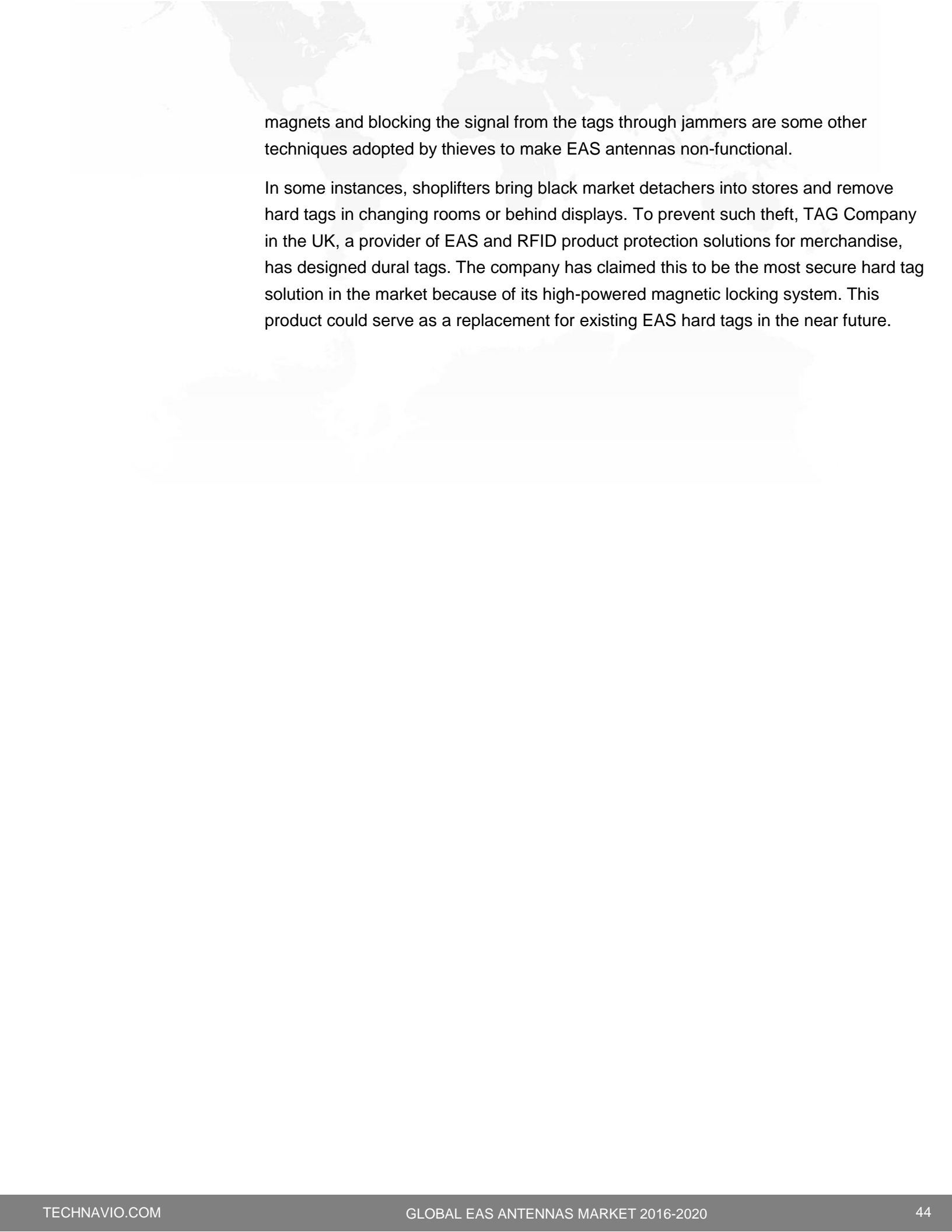### Availability of low-cost substitutes

One of the substitutes for EAS antennas is RFID labels, which have been gaining popularity in European retail outlets since 2014. RFID labels can work in harsh environments, identify fast moving objects in a store, and are easy to deploy.

Unlike EAS antennas, which are used only to prevent or identify theft-related activity, RFIDs have multiple functions such as inventory tracking, product information storage, and theft control. CCTV cameras are also being used as a theft control measure. As these alternatives are inexpensive compared to EAS antennas, they are widely adopted by small retail stores.

Advanced retail theft techniques

With advances in technology in retail security, thieves are becoming technologically savvy and exploiting it to steal products smartly. EAS antennas reduce the incidences of theft, but cannot eradicate it completely. EAS tag shielding is one of the techniques used by thieves to pass through electronic antennas. Even moisture from the human body can affect the functionality of an electronic antenna. On some occasions, aluminum covers are used in shopping bags or backpacks, also known as booster bags, to shield the EAS tag. However, the latest EAS antennas have the ability to detect booster bags. Tag tampering by thieves has been overcome by EAS manufacturers by building stronger tags. Demagnetization of the tags through strong

magnets and blocking the signal from the tags through jammers are some other techniques adopted by thieves to make EAS antennas non-functional.

In some instances, shoplifters bring black market detachers into stores and remove hard tags in changing rooms or behind displays. To prevent such theft, TAG Company in the UK, a provider of EAS and RFID product protection solutions for merchandise, has designed dural tags. The company has claimed this to be the most secure hard tag solution in the market because of its high-powered magnetic locking system. This product could serve as a replacement for existing EAS hard tags in the near future.

Impact of drivers and challenges

Exhibit 31: Impact of drivers and challenges

Drivers		Challenges	
Rising need to prevent retail shrinkage			Rapid growth of e-commerce
			Availability of low-cost substitutes
Growth of retail sectors in developing countries			Advanced retail theft techniques

2016   2018   2020
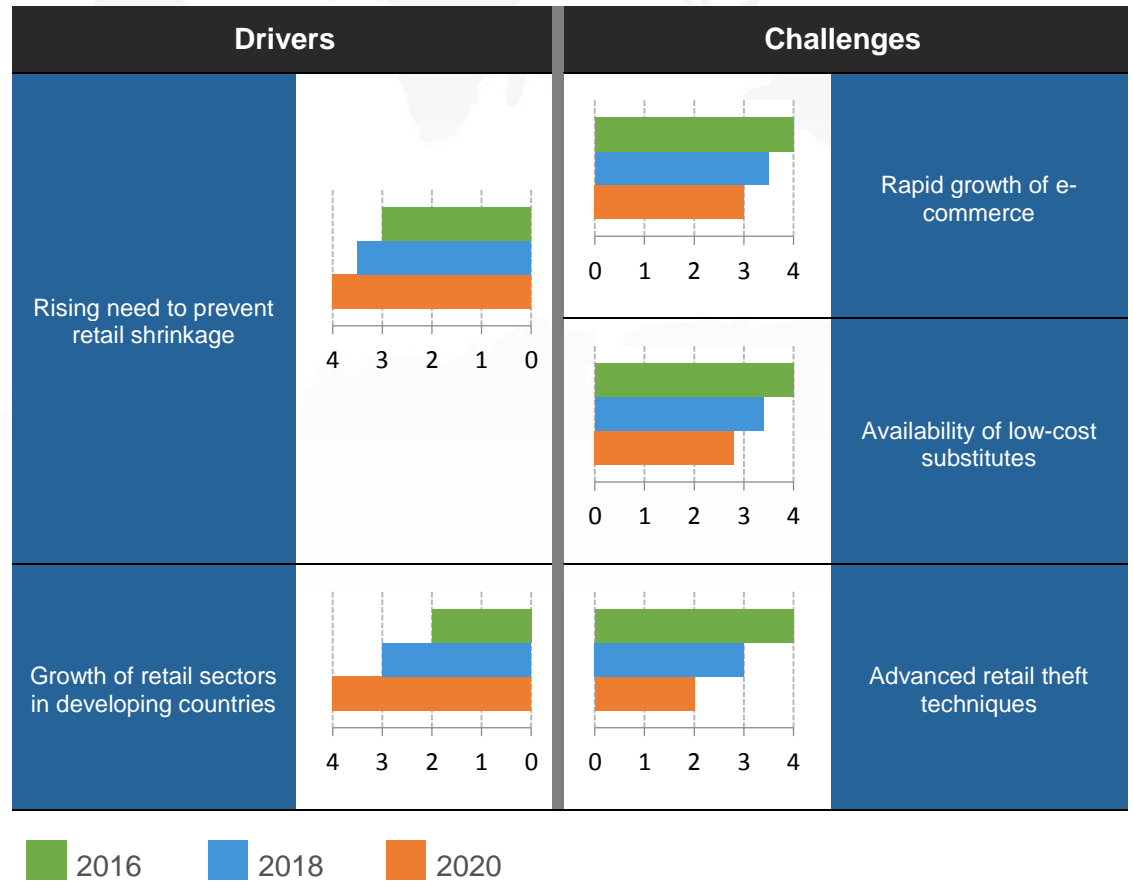
Source: Technavio

Adoption of source tagging

Source tagging is adopted by retailers to reduce instances of theft and fraud. The EAS tags used in source tagging are installed at the manufacturing source and recirculated from the retail store. This recirculation helps curtail store payroll costs, increase sales, and safeguard reliability in each store (from store operations to merchandise displays). It also increases the time spent on customer service.

Vendors have taken initiatives to increase the acceptance of source tagging among retailers. For example, Checkpoint Systems partners with retail suppliers worldwide and runs source tagging to increase its acceptance. Assisting retailers to promote source tagging is expected to increase the installation of EAS antennas and related equipment.

Increased spending on retail security systems

A retail store is one of the most challenging places in terms of deploying security measures, as it involves many people, employees, and merchandise. It is difficult for security guards deployed at stores to track and protect the merchandise from customers and employees.

In an effort to meet security challenges, retailers are increasingly seeking new tools and technologies such as EAS antennas and systems. For example, in 2014, Family Dollar Stores and TESCO adopted Checkpoint EAS systems for loss prevention. Trends in security purchases, implementation, and future purchases vary among market segments. However, retailers, regardless of size or segment, are committed to adopting security technology to reduce shoplifting and increase their operating profit margin.

Growing adoption of dural tags

EAS tag detachers are available in the market starting at $10 and can easily replace EAS antennas. To address this problem, TAG Company in the UK has introduced a new type of EAS tag known as a dural tag. The company claims that it can only be detached by high-strength magnetic release and cannot be detached by any other black market detacher.

Dural tags do not affect garments and are equipped with a clip system so that when the tag is detached and placed in the storage hole, it makes sure that the pin is not exposed. These tags are being adopted at a rapid pace in European stores as well as in other parts of the world.

Integration of RFID in EAS tags

The integration of RFID in EAS tags leads to the creation of RF-EAS systems, which consist of a transmitter and receiver antenna at the exit gate. In this system, a disposable electronic circuit and antenna are attached to a product, which responds to a specific frequency emitted by a transmitter antenna at the exit gate. An adjacent receiver antenna of an RF-EAS system picks up the response from the label.

RF-EAS systems are widely used to prevent shrinkage in retail stores, as they give retailers insight into the movement of products in the store. These systems also enable easy identification of any unauthorized removal of an item from the store. This will help retailers minimize shoplifting and vendor fraud as well as internal sources of loss.

Competitive scenario

The global EAS antennas market is highly competitive for new entrants and small players because of the strong positions held by key leading vendors in the market. Two major vendors, Checkpoint Systems and Tyco Retail Solutions, together accounted for almost 80% of the market in 2015. Nedap holds the third position in the EAS antennas market in terms of global market share. The other key vendors include TAG Company, All-Tag, Ketec, Amersec, Gunnebo Gateway, Hangzhou Century, CNC International, and Sentry Technology.

The market has high entry barriers because of the strong positions held by existing vendors. This restricts the entry of new players in the market. Vendors have also been adopting new technologies and coming out with extra features to gain a competitive edge over other market players. For example, in September 2015, Checkpoint Systems announced their Classic N10 EAS solution, which is specifically designed for convenience stores. The N10 features a small flexible antenna, which helps reduce shrinkage, improves on-shelf availability, and enables open display of merchandise. The vendor competition is expected to intensify during the forecast period.

Checkpoint Systems

Checkpoint Systems' business strategy is to move from being a provider of product protection business products to offering inventory management solutions. As a part of its strategy, the company is divesting certain businesses and product lines that are not profitable. The company aims to use its knowledge of RF and identification technologies to help retailers and manufacturers to realize the benefits of RFID. The company focuses on making partnerships with retail suppliers worldwide for its source tagging program to increase awareness and gain acceptance of source tagging.

The company's products are principally developed and manufactured in-house and sold through direct distribution and reseller channels. It refined its business strategy from a product protection business to a provider of inventory management solutions in 2012. These solutions give retailers ready insight into on-shelf availability of merchandise in their stores.

The company is focusing on products that support its refined strategy in apparel labeling and is leveraging its competitive advantage in the transfer and printing of data onto apparel labels. Checkpoint Systems considers acquisitions that are synchronized with its strategic plan. It will continue to consider divesting certain businesses and product lines that are not advantageous to its refined strategy.
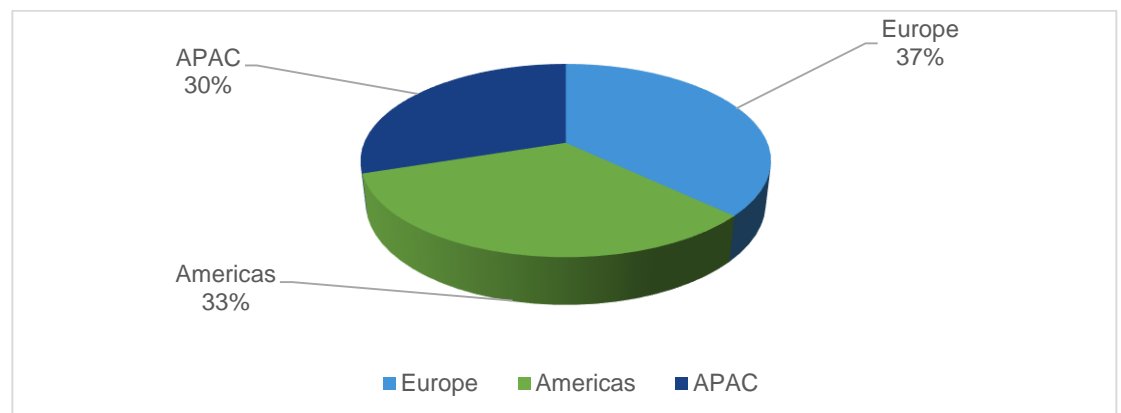
Exhibit 32: Checkpoint Systems: Revenue by segment 2015
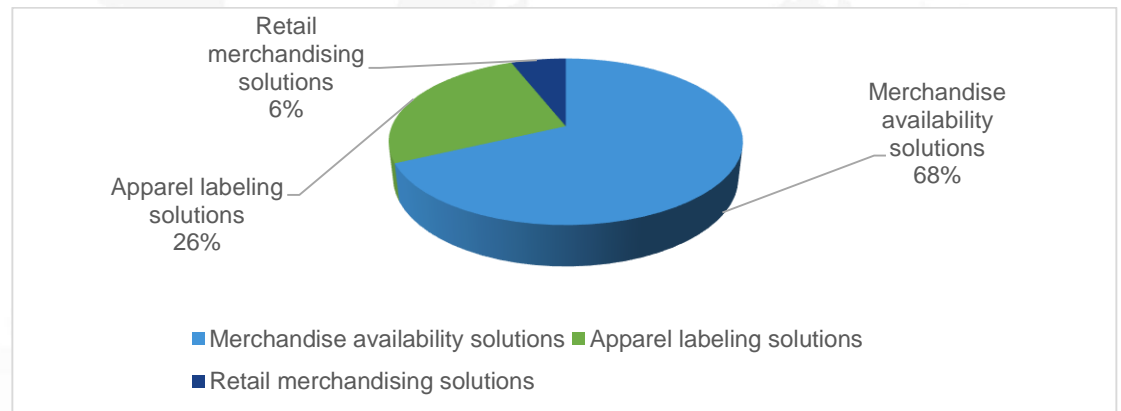
Source: Technavio

Exhibit 33: Checkpoint Systems: Revenue by geography 2015
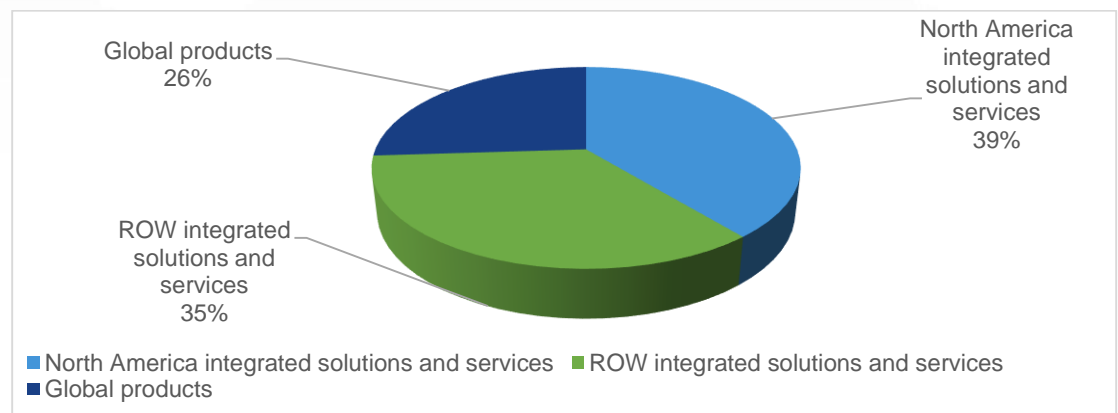

Source: Technavio

Nedap

Nedap was established in the year 1929 and is headquartered in the Netherlands. It enjoys the third position in the EAS antennas market, after Checkpoint Systems and Tyco Retail Solutions. The company will showcase its loss prevention and stock management solutions at the Retail Business Technology Expo for the third year in a row in 2016. The company believes the expo gives it a platform to demonstrate to retailers how Nedap's EAS and RFID solutions can be used to reduce shrinkage levels, prevent stock outs, and increase sales. The company's iSense portfolio includes RF or RFID antennas for EAS and in-store merchandise tracking. The company works alongside leading retail clients such as H&M, Calzedonia, River Island, Dunelm, Tesco, and Superdrug for EAS antennas and systems installations.
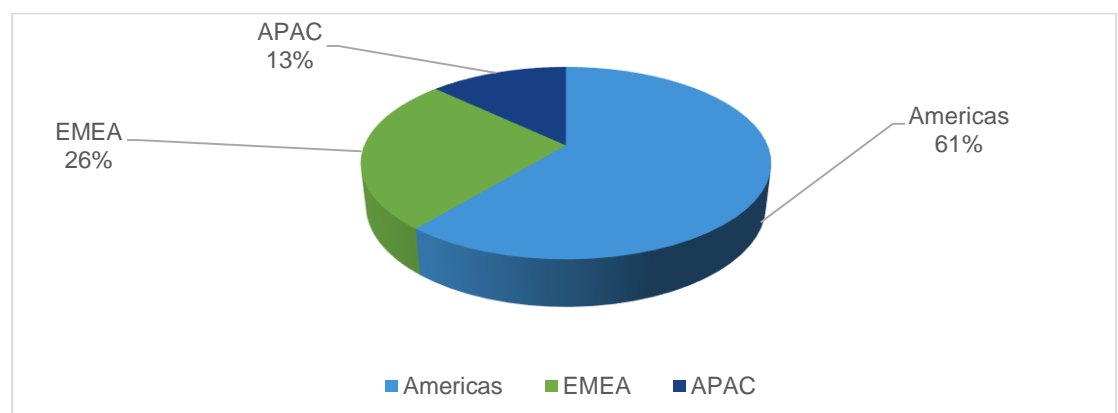
Tyco Retail Solutions

Tyco Retail Solutions has adopted a strategy to provide innovative and genuine products to its customers and minimize shrinkage, increase conversion or sales rates, optimize inventory, drive employee productivity, and enhance overall store performance. The company aims to provide a safe shopping environment by helping its retailers identify theft, allowing customers to leisurely skim through openly displayed merchandise, and protecting the store's bottom line. It also aims to acquire companies that are pioneers in the global EAS market to capitalize on its resources and expand its market share.

Exhibit 34: Tyco Retail Solutions: Revenue by segment 2015

- North America integrated solutions and services 39%
- ROW integrated solutions and services 35%
- Global products 26%

■ North America integrated solutions and services ■ ROW integrated solutions and services
■ Global products

Exhibit 35: Tyco Retail Solutions: Revenue by geography 2015

- APAC 13%
- EMEA 26%
- Americas 61%

■ Americas ■ EMEA ■ APAC
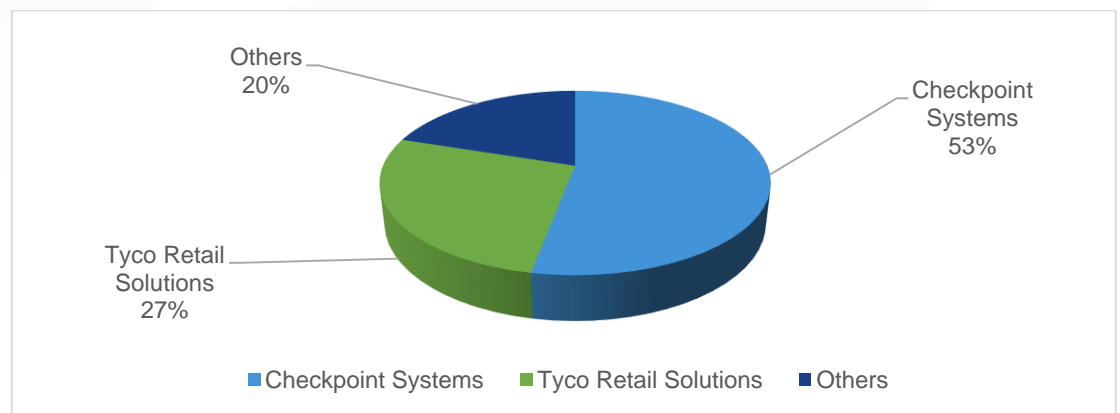
Market share analysis 2015

Checkpoint Systems is the leading vendor, accounting for 53% of the market in terms of revenue in 2015, followed by Tyco Retail Solutions with 27%. Nedap, All-Tag, Ketec, and Sentry Technology are the other prominent vendors in the EAS antennas market. Checkpoint Systems was in the second position in 2013, but it overtook Tyco Retail Solutions in 2014 by landing the contracts for Family Dollar Stores (an American variety store) and Tesco (a famous British multinational merchandise and grocery retailer).

Exhibit 36: Market share analysis 2015
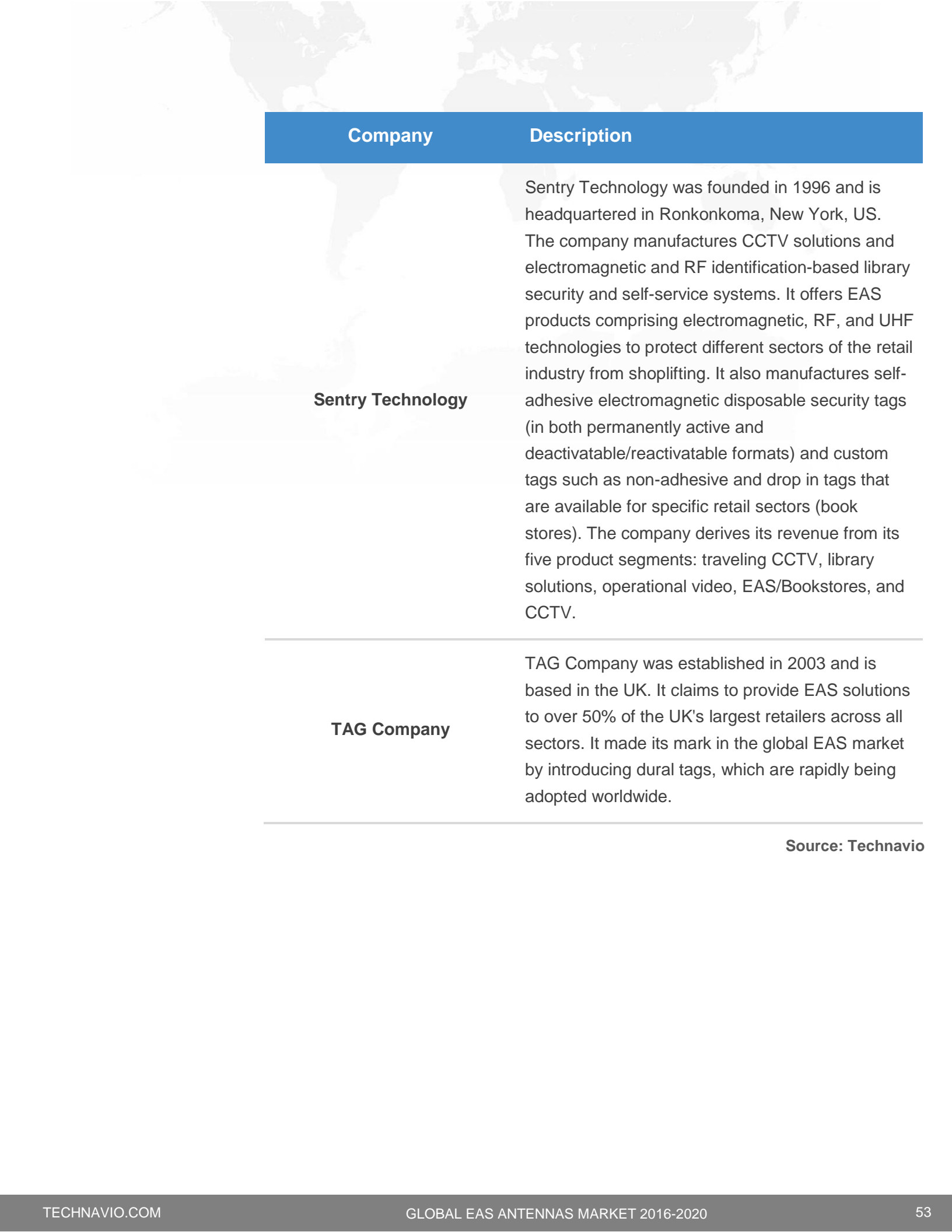
Source: Technavio

Other prominent vendors

Exhibit 37: Other prominent vendors

Company	Description
All-Tag	ALL-Tag was founded in 1992 and is headquartered in Manage, Belgium, with additional offices in Boca Raton, Florida; Harlow, UK; and Hong Kong. It is a global manufacturer of EAS products and services. The company's product segmentation comprises security labels, security tags, deactivators, detachers, EAS detection systems, ink tags, and people counters. The company provides EAS solutions that are

Company	Description
	compatible with both sensormatic AM ultra max and checkpoint RF products. In July 2011, the company launched a production facility to manufacture labels in the US that is now the sole manufacturing plant for ALL-Tag's RF labels.
Amersec	Amersec started operating in 1996 and is based in the Czech Republic. It offers advanced shoplifting prevention systems and has more than 70 dealers in over 50 countries.
CNC International	CNC International is a Korea-based company established in 1994. The company claims to be the only EAS product manufacturing company in Korea and offers a range of EAS antennas and other related products.
Gunnebo Gateway	Gunnebo Gateway is a part of the Sweden-based multinational corporation Gunnebo. Gunnebo Gateway offers a wide range of EAS antennas and related security solutions for different verticals.
Hangzhou Century	Hangzhou Century is based out of China and was established in 2004. The company offers RF and AM antennas and other EAS-related products.
Ketec	Ketec was founded in 1988 and is headquartered in New Jersey, US. The company is a global manufacturer of EAS systems, including EAS tags. It offers numerous products, including deactivators, single panel and vector systems, detection labels, and hard tags and detachers. Its EAS systems are used in applications such as clothing, drug stores, liquor, mass merchandisers, and supermarkets. It markets its product through a network of distributors across the globe.

Company	Description
Sentry Technology	Sentry Technology was founded in 1996 and is headquartered in Ronkonkoma, New York, US. The company manufactures CCTV solutions and electromagnetic and RF identification-based library security and self-service systems. It offers EAS products comprising electromagnetic, RF, and UHF technologies to protect different sectors of the retail industry from shoplifting. It also manufactures self-adhesive electromagnetic disposable security tags (in both permanently active and deactivatable/reactivatable formats) and custom tags such as non-adhesive and drop in tags that are available for specific retail sectors (book stores). The company derives its revenue from its five product segments: traveling CCTV, library solutions, operational video, EAS/Bookstores, and CCTV.
TAG Company	TAG Company was established in 2003 and is based in the UK. It claims to provide EAS solutions to over 50% of the UK's largest retailers across all sectors. It made its mark in the global EAS market by introducing dural tags, which are rapidly being adopted worldwide.

Source: Technavio

PART 17:

Appendix

List of abbreviations

AM	acousto-magnetic
APAC	Asia-Pacific
CAGR	compound annual growth rate
EAS	electronic article surveillance
ORC	organized retail crime
RFID	radio-frequency identification
ROW	rest of world

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