RETAIL INNOVATION HUB

BY cardlink
aWorldlinebrand

INSIGHTSREPORT

Retail Innovation Report

2024

CONTENTS

FOREWORD - A letter from Ioannis Kitixis

WELCOME to another edition of the State of Innovation in Retail Report by Cardlink, member of Worldline.

The previous report we produced in 2023, in collaboration with Found.ation, was a thorough breakdown of the state of technology-enabled innovation in the retail sector, in Greece and abroad. This year has seen much additional adversity, further solidifying the compounding challenges we have been experiencing for the past four years.

Just as we have observed previous challenges persist, this year we see new ones added to the mix. This is why this year's report looks a little different, being a little more focused on key problems and challenges faced by the sector, and on how they can be addressed by innovation.

Innovation is deeply ingrained in both Cardlink's and Worldline's DNA. Through ongoing research and dedication to cutting-edge technologies, we continuously develop innovative products and services. This commitment remains steadfast as we strive to contribute to our customers' growth and enhance their daily experiences.

But it's not just about us. Innovation has always been at the core of our efforts, evident in both our products and services, as well as initiatives like the Retail Innovation Hub, the open innovation program that we have created with our strategic partner, Found.ation. In fact, towards the end of last year, we announced the second cycle of the Retail Innovation Hub's Business Factory program, with the aim of highlighting new business ideas, innovative products, and services that will be developed and implemented in a real environment.

Already, innovative ideas from the first cycle of Business Factory have been thoroughly explored to jointly create products that will contribute to the digital transformation of businesses, improving customer experience and leading the retail industry forward.

Of course, we remain committed to investing in supporting startup entrepreneurship and continuously seeking and implementing cutting-edge technologies in our products and services.

With that said, we are very excited to share with you this latest version of the Retail Innovation Report by Cardlink, member of Worldline, and Found.ation, and we hope you will be just as excited to discover its contents.

Ioannis Kitixis
Country Head
Managing Director Worldline Group in Greece
(Worldline Greece & Cardlink, a Worldline brand)

INTRODUCTION

We used to call them "black swan" events - statistically unexpected events with a major impact that happen rarely but have lasting consequences. **In 2024, it feels like there's nary a white swan to be found around the global markets.**

This decade has been marked by events from the Covid pandemic to Russia's invasion of Ukraine, leaving behind a challenging reality - a divided, multi-polar world, where geopolitical tensions affect global trade and the economy as well as social norms.

Technology, of course, moves ever faster and yesterday's predictions are quickly surpassed by today's facts. Long in development and used widely by academics, researchers, and technologists in other contexts, AI exploded onto the mainstream in the past year with the public release of generative AI tools such as ChatGPT, completely changing the landscape for both users and businesses.

Elsewhere, local conflicts have consequences that ripple out globally, further stretching an already strained supply chain. And the ever-present climate crisis is making itself known more and more, to the point that there is now quantifiable financial and operational impact in global retail because of climate change.

All this is taking place around a customer that has less to spend, and more choice than ever on where to spend it. The challenge for businesses in 2024 is to meet customers where they are, building loyalty through convenience, consistency, and excellence.

In this report, we are looking at some of the most serious challenges retailers face in the current landscape, breaking down some key figures and laying out concerns from global retailers. But there is a right answer to every question, and in this case, innovation is that answer more often than not.

Some of the most competitive technological solutions to these problems come from startup companies that have the drive, flexibility, and know-how to attack challenges head-on. This makes them valuable partners for any retailer who is serious about starting or speeding up their business's digital transformation, and a key piece of the puzzle that is retail innovation.

The future of the retail sector in Greece and worldwide is inextricably linked with technology and innovation. In the pages that follow, we'll glimpse a few aspects of that future, and what it takes to reach it.

Challenges, and how to face them head-on

The post-pandemic optimism is a thing of the past as 2023 confirmed some of the key concerns of businesses in Greece and worldwide.

Already, **an overwhelming share of global business leaders - over 75% - expect economic growth to slow down further this year**[1]. 2024 being a major election year in several key markets brings an additional degree of uncertainty as different candidates bring very different views to the table when it comes to international trade and the role of technology.

Indicative of that uncertainty is the cautiousness observed among Greek businesses - towards the end of 2022, only 4 out of 10 Greek business owners appeared optimistic about the economy[2], although they were overwhelmingly positive about their prospective revenues and profit. Beyond Greece, only one-third of retail executives were very confident about maintaining or improving profit margins in the challenging environment of the same period[3].

Over

75%

of global business leaders expect economic growth to slow down further this year

Only **4 out of 10** Greek
business owners appeared optimistic about the economy

1. https://www.pwc.com/gx/en/issues/c-suite-insights/ceo-survey.html
2. https://www.grant-thornton.gr/globalassets/1.-member-firms/greece/insights/surveys/grant-thornton-survey-2022-greek-entrepreneurship.pdf
3. https://www2.deloitte.com/content/dam/Deloitte/pt/Documents/consumer-business/Retail-Industry-Outlook-2023.pdf

The past year has seen surging inflation, rising geopolitical upheaval, and soaring cost of living. Consumers have seen their spending power diminish at the same time that prices have hit record highs. As a result, more than half of retail executives expect consumers to be more price-sensitive and purchase less this year[4].

The challenge for retailers, then, is laid out clearly; how to make sure they will be the ones to attract those customers willing to spend their hard-earned money.

CHALLENGE: SHIFTING DISPOSABLE INCOME AND THE CHANGING FACE OF CONSUMERS

If the span between 2020-2022 was a story about the triumph of retail against unprecedented adversity, 2023-2024 is the darker, scarier sequel where the stakes are higher and the villains even more vicious.
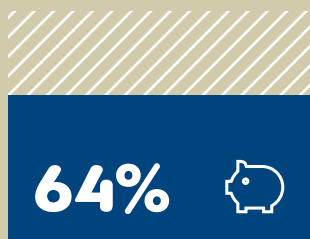
One would be forgiven for thinking the end of lockdowns and the eventual return to normal social interactions would continue the positive trends seen around 2022. However, the mix of geopolitical challenges, the ensuing energy crisis, and ever-present inflation made 2023 a particularly complex year to navigate for consumers. The aftershocks are still felt across several markets.

As a result, **50% of retail executives** expect that price, rather than brand loyalty, will drive consumer decisions this year. **More than half of executives (64%)** also believe that consumers are going to be purchasing fewer goods as financial woes persist[5]. Consumers seem to agree. **In a worldwide survey, 50% of consumers** express extreme concern over their personal financial situation, and well over half of them are making changes to their non-essential spending[6].

HOW CONSUMER BEHAVIOR WILL CHANGE ACCORDING TO RETAILERS

50% 🛒
PRICE OVER
BRAND LOYALTY

64% 🐷
PURCHASING
FEWER GOODS

50% $
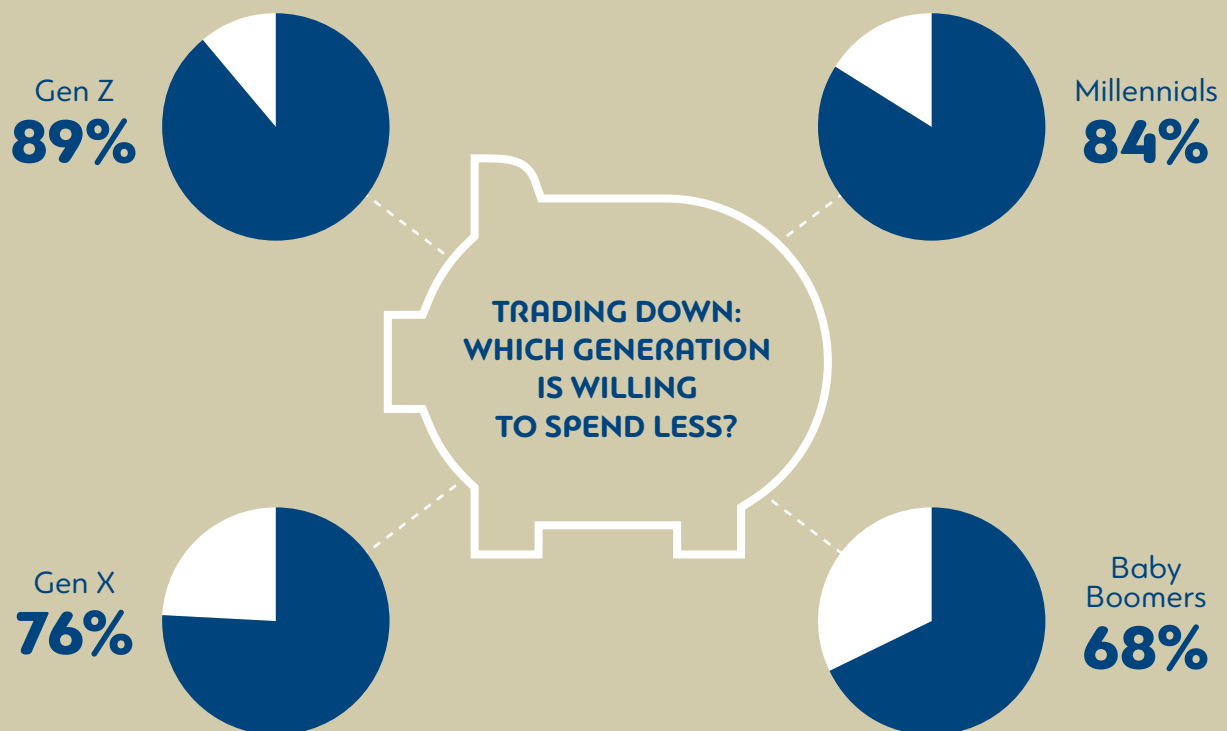CONCERN OVER
FINANCIAL SITUATION

4. https://www2.deloitte.com/us/en/pages/consumer-business/articles/retail-distribution-industry-outlook.html
5. https://www2.deloitte.com/us/en/pages/consumer-business/articles/retail-distribution-industry-outlook.html
6. https://www.pwc.com/gx/en/consumer-markets/global-consumer-insights-survey-2023-01/feb-2023-global-consumer-insights-survey-pulse-5-pwc-global.pdf

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Gen Z
89%

Millennials
84%

TRADING DOWN: WHICH GENERATION IS WILLING TO SPEND LESS?

Gen X
76%

Baby Boomers
68%

Nowhere is this more evident than in shopping habits. "Trading down" is a recurring theme: Overwhelmingly, consumers believe they will need to switch to lower-priced goods, seek more discounts or special offers, find cheaper retailers, or put off costly purchases for a later time. The trend cuts across consumer demographics and income levels in key European markets. **Gen Z consumers appear to be the most likely segment to change their spending habits (89%), followed by Millennials (84%), Gen X (76%), and Baby Boomers (68%)[7].**

43% in-store

34% mobile/ smartphone

23% PC

15% tablet

SHOPPING NON GROCERY PRODUCTS

It's a bleak outlook but as always, the devil is in the details. While consumers are understandably tightening their belts, they are also more selective and more strategic about when, where, and how to shop. It is interesting to see, for example, that **customers have favored in-store shopping for non-grocery products (43%) over buying online (34% on mobile/smartphone, 23% on PC, 15% on tablet).**

7. https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/an-update-on-european-consumer-sentiment

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The most important factor for this preference seems to be the interaction with helpful and knowledgeable staff (driven mostly by older demographics), however right behind it come factors that emphasize the importance of retailers embracing "phygital". These factors include being able to **use self-service kiosks (42%) or automated check-out technology (34%)**, being able to **use the retailer's app or website while in-store to browse for the right item (41%)** as well as being able to **"click and collect" (38%)**, and being able to **try immersive digital experiences while in the store (24%)**[8].

The nuance to focus on here is that consumers are not necessarily giving up on spending and purchasing - but they are getting increasingly savvier at what to spend and where. Yes, the price is currently winning out over brand loyalty - **consumer spending at discount stores has increased by 26% annually from 2022 to 2023**[9]. However, loyalty is being channeled through familiarity and trust.

62%
WOULD NOT STAY LOYAL
to a brand that could not deliver a personalized experience

45%
WOULD LEAVE
a website that didn't predict what they liked or needed
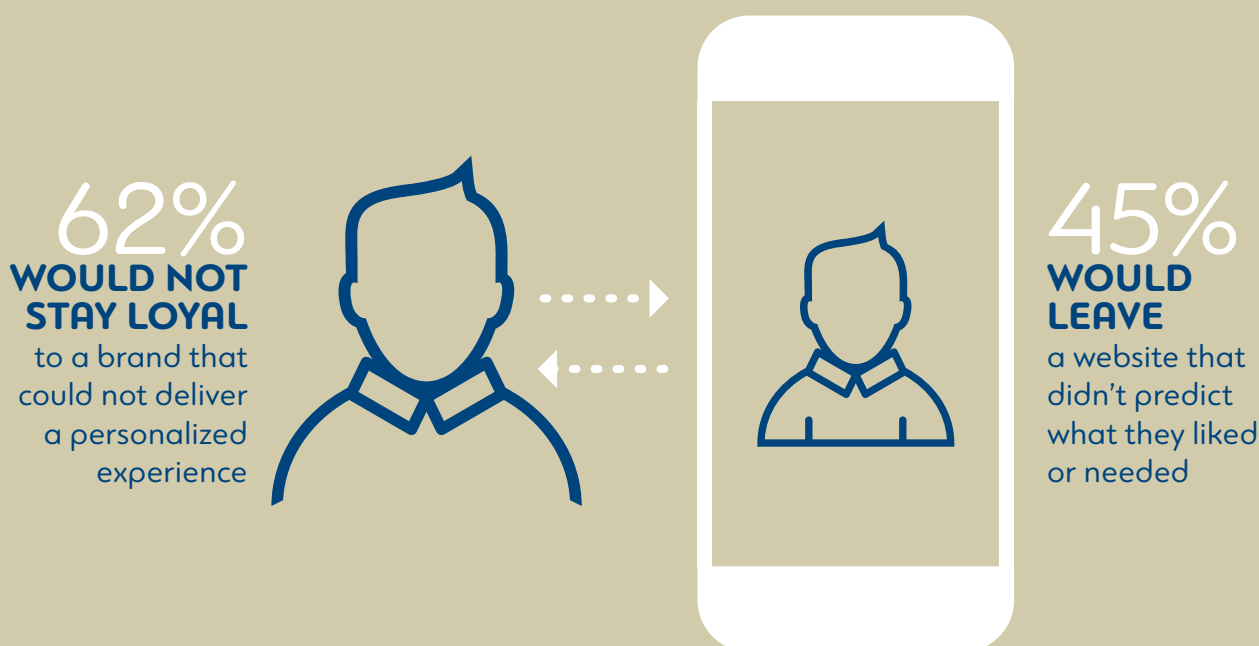
Personalization is increasingly a key factor in winning over and retaining a customer. In 2022, **62% of consumers stated that they would not stay loyal to a brand that could not deliver a personalized experience**[10]. Gen Z shoppers in particular have overwhelmingly come to expect personalization, with more than half stating they believe in tailored experiences and **45% stating they would leave a website that didn't predict what they liked or needed**[11].

8.   https://www.pwc.com/gx/en/consumer-markets/global-consumer-insights-survey-2023-01/feb-2023-global-consumer-insights-survey-pulse-5-pwc-global.pdf
9.   https://www2.deloitte.com/us/en/pages/consumer-business/articles/retail-distribution-industry-outlook.html
10. https://www.statista.com/statistics/1332284/marketing-personalization-consumer-loyalty/
11. https://www.statista.com/chart/29429/personalization-gen-z-online-experience/

Not everyone knows what ESG (Environmental, Social, Governance) stands for but whether they do or not, consumers seem more willing to support a brand or business if it upholds values that are important to them - even if that means spending more. Among European consumers, environmental concerns such as environmentally friendly packaging, sustainably sourced materials, and fair trading practices are important to more than half of those surveyed. Around half of consumers also indicated they value transparency and authenticity in brands and companies they buy from, as well as companies that prioritize employee well-being[12].

An overwhelming

70%

of consumers claimed

they would be willing to pay more for food and groceries from local producers and for goods coming from companies known for ethical practices[13] - at least to "some extent".

THE "ETHICAL PRACTICES" COMPANY

12. https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/an-update-on-european-consumer-sentiment
13. https://www.pwc.com/gx/en/consumer-markets/global-consumer-insights-survey-2023-01/feb-2023-global-consumer-insights-survey-pulse-5-pwc-global.pdf

SOLUTIONS PRESENTED BY NEW TECHNOLOGIES

Hyper-personalization with AI

If there is an overarching theme of addressing consumers' changing needs, it is this: Meet them where they are. It sounds simple enough - the challenge, of course, is navigating all the different ways of achieving it. It is notable, for example, that **40% of retailers still struggle with delivering relevant product recommendations[14].**

AI can be at the forefront of personalizing the customer experience down to the individual like never before. Before anything else, however, it's crucial to note that, despite the speed at which the technology has advanced and spread, the challenge of successfully implementing it must not be underestimated. The vast majority of consumers claim to have little or no trust in retailers' ability to use AI responsibly as part of their business[15], while only half of retailer executives surveyed are confident in their business's ability to deploy AI effectively in their operations[16]. That said, consumers largely understand that AI is rapidly becoming part of the retail experience - particularly in customer service[17].

"Hyper-personalization" is the goal to work towards, and AI technology affords retailers several different ways of achieving it. Most businesses today have enormous amounts of data about their customers, from their purchasing decisions to their preferred channels. Through solutions utilizing AI and machine learning, they can integrate and combine data from across their organization to offer personalized marketing, tailor product recommendations down to the individual, and provide relevant experiences that help the customer engage with the brand on a deeper level.

40%
of retailers still struggle with delivering relevant product recommendations

14. https://emarsys.com/learn/white-papers/the-omnichannel-difference/
15. https://www2.deloitte.com/us/en/insights/industry/retail-distribution/holiday-retail-sales-consumer-survey.html
16. 2023 Deloitte Global Retail, Wholesale and Distribution Executive Survey
17. https://cxtrends.zendesk.com/

DATA POWERING AI INSIGHTS

Purchasing history

Demographic data

Geographical data

Personally identifiable data

AI

Generating relevant product recommendations

Providing relevant experiences through content or activations

Leveraging relevant cultural touchpoints, local holiday events

Providing tailored in-store or online customer service
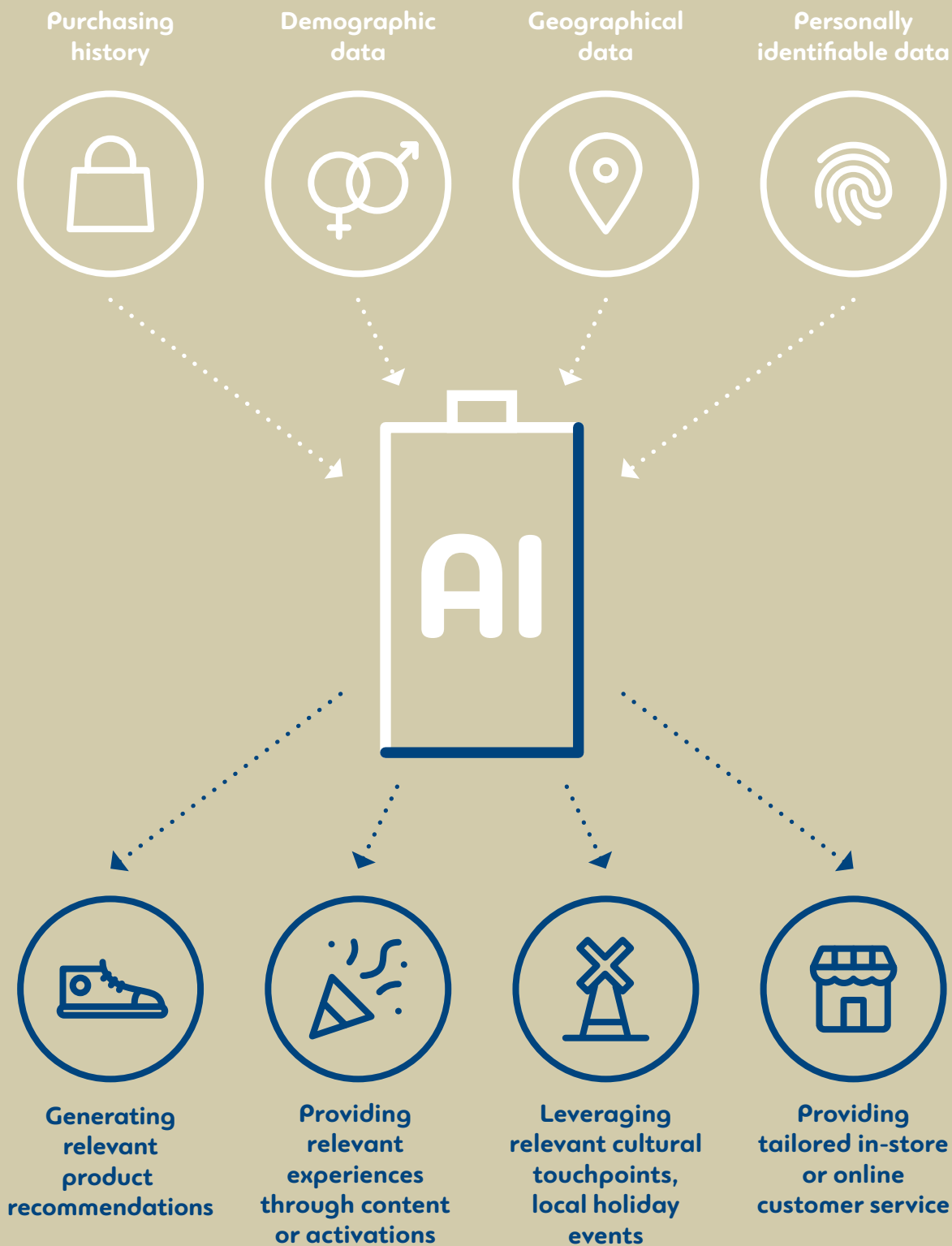
AI SOLUTIONS FOR PERSONALIZATION
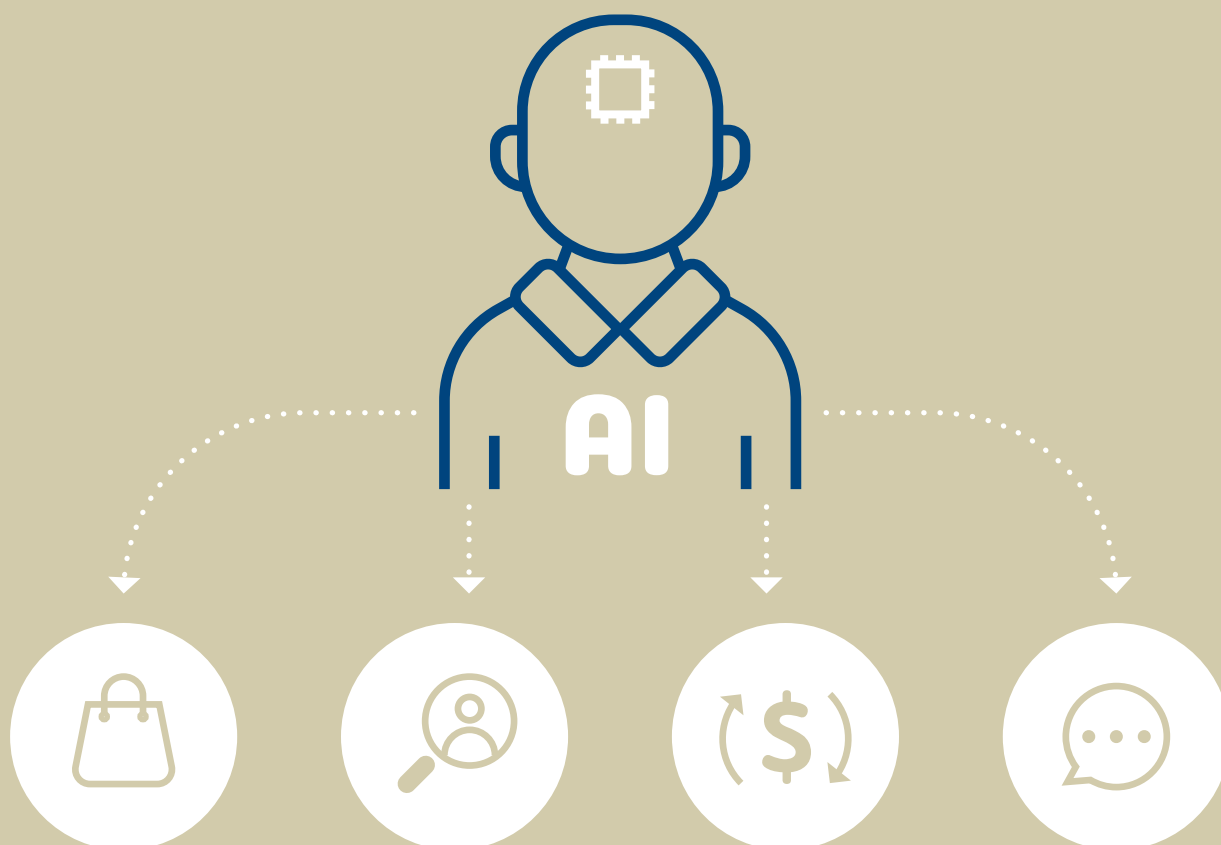
Product recommendations:
By analyzing customer data including purchasing history, search history, demographic data, and more, AI-powered solutions can generate accurate recommendations at scale while being able to focus on each individual customer.

Customer segmentation:
AI can help retailers better understand who their customers are by segmenting them based on data like preferences and demographics. Customer groups created by AI analytics can be used for targeted marketing and personalized experiences.

Dynamic pricing:
AI algorithms can keep track of stock movements, analyze customer behavior patterns, and take into account broader market developments to dynamically suggest competitive pricing and personalized discounts.

Personalized customer service and content:
Generative AI can be leveraged in the form of chatbots and virtual assistants offering tailored advice and information to customers. It can also be used in content production that can be targeted to specific customer segments.

Enabling diverse payment options

Attracting the right paying customers to your business is key - particularly the "paying" part. While consumers' disposable income is not what it used to be, it's vital for businesses to be able to accommodate customers when and how they wish - or can afford - to pay for the products and services they want.
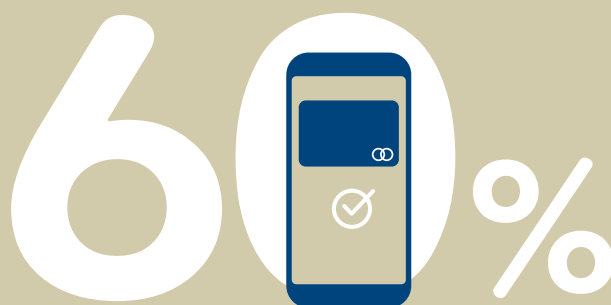
Post-pandemic trends have seen significant increases in credit card and digital wallet usage, enabling many markets to move away from cash and into more tech-friendly solutions.

And while physical cards remain the most popular payment methods, **52% of consumers globally say they are comfortable relying on a digital wallet solution such as Apple Pay or Google Pay,** opting to store their cards in such wallets rather than carry a physical one - which more than half believe will be obsolete in the near future[19].

60%

of consumers across Europe and North America have stated that **they are using digital payment solutions more often** since they changed their habits during the pandemic, **which allows them to control costs and feel more secure when paying online.**[18]

The **Buy Now, Pay Later (BNPL)** trend is set to remain a powerful tool in a business's payments belt in the coming years as well, despite the challenges this model has faced recently. **Total BNPL transaction value in 2024 is expected to reach $334 billion**, while the BNPL market is forecast to grow 105% from this year to 2028[20].

The picture changes slightly when we focus on the Greek market in particular, where it's interesting to observe the the contrast with international trends. Cash or cash-on-delivery remain the dominant payment methods, with prepaid, debit, and credit cards coming in second. Digital wallets and BNPL follow by some distance, falling behind even electronic bank transfers. Unsurprisingly, **younger demographics favor more modern payment options, but even they seem to opt for cash methods more than anything else**[21].

It is up to businesses to provide a sufficiently broad range of payment methods to their customers, with an emphasis on flexibility and choice. At the same time, opportunities lie in educating customers about different payment options they might not have considered before (such as BNPL) and in understanding customer pain points with various payment methods.

18. https://usa.visa.com/dam/VCOM/blogs/visa-back-to-business-study-one-year-edition-sep21.pdf
19. https://www.paysafe.com/gb-en/resource-center/lost-in-transaction-2023-3-key-findings-from-our-latest-consumer-payment-trend-research/
20. https://www.juniperresearch.com/research/fintech-payments/ecommerce/buy-now-pay-later-research-report/
21 https://focusbari.gr/wp-content/uploads/2023/05/%CE%A4%CF%81%CF%8C%CF%80%CE%BF%CE%B9-%CE%A0%CE%B-
    B%CE%B7%CF%81%CF%89%CE%BC%CE%AE%CF%82-GR.pdf

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As customers prioritize different needs and products and have smaller budgets to allocate, it becomes especially important for retailers to be able to accept their business in the manner most convenient to those customers who choose to spend their money with them.

PREFERRED PAYMENT METHODS AMONG GREEK CONSUMERS (%)[22]

3%
Revolut card (physical/digital)

1%
Payzy by Cosmote

1%
BNPL

1%
N26 card
(physical/digital)

6%
Digital wallets
(Apple Pay,
Google Pay)

29%
Debit card (physical)

14%
Bank transfer
(e-banking)

MODERN

DIGITAL

TRADITIONAL

3%
Credit card
on mobile

7%
Debit card
on mobile

8%
Credit card (physical)

3%
Prepaid card
(physical/digital)

23%
Cash/Cash on delivery

22. https://focusbari.gr/wp-content/uploads/2023/05/%CE%A4%CF%81%CF%8C%CF%80%CE%BF%CE%B9-%CE%A0%CE%B-B%CE%B7%CF%81%CF%89%CE%BC%CE%AE%CF%82-GR.pdf

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Embrace omnichannel

One trend that was accelerated by the pandemic and remains equally as important today, if not more so, is **omnichannel**. A solid omnichannel strategy empowers customers to opt for the shopping channel they want, whether in-store or online, with the assurance that the experience will remain consistent and that they will be able to find what they're looking for regardless of how they get there.

As we have seen, cost-conscious consumers are already becoming more selective about where to spend their money. It follows that they will value convenience and consistency - in fact, **three out of four consumers say they stay more loyal to stores that provide consistent experiences and services**[23].

CONSISTENCY GETS LOYALTY 3 OUT OF 4 TIMES!

Retail executives also recognize the need to provide consistent experiences online and offline. When surveyed on top growth opportunities for 2024[24], those highlighted included the following:

44%	Strengthening digital commerce offerings
36%	Enhancing in-store customer experience
32%	Enhancing omnichannel experience

23. https://www.merkle.com/en/merkle-now/ebooks/2022-loyalty-barometer-report.html
24. 2023 Deloitte Global Retail, Wholesale and Distribution Executive Survey

It's not hard to see why these areas offer opportunity. For more and more consumers, the choice is no longer whether to buy online or in-store. It's much more important to them to determine what kind of experience they wish to have at a given moment, and what kind of purpose each channel serves for them.

For example, when buying online and picking up in-store,

54%
of consumers say that **it helps them check products for faults** or verify that they actually got the product they wanted.

41%
of consumers who prefer to shop in-store have said that **they have missed doing so during lockdown periods.**

40%
of those consumers who plan to shop more in-store do so in order to **save money on high delivery costs.**[25]
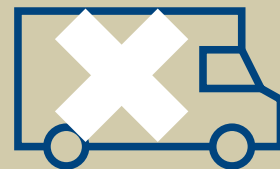
Supply chain and shipping challenges, which we'll look at later on, have also led to increased delays that frustrate shoppers who expect their purchases to arrive at the expected times, particularly during holiday periods[26].

It is therefore key for retailers to enable "seamless shopping", **allowing customers the flexibility to** browse, buy, and receive **their purchased items where and when they want.**

25. https://www.pwc.com/gx/en/consumer-markets/global-consumer-insights-survey-2023-01/feb-2023-global-consumer-insights-survey-pulse-5-pwc-global.pdf
26. Deloitte, Omnichannel holiday analysis, December 2023

Buy Online, Pick up In Store

is a major expression of seamless shopping. Offering customers the ability to check available stock and make their order online, and allowing them to pick up their purchase at the store of their choice, saves both shipping costs and time, since customers can go straight to the outlet that has the item they want in stock.

While seemingly a contradiction, the reverse is also a possibility.

Buy In Store, Ship to Home

is based on physical locations becoming effective showrooms for the business, where customers can browse through available items, buy what they want, and have it delivered to their homes. This allows a business to occupy a smaller space and not worry about replenishing stock at every outlet and provides a space for the customer to have an in-store experience, complete with the flexibility to pay in the method of their choice, even cash, without having to carry potentially heavy or bulky items with them.

A robust returns infrastructure is also key for a seamless experience.

Buy Online, Return In Store

is another trend that is embraced by consumers. Compared to online returns, being able to return an online purchase in-store gives customers greater confidence that the returned item will

reach the retailer safely and saves on shipping costs - a positive for both the customer and the business, regardless of who shoulders the cost. Having customers actually come into a physical outlet to return an item can also be instrumental in retaining such customers with alternative offers or suggestions on what to buy instead-or just having them browse for something new.

RETAIL JARGON

BISSTH

BOPIS

BORIS

Buy In Store, Ship to Home

Buy Online, Pick up In Store

Buy Online, Return In Store
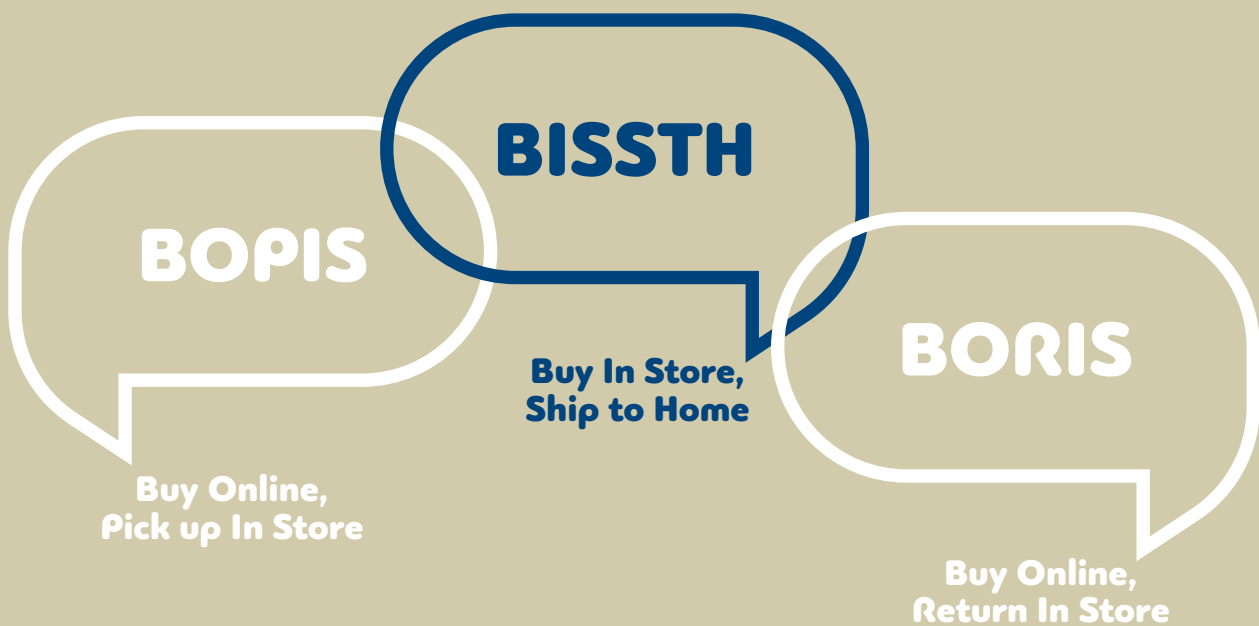
Consumers are certainly embracing these trends:

59% of consumers support the idea of **browsing online and buying in-store**

54% of consumers say they are more likely to **check a product in-store and buy it online afterwards**

58% of consumers also confirm that **having such flexibility is important to them**[27]

27. https://www.shopify.com/plus/commerce-trends

Engagement through the metaverse

Maturing technologies in the virtual space offer an alternative avenue for customer engagement that wasn't there before. **Augmented and virtual reality (AR/VR) and the metaverse** are constantly evolving and are reac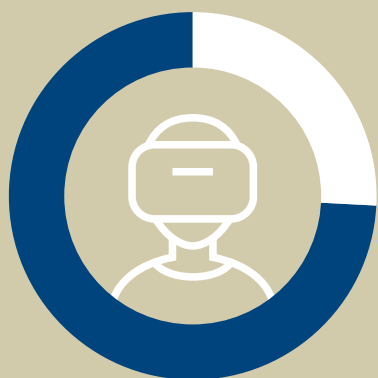hing a point where consumers are starting to get more familiar with such applications, even if they don't yet fully grasp their potential.

ONLY 26%
had participated in activities related to the metaverse

A problem here is that only 26% of consumers had stated in 2023 that they had participated in activities related to the metaverse, whether for shopping, entertainment, or gaming. **A key hurdle is the relatively low adoption of the equipment needed to fully immerse oneself in the metaverse - namely, a VR/AR headset**, which can be both expensive and unwieldy to use for most people. In fact, the market for such devices saw a 8.3% decline year-over-year in 2023, although it is expected to recover this year[28].

The release of the **Vision Pro headset by Apple** is expected to bring some fresh attention to the sector, given Apple's ability to help product categories go mainstream when launching a relevant product. Other initiatives like **Meta's Ray-Ban smart glasses** could further pave the way for wearable devices with smart capabilities[29].

Metaverse applications don't have to limit themselves to headsets, however. Using AR technologies can help brands reach customers in different ways, whether remotely or in-store. **Virtual showrooms or fitting rooms can be used to display products to customers in a fully-realized 3D environment**, allowing them to customize or combine items on the fly. **Virtual events and activations that can be accessed from a computer or mobile device**, can generate increased engagement with the brand - Tommy Hilfiger made headlines last year for launching virtual spaces in a number of metaverse-related platforms such as **blockchain-powered VR world Decentraland** and **online video game creation platform Roblox** for its Metaverse Fashion Week 2023 event[30].

Such initiatives are not only useful engagement and marketing tools but can also create opportunities for new products and revenue sources - in the previous example, Tommy Hilfiger has been selling virtual outfits for use within these metaverse spaces. Taking a page out of the digital entertainment industry, retailers can also cultivate brand loyalty as customers evolve into community members and actively participate in the brand. This can involve, for example, **inviting community members to design their own versions of digital products or online-to-offline rewards that can be claimed in physical stores or online orders to entice cost-conscious customers.**

28. https://www.idc.com/getdoc.jsp?containerId=prUS51574023
29. https://www.ray-ban.com/usa/ray-ban-meta-smart-glasses
30. https://mobilemarketingmagazine.com/tommy-hilfiger-launches-multi-metaverse-hub/

STARTUP HIGHLIGHTS

Advisable (Greece)

advisable.ai
AI, Personalization

Advisable is a consulting startup advising businesses on digital transformation, digital marketing, AI development, and technical project implementation. Most recently, the company has developed Advisable AI, an AI-powered recommendation system for retailers that aims to improve personalization and deliver more accurate suggestions to customers, thus increasing order sizes and boosting customer loyalty.

"If you own or administrate an e-commerce business and you want to steadily increase your sales, then yes, it is for you!"

Safesize (Greece)

safesize.com
Personalization, Metaverse

Safesize combines 3D-scanning technology and a self-learning recommendation algorithm to help customers find the right-fitting shoes for them by scanning their feet. Its products include an in-store solution for physical retail as well as an online fitting tool for e-commerce applications. The startup claims its solutions can help retailers reduce product returns and optimize their inventory and production.

"We bridge the gap between in-store and online retail by creating a personalized, data-driven, unforgettable yet seamless shopping experience for every customer anywhere, anytime."

Rapyd (UK)

rapyd.net
Payments

Rapyd provides fintech solutions for business across different sectors. Its services include card acquiring, cross-border payments, e-commerce, payroll, and more. The company claims to integrate several payment networks and technologies into a single platform, providing businesses with a one-stop shop for accepting, receiving, and moving money worldwide.

"Whether it's reaching new markets, growing sales, cutting costs or inventing ways to make commerce work for all — we're boldly building it, so you can build your business."

Gr4vy (USA)

gr4vy.com
Payments

Gr4vy operates an online payments platform that integrates several payment service providers in one place. This way, a business can accept payments from Klarna, PayPal, or Stripe and manage it all within one platform. Its no-code implementation supports over 100 payment methods and several payment providers worldwide.

"We work with leading companies and solution providers around the world to bring you the best options for your payment stack."

Intelistyle (UK, Greece)

intelistyle.com
AI, Personalization

Intelistyle uses AI to hyper-personalize the customer experience for fashion retailers. Its system crawls fashion photography from fashion shows to social media and creates styling recommendations with outfits and clothes based on what customers have recently bought, want to buy, or own already.

"By understanding the latest fashion trends, the customer's style, preferences, and unique needs, we produce instant and free recommendations from their wardrobe and retail partners to complete their dream looks."

Eberus (Greece)

eberus.com
Personalization, Metaverse

Eberus offers a CMS-like solution for retailers that allows them to create photorealistic digital representations of their wares and showcase them through animation and interactive 3D visuals. The assets can be used both on the web as well as through augmented reality applications to allow customers to visualize, customize, and try on digital versions of products they're interested in.

"Produce, publish — and instantly update— engaging content suitable for any e-commerce, social media, education, presentation, or any other use."

Condense (UK)

condense.live
Metaverse

Condense has built a platform for creating live events in virtual spaces. From concerts to sports to any kind of performance, the company can capture 3D video in real-time and stream it live to web and metaverse platforms, using cutting-edge visual effects and computer graphics technology.

"Spatial computing is opening up new ways for audiences to engage with high-quality content. The demand is only going to increase."

CHALLENGE: SUPPLY CHAIN DISRUPTIONS

A vital part of the equation in 2024 is getting wares in front of consumers in the first place. The challenges of recent years have shown no signs of abating, with geopolitical tensions forming choke points along crucial trading routes and hindering access to materials and manufacturing.

The impact of the war in Ukraine has continued to reverberate across global trade, with severe disruptions in the supply of raw materials and increased sourcing challenges[31]. Not to be outdone, the end of 2023 brought to the fore fresh geopolitical as well as environmental challenges at some of the world's most vital shipping routes. Conflict at the entrance to the Red Sea has resulted in lost cargo, delayed shipments, and turbulence in the market as the conduit for an estimated 12% of global trade is at risk[32].

And the challenges are not only geopolitical; rapidly deteriorating environmental conditions across the globe play their own part in this saga. On the other side of the world, unprecedented drought conditions in the Panama Canal have created shipping traffic jams in the all-important strait. Low water levels have forced operators to reduce the number of ships allowed to pass through the Canal, leading to increased delays and costs for suppliers[33].

The impact is far from theoretical. Even if they don't know much about it, consumers felt the supply chain pinch in 2023, right in their pockets - and this has necessitated hard decisions on how to allocate dwindling budgets and what to prioritize. **Out of consumers surveyed globally, nearly seven out of ten said that rising prices had the most significant impact on their in-store purchasing decisions, while 48% zeroed in on higher prices of household items when asked about constant issues they face when shopping online**[34]. Both sets also identified the major issue of not being able to find the goods they were looking for because they were out of stock or would take longer to deliver than anticipated.

CRUCIAL TRADE CONDUITS
Percentage of global trade passing through every year[35, 36]

12% <--------> **5**%

Suez Canal   Panama Canal

31. https://www.oecd.org/ukraine-hub/policy-responses/the-supply-of-critical-raw-materials-endangered-by-russia-s-war-on-ukraine-e01ac7be/
32. https://www.bbc.com/future/article/20240119-red-sea-crisis-how-global-shipping-is-being-rerouted-out-of-danger
33. https://foreignpolicy.com/2024/01/15/panama-suez-canal-global-shipping-crisis-climate-change-drought/
34. https://www.pwc.com/gx/en/consumer-markets/global-consumer-insights-survey-2023-01/feb-2023-global-consumer-insights-survey-pulse-5-pwc-global.pdf
35. https://www.bbc.com/future/article/20240119-red-sea-crisis-how-global-shipping-is-being-rerouted-out-of-danger
36. https://foreignpolicy.com/2024/01/15/panama-suez-canal-global-shipping-crisis-climate-change-drought/

The continuing environmental decline is expected to make a massive dent in global supply chains and economies. A recent study quantified for the first time the expected economic impact of worsening environmental conditions on global supply chains. According to the study, **supply chain disruptions due to climate change will incur projected net economic losses of between $3.75 trillion and $24.7 trillion in adjusted 2020 dollars by 2060, depending on the size of carbon emissions**[37].

Ironically, the problem is cyclical: **Those same supply chains that are being impacted by climate change are responsible for an overwhelming percentage of emissions that contributed to the problem in the first place.** A McKinsey study in 2016 found that a typical consumer company's supply chain has a much larger environmental impact than the company itself - one that accounts for more than 80% of greenhouse gas emissions and more than 90% of the impact on air, land, water, biodiversity, and geological resources[38].

As climate conditions continue to worsen, crucial infrastructure will be affected. Rising sea levels can affect ports that are vital hubs for shipping, creating unexpected bottlenecks. Prolonged drought can block waterways that are key freight routes. Population displacement due to climate change can sever entire links to the supply chain that are not even visible at the moment. It's therefore existential for businesses to carefully review their supply chains, diversify as much as possible, and ideally, begin to implement environmentally friendly processes.

SOLUTIONS PRESENTED BY NEW TECHNOLOGIES

AI in demand forecasting, supply chain predictions, and omnichannel

Faced with unpredictability, the goal for businesses should be to mitigate it as much as possible. Breakthroughs in artificial intelligence and predictive analytics can enable more informed decision-making, more efficient management of resources, and increased flexibility in order to adapt to rapidly changing circumstances.

In this, as increasingly in so many other areas, data is key. **AI and machine learning technologies are not only more advanced but also becoming cheaper to access and more widely available.** Thus, businesses can store and analyze large amounts of information including historical sales data, market trends, financial data, and other key variables.

Equipped with such data and AI algorithms, the retailer can implement a true omnichannel strategy that ensures the right products are available at the right time and can be routed through the appropriate channels according to customers' needs.

37. https://www.sciencedaily.com/releases/2024/03/240313135634.htm
38. https://www.mckinsey.com/capabilities/sustainability/our-insights/starting-at-the-source-sustainability-in-supply-chains

Optimizing its supply chain in this way allows a business to create more predictable outcomes in the face of continuing unpredictability, mitigate adversity, and even reduce its carbon footprint as it creates more efficient processes and avoids wasted resources.

ADVANTAGES OF AI APPLICATIONS FOR SUPPLY CHAIN OPTIMIZATION:

Real-time visibility

Supply chains are notoriously opaque - most businesses are likely to have very little visibility across the entire chain of multiple companies, providers, and jurisdictions. But **an AI-powered system, fed with data from a variety of sources including suppliers, manufacturers, logistics, and more, can help businesses large and small keep better track of inventory, track shipping, identify bottlenecks and disruptions, and respond in a timely fashion.**

Fraud detection

By having increased visibility across the supply chain, **AI-powered analytics can identify and alert businesses about fraudulent activities** like theft, product counterfeiting, or cyberattacks.

Demand forecasting

Using AI, retailers can monitor and study exactly how much demand for specific products or services there is by analyzing data sets from sales records to economic conditions. AI technology is getting better at being able to analyze such unstructured sources of data and produce actionable insights that can tell a business how to allocate its resources at any given time. Such insights can, in fact, be shared across the length of the supply chain, resulting in better coordination and scheduling to ensure minimal disruptions and mitigate waste of effort and resources.

Warehouse and transportation automation

AI and machine learning can help a business optimize its warehouse and transportation infrastructure by analyzing data from past orders to product movement down to the individual item. **AI-produced insights can result in more efficient product placement, pickup routes, and optimized space allocation.** This can be combined with hardware automation so that the right item is picked and processed at the right time, ensuring an efficient and speedy process.

Leveraging the metaverse

Metaverse technology combines cutting-edge technologies including virtual and augmented reality (VR/AR), cloud computing, and advanced computer graphics to create an interconnected online environment for a variety of applications. While the metaverse's highest-profile applications have mostly been related to entertainment, many organizations see the technology as a brave new world for productivity, collaboration, communication, and training. **The market for metaverse applications is expected to reach $74.4 billion in value in 2024**[39].

When it comes to the supply chain, metaverse technologies can bring to the table their unique potential for remote team collaboration, data visualization, and environment simulation:

MANUFACTURING VISUALIZATION

By creating 3D visualizations of manufacturing processes and environments, businesses can more efficiently preview products and processes to better allocate resources and prioritize, ensuring the right products leave the manufacturer at the right time. This allows a higher degree of transparency for retailers, as they can visualize and monitor all the steps of the manufacturing process virtually. It also allows for the manufacturing of more personalized items at manufacturers who have so far focused on mass production of the same products.

REMOTE COLLABORATION

Given the complexity and cross-border nature of supply chains, the metaverse's collaboration features are an ideal way of collaborating with teams around the world in a more direct, organic way than what a video conference provides. Collaboration through the metaverse doesn't just involve communication and dialogue but can take the form of completing actual tasks in concert with remote colleagues and partners. These can be both training scenarios that improve processes and exchange knowledge, but also real-time tasks that improve efficiency and speed up timelines.

REAL-TIME CUSTOMER ANALYTICS

Through consumer-facing virtual events, a retailer can gather valuable data about its customers and what kinds of products they are interested in. Besides increasing its brand's visibility, this can also help the retailers to better plan product orders and enable them to offer added personalization and tailored services to each customer.

39. https://www.statista.com/outlook/amo/metaverse/worldwide

STARTUP HIGHLIGHTS

Dataviva (Greece, USA)

dataviva.com
AI automation

Dataviva uses AI solutions to help businesses in faster decision-making and better planning. It uses advanced analytics and machine learning to help various retail sectors optimize their inventory management, forecast demand for existing products as well as brand-new ones, and adjust tactics accordingly to maximize their ROI. Its solutions include Merchandise & Assortment, Supply Chain, Demand Forecasting, and Price & Promotion.

"Dataviva can point planners to what they should focus on next, why and how best to proactively manage reality vs the plan."

Leafio (USA)

leafio.ai
AI automation

Leafio is a software platform that uses AI and automation to optimize various aspects of retail business, including inventory management, ordering, product placement, and promotional campaigns. It helps retailers improve efficiency, reduce costs, and increase sales through features like demand forecasting, automated replenishment, and data-driven insights.

"Implementing retail product planning software greatly simplifies and optimizes the work of demand forecasting, managing turnover and retail space, and controlling sales."

Monstock (France)

monstock.net
Omnichannel

Monstock streamlines stock management for businesses, offering a hassle-free and affordable digitalization solution that scales with their needs. By making inventory data accessible on smartphones, Monstock empowers businesses with 24/7 access to their inventory, sales, and warehouse status. This allows them to view product information, generate quotes, and track orders even while they're away from their desks.

"Control your data, from purchase request to payment, and facilitate day-to-day purchasing functions by automating your processes and centralizing purchases."

Ordoro (USA)

ordoro.com
Omnichannel

Ordoro's software helps online sellers manage their orders and inventory across all their sales channels. It does this by connecting to different marketplaces and shopping carts through an open API. This connection allows sellers to easily manage shipping and inventory in one place, freeing up their time to focus on growing their business.

"Our goal is to provide small-to-medium sized businesses with the same back-office tools that large-scale corporations have — at an affordable price."

Kivos (Greece)

kivos.ai
AI automation

Kivos uses AI and ML technology to power a retail merchandising automation solution. The company leverages data and algorithms to come up with automated planning decisions that allow the retailers to optimize their merchandising processes, improve promo and price strategies, and compensate for supply chain unpredictability through data-driven insights.

"We're developing a platform that is powerful enough to model real-world scenarios, complex enough to take on retail challenges, and reliable enough to account for uncertainties."

Keyvoto (Greece)

keyvoto.com
AI automation

Keyvoto is a platform designed to help brands and retailers efficiently manage their product information by creating, storing, and sharing product data across various channels consistently and accurately. This centralized approach improves collaboration, enhances customer experience, and maximizes sales opportunities in a competitive online environment. By providing tools like automated insights and promotion tracking, Keyvoto helps businesses stay informed and competitive in the digital marketplace.

"People engage with your products long before they purchase them, that's why you have to use product content to engage buyers and drive purchase decisions."

CHALLENGE: CYBERSECURITY BECOMES A PRIORITY

We have seen how being increasingly interconnected and reliant on data is not just an imperative for businesses but also a demand from consumers. This presents a conundrum for retailers who, as a result, find themselves in the position of data controllers and processors for hundreds, thousands, or hundreds of thousands of users. In 2024, an interconnected system that relies on and brings together business data, supply chain data, and customer data is a goldmine for potential bad actors - a cybersecurity risk.

In recent years, cyberattacks have been growing in both number and complexity, evolving together with technological advances to create ever more sophisticated threats. **In 2024 alone, more than 5,000 publicly disclosed data breaches and attacks have taken place, potentially compromising more than 30 million records**[40]. While retail was not one of the sectors most exposed to the risk of cyberattack, it's not hard to imagine why it would be attractive to bad actors.

And while it's tempting to think that it's mainly large, rich multinationals that have to worry about cyberattacks, this is, unfortunately, not the case. Research shows that **43% of cyberattacks target small and medium-sized businesses**[41]**, which are less likely to have a robust cybersecurity infrastructure or a team of experts in place to defend themselves**.

**In 2024 alone,
more than
5,000
publicly disclosed
data
breaches
& attacks
have taken place.**

Sensitive data stored or processed by a retailer can span a broad spectrum with varying degrees of value to an attacker. Supply chain information; customer personal data (including home addresses, contact details, log-in information, and more); financial transaction data (including credit card numbers, and bank account details); IoT data generated by smart devices across an organization's stores and outlets; these are just some examples of data that might be targeted by a threat actor.

40. https://www.itgovernance.co.uk/blog/global-data-breaches-and-cyber-attacks-in-2024
41. https://www.accenture.com/us-en/insights/security/state-cybersecurity

RETAIL
INNO ATION
HUB
BY cardlink

TOP SECTORS TARGETED
BY CYBERATTACKS IN 2024[43]

Healthcare

Public sector

Telecom-
munications

Professional
services

IT services
and software

Cybersecurity risks increase exponentially when we take into account technological advancements that allow threat actors to plan and execute attacks. **The proliferation of AI tools,** for example, **is a particular concern for cybersecurity experts**[42]. An attacker could use generative AI tools to create phishing content and malicious websites at scale or leverage its code-writing capabilities to develop malicious code in a fraction of the time it would take under normal circumstances, and with a lot less expertise. AI-powered analytics could be used to break down a brand's or a sector's entire supply chain and identify weak points and vulnerabilities.

AI-POWERED CYBERATTACKS

Effective
phishing content
and malicious
websites at scale

Malicious
code
development

Dynamic threats that
evolve and adapt
automatically
to avoid detection

Brute force attacks
that evolve according
to the defenses
they encounter

42. https://www.weforum.org/agenda/2024/02/what-does-2024-have-in-store-for-the-world-of-cybersecurity/
43. https://www.itgovernance.co.uk/blog/global-data-breaches-and-cyber-attacks-in-2024

BY cardlink

In the face of such risk, a robust cybersecurity infrastructure should be top-of-mind for retailers. Being compromised by cyberattacks can have far-reaching consequences that go beyond financial loss or temporary disruption of business. It was mentioned earlier that consumers consider trust in a brand as a key factor in staying loyal to that brand. Currently, **consumers trust the retail sector more with their data than any other sector, including social media, healthcare, and travel**[44].

A large-scale data breach, a ransomware attack (where a company's data is held hostage by an attacker in exchange for money), or other cyberattack has financial consequences, but on top of that it compromises trust in that company as its customers no longer feel safe sharing their data and patronage with it. The reputational damage that comes with that can be a serious risk to any brand, as any significant incident can resonate for years after the fact.
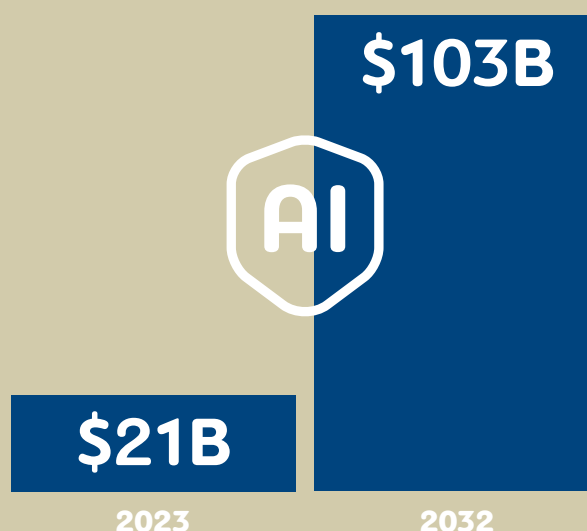
Consumers trust the retail sector
more with their data than any other sector.

SOLUTIONS PRESENTED BY NEW TECHNOLOGIES

AI in the front lines

Just as bad actors can leverage AI to create more sophisticated cyberattacks, so can businesses put AI to work to defend themselves. The use of AI is a major trend in cybersecurity and is expected to be for the foreseeable future as the arms race between cybersecurity experts and cybercriminals intensifies. Currently, **the market for AI in cyber threat detection is growing at a CAGR of 23.6% and is expected to be worth $46.3 billion by 2027, according to IDC**[45]. **Other analysts expect the market size of AI in cybersecurity to hit $103 billion by 2032**, up from $21 billion in 2023[46].

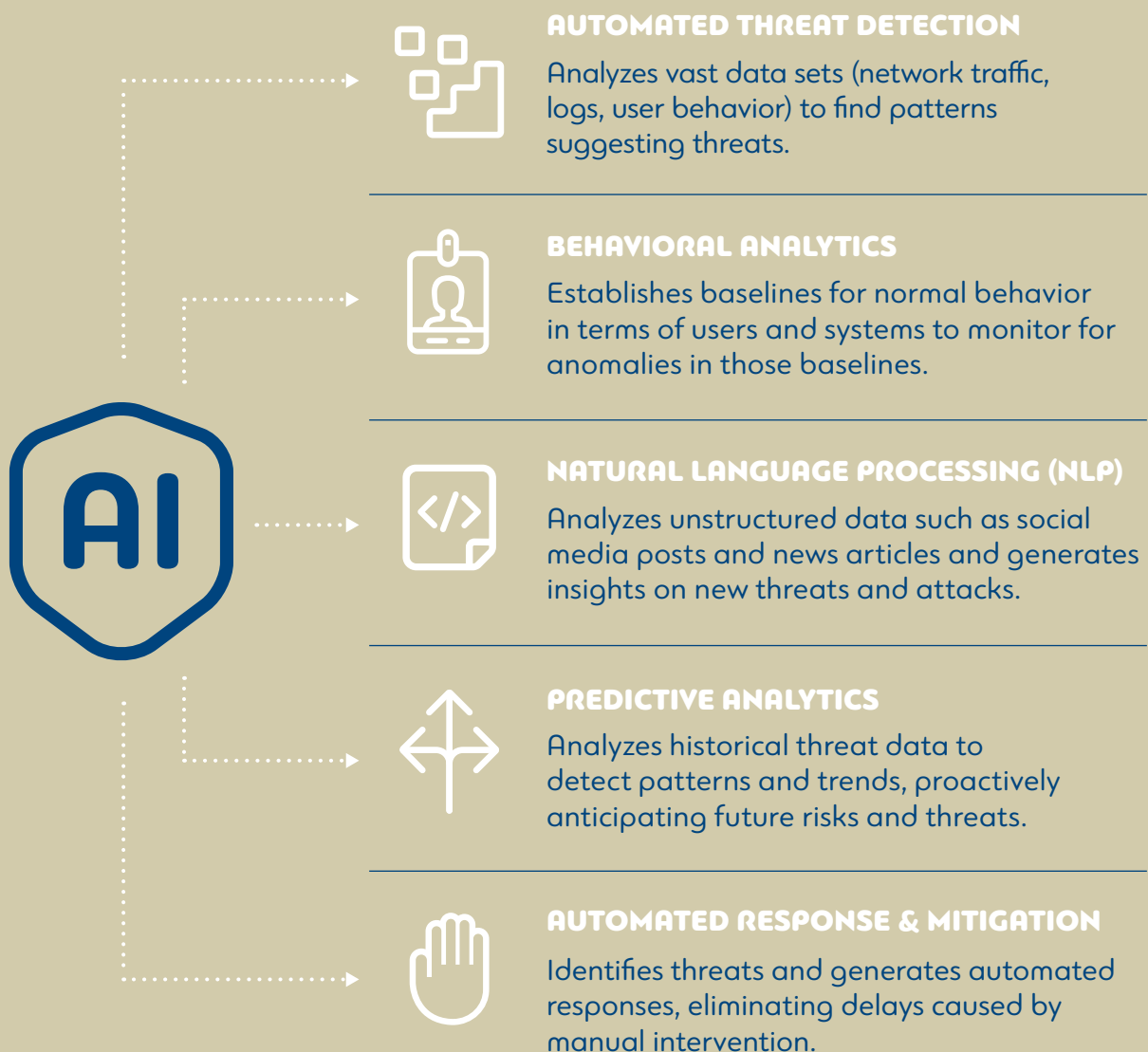### AI MARKET SIZE IN CYBERSECURITY

$103B

AI

$21B

2023   2032

44. https://www.pwc.com/gx/en/consumer-markets/global-consumer-insights-survey-2023-01/feb-2023-global-consumer-insights-survey-pulse-5-pwc-global.pdf
45. https://venturebeat.com/security/experts-predict-how-ai-will-energize-cybersecurity-in-2023-and-beyond/
46. https://www.precedenceresearch.com/artificial-intelligence-in-cybersecurity-market

AI can be a powerful tool for businesses, helping with threat analysis, detection, and response. It can be used to sift through vast amounts of data from online traffic to user behavior, in order to identify patterns and establish baselines that can then be monitored for suspicious behavior in real-time. The key advantage here is the automation of arduous and complex processes that would otherwise be too complex, too time-consuming, or too expensive to be implemented. AI-powered analytics could yield valuable insights that would help prevent an attack or provide sufficient warning for the business to mitigate it, at a fraction of the time and the cost of maintaining an always-on cybersecurity team.

AI IN CYBERSECURITY

AUTOMATED THREAT DETECTION

Analyzes vast data sets (network traffic, logs, user behavior) to find patterns suggesting threats.

BEHAVIORAL ANALYTICS

Establishes baselines for normal behavior in terms of users and systems to monitor for anomalies in those baselines.

NATURAL LANGUAGE PROCESSING (NLP)

Analyzes unstructured data such as social media posts and news articles and generates insights on new threats and attacks.

PREDICTIVE ANALYTICS

Analyzes historical threat data to detect patterns and trends, proactively anticipating future risks and threats.

AUTOMATED RESPONSE & MITIGATION

Identifies threats and generates automated responses, eliminating delays caused by manual intervention.

Cybersecurity training for employees

When it comes to cybersecurity, most businesses need to be aware of the weakest points in their defense - and those are often the employees themselves. In fact, **95% of cybersecurity breaches can be attributed to human error**[47] - an employee might fall victim to a phishing scam, or might use a non-secure device to access sensitive systems, giving attackers a way in.

95%

of cybersecurity breaches can be attributed to

human error

This makes employee education and training an imperative for businesses that want to ensure their defenses are strong across the board. **A vast majority of organizations (80%) that have implemented regular cybersecurity training for their employees report that their employees became less susceptible to tactics like phishing**[48].

CYBERSECURITY TRAINING RESULTS

EMPLOYEES BECAME **LESS SUSCEPTIBLE** TO TACTICS LIKE PHISHING

80%

And such an investment is money well-spent for businesses - a key study on the subject indicated that the ROI for security awareness training was 69% for smaller businesses and 562% for large organizations with more than 1,000 employees[49].

ROI FOR SECURITY AWARENESS TRAINING

SMALLER BUSINESSES

69%

LARGE ORGANIZATIONS

562%

47. https://www.weforum.org/agenda/2020/12/cyber-risk-cyber-security-education/
48. https://www.proofpoint.com/sites/default/files/threat-reports/pfpt-us-tr-state-of-the-phish-2021.pdf
49. https://ostermanresearch.com/2019/08/19/orwp_0313/

While there are several cybersecurity courses for businesses, any kind of training must be engaging and interesting for employees to connect with it. This is where metaverse technologies come in. By immersing employees in a virtual, interactive environment, employers can help them engage with specific cybersecurity scenarios where they can explore actions and consequences in a safe space, receive complex information using audiovisual cues, and take advantage of additional incentives through gamification.

This requires some up-front investment in finding the right partner or tool to implement such training in the metaverse but the benefits more than make up for it. Research has shown that **employees who train using VR have four times higher confidence and 3.75 times higher retention rate,** while also completing their training four times faster than traditional training methods[50].

EMPLOYEE TRAINING

WITHOUT VR

WITH VR

Confidence

Retention Rate

Training Time Completion
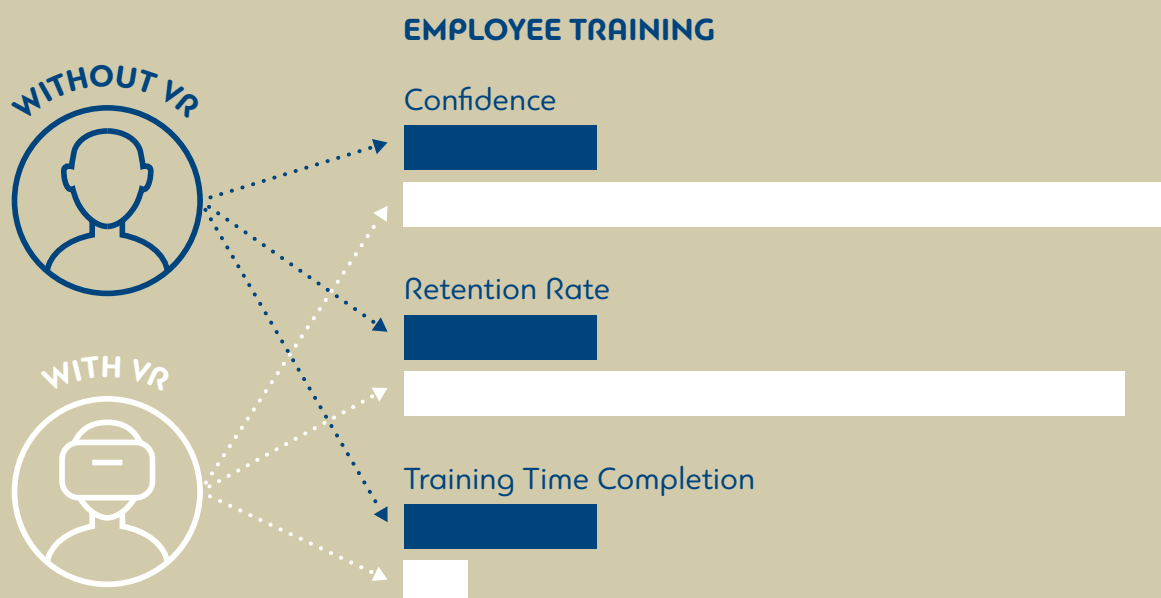
Securing your payments infrastructure

Perhaps the single most sensitive area that retailers need to keep secure and safe is payments. Customers who trust a business enough to enter their payment details into a website have a reasonable expectation that such details will remain safe and will not be abused.

These days, retailers are - rightly - encouraged to support as many payment methods as possible so they can accommodate customers' increasingly diverse preferences. But this also means that, as payments go digital and increasingly rely on complex online systems, they become more attractive to attackers.

50. https://www.pwc.com/us/en/tech-effect/emerging-tech/virtual-reality-study.html

A successful cyberattack on payments infrastructure can be disastrous for all involved. Potential fallout can include:

▷ **Instances of financial loss and identity theft for customers**
▷ **Loss of data, ransomware demands against the business**
▷ **Customer flight and erosion of trust as the business's reputation is impacted**
▷ **Legal consequences including fines, legal action by impacted customers**

It follows that, as a business moves to implement a broader range of payment options for its customers, it takes equally great care to safeguard these systems from cybercriminals. It also makes sense for businesses to emphasize the adoption of more modern payment methods versus traditional ones, as they tend to be based on more sophisticated technology and up-to-date security measures.

KEY

TECHNOLOGIES
TO FOCUS ON WHEN IMPLEMENTING PAYMENT OPTIONS AND SELECTING RELEVANT PARTNERS:
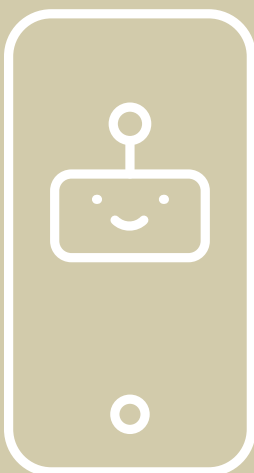
STRONG ENCRYPTION: Encryption is generally recommended for any business that handles large amounts of data. As data becomes an important asset for any business, the use of robust encryption technology is vital.

TOKENIZATION: This is a method of replacing financial details such as credit card information with unique tokens that validate the transaction and the customer's identity without revealing sensitive data.

BIOMETRICS: Most modern smartphones today have robust biometric authenticators, like fingerprint readers and facial recognition. Businesses can leverage those features to further secure transactions through their website or app.

MULTI-FACTOR AUTHENTICATION: Through their own infrastructure or by leveraging third-party partners, businesses can add an extra verification step for customers as well as for internal systems and processes. However, they need to be conscious that any extra steps do not compromise the user experience for the sake of security, but find ways to balance the two.

SECURE CLOUD INFRASTRUCTURE: Most businesses will not be maintaining their own server infrastructure, and that is for the best. Leveraging an established cloud provider can help businesses save on costs and resources, and give them access to a secure infrastructure with robust monitoring and support systems.

Omnichannel data security

The need to safeguard against online attacks is especially acute considering the imperative for maintaining an omnichannel strategy. A seamless experience across different platforms and touchpoints is a consumer demand. However, the only way to effectively implement it is through significant amounts of data, most likely including personal customer data, financial information, hardware data, data from third-party partners and suppliers, and more.

For attackers, the appeal is clear: Not only is there a treasure trove of data, but it's all sitting in one place - often a not very well-protected one. **If a business is not prepared to upgrade its cybersecurity practices and processes, it is not ready for a true omnichannel presence.** While customers trust the retail sector more with their data, that trust can easily and quickly evaporate after a large-scale data breach incident.

KEY PRACTICES FOR ENSURING A SECURE AS WELL AS EFFECTIVE OMNICHANNEL OPERATION

1
Data protection and cybersecurity training for employees

2
Securing of payment systems using encryption, authentication, and tokenization technologies

3
Deploying AI to stay one step ahead of bad actors

Finally, any company that needs to collect large amounts of data to power its omnichannel strategy also needs to be transparent about this fact with its customers. The General Data Protection Regulation (GDPR) and national data protection laws in Europe impose specific obligations on businesses regarding transparency and informing users about data collection and processing. Beyond those obligations, however, **retailers can go the extra mile and keep customers updated through various channels on exactly how their data is kept safe and the value such data unlocks for customers.**

STARTUP HIGHLIGHTS

Hack The Box
(Greece, UK)

hackthebox.com
Cybersecurity training

Hack The Box is a software platform that enables cybersecurity upskilling, certification, and talent assessment using gamification. The startup claims hacker bonafides that make it part of a 2 million-member community and uses gamified tools to help train individuals, businesses, and universities in cybersecurity. It counts Toyota, Intel, and Deloitte among its global clients.

"Our mission [is] to create and connect cyber-ready humans and organizations through highly engaging hacking experiences that cultivate out-of-the-box thinking."

Hanko
(Germany)

hanko.io
Authentication

Hanko develops open-source authentication solutions for e-commerce checkout systems, enabling password-free log-ins that provide a seamless experience to customers while boosting their security. It can offer a range from full authentication solutions to passkey APIs that can be plugged in to a client's existing authentication system.

"The future is passwordless — but today maybe not. Hanko provides a beautiful login that allows you to meet your users where they are, and carefully guide them into a world without passwords."

Payshield
(Australia)

payshield.ai
Secure payments

Payshield protects businesses from fraud with the help of AI-powered chargeback protection software. The platform claims to check over 16,000 data points to streamline and automate dispute and chargeback management, and prevent financial loss without affecting genuine customers. The company also allows clients to use 3D Secure to safeguard payment pages.

"We blend our technical prowess with a deep understanding of the financial landscape, enabling us to craft solutions that cater to the diverse needs of our clients."

Vectra (USA)

vectra.ai
AI, Cybersecurity

Vectra uses AI to automate threat detection. Its platform analyzes attacker behavior and creates a triage system where threats are correlated and attacks are prioritized. This enables the businesses to respond to threats in real-time, so they can prevent them before they become breaches.

"We find attacks others can't, at the speed and scale needed to stop attacks fast."

GMetri (USA)

gmetri.com
Metaverse

GMetri operates a no-code metaverse platform that helps businesses create immersive virtual environments for a range of use cases. It provides a simplified and cost-effective way for organizations to create immersive experiences that focus on employee training, virtual meetings, and shopping in VR. The company recently showcased its virtual environment for training employees on cybersecurity.

"Anyone can create and deploy metaverses in minutes, with auto-generated smart dashboards & analytics."

Takeaways

Throughout this report, we have looked at some of the most pressing challenges and areas of focus for retailers in the current landscape. New technologies give businesses the opportunity to innovate and reinvent key systems and processes in order to meet these challenges head-on.

But the reality is, not every business will be able to invest in every solution out there - nor should it. Depending on what the business needs and the goals it wants to achieve, there are tools and services that are best suited to the task at hand. It is on the business, then, to carefully map out its pain points and the roadmap to addressing them, and decide if this warrants developing custom solutions from the ground up or working with third parties such as startups.

For some businesses, these decisions are part of an already existing digital strategy. For others, they might be the start of their digital transformation. Regardless, a successful digital strategy can go a long way towards addressing the challenges we have discussed so far and build resilience and adaptability for the future.

AREAS OF FOCUS

There is no roundabout way of saying this: **Digital transformation costs a lot.** In most cases, and depending on a business's level of digital maturity, there are significant up-front costs involved in order to get the right infrastructure and processes up and running.
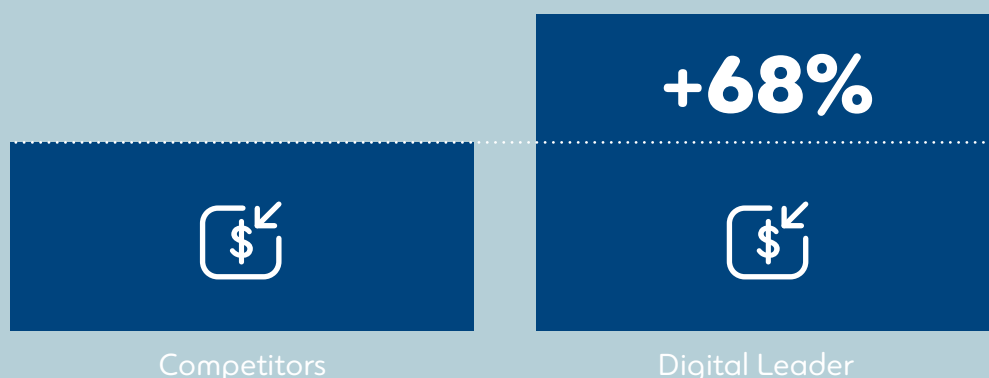
Yet, the retail sector is showing no signs of slowing down when it comes to such investment. According to Gartner, global IT spending in the retail industry was forecast to hit $197.1 billion in 2023, and is expected to grow at a CAGR of 6.9% to reach an estimated $262.6 billion by 2027[51].

GLOBAL IT SPENDING FORECAST IN RETAIL

$197.1B

2023

$262.6B

2027

While the spend can be significant, one must look towards the expected ROI and plan accordingly. Following the pandemic, data by McKinsey showed that businesses leading in digital outperformed their competitors in terms of returns to shareholders by 68% - and this was a trend that was visible before the Covid-19 era as well[52].

SHAREHOLDERS RETURNS

+68%

Competitors

Digital Leader

51. https://www.gartner.com/en/documents/4910931
52. https://www.mckinsey.com/industries/retail/our-insights/fashions-digital-transformation-now-or-never

The key areas identified in the research dovetail with the technology solutions outlined in this report, and for good reason - any business that focuses on any and all of those areas not only gives customers reasons to come back repeatedly, but also knows exactly who those customers are and what they want.

| AREA OF FOCUS	CORRESPONDING TECHNOLOGY
Strong omnichannel experience	AI, Data analytics, Payments, Automation
Personalization	AI, Data analytics, Cybersecurity
Supply chain optimization	AI, Data analytics, Virtual collaboration tools (metaverse), Cybersecurity
Digitization of product development	AI, Virtual collaboration tools (metaverse)
Build up data and tech capabilities	AI, Data analytics, Payments, Cybersecurity

A QUESTION OF COST

As we just saw, several key areas of focus overlap with AI technologies, which are becoming ubiquitous. From generating valuable insights through data analysis and machine learning, to generating engagement and content with generative AI, there are several degrees of AI tool deployment that a business can look into, depending on its needs and resources.

Retail is one of the top two sectors expected to invest the most in AI from 2022 to 2026, according to IDC, which forecasts that global spending on AI systems will go beyond $300 billion by 2026 with a CAGR of 26.5% between 2022 and 2026[53].

53. https://www.idc.com/getdoc.jsp?containerId=prUS49670322#:~:text=NEEDHAM%2C%20Mass.%2C%20September%2012,%24118%20billion%20in%20 2022%20and
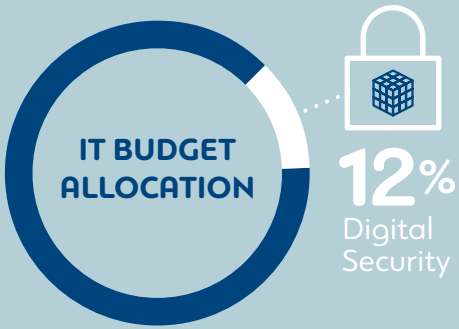
The cost of deploying AI solutions can vary greatly depending on the scale of the deployment. A business might want to build its own custom AI solution that suits its own needs specifically, or it might engage third party partners for different scales of deployment - starting with a chatbot service, for example, or subscribing to a SaaS-style cloud solution. A custom solution will certainly be more expensive than engaging a third-party provider but the decision depends on business objectives and available resources.

AI SOLUTION	COST [54]
Custom AI solution	$6,000 - $300,000 per solution
Third-party AI software	$0 - $40,000 / year

METAVERSE INVESTMENT RANGE

$400,000

$10,000
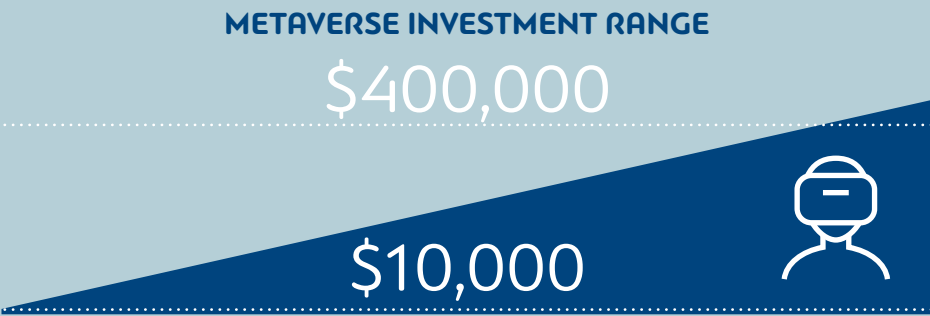
Metaverse applications can incur significant costs for a business, again depending on whether it will develop its own metaverse presence or work with specialized partners who do this work on a hire or subscription basis. Between costs of data and infrastructure, hardware such as headsets and sensors, content, and staffing, **a metaverse investment can range from $10,000 to more than $400,000**[55].

A robust cybersecurity investment, meanwhile, is harder to quantify because a) needs and use cases differ significantly from business to business and b) such an investment is of a preventive nature - however much it costs, it's made in order to protect the business from much higher costs down the line in the event of a successful cyberattack. That said, research shows that, on average, **companies around the world allocate at least 12% of their IT budget to digital security**[56].

IT BUDGET ALLOCATION

12% Digital Security

54. https://www.webfx.com/martech/pricing/ai/
55. https://appinventiv.com/blog/how-much-does-it-cost-to-develop-metaverse/
56. https://www.statista.com/statistics/1319677/companies-it-budget-allocated-to-security-worldwide/

INVESTING IN THE FUTURE

It's impossible to have digital transformation without significant investment. However, as businesses decide what to prioritize and budget, they need to keep their eyes on the big picture - a significant investment up front can help save on costs and resources later down the line as the business becomes more streamlined, efficient, and data-driven.

WHERE RETAILERS OF ANY SIZE SHOULD INVEST IN:

IMPROVED DECISION-MAKING THROUGH DATA
With AI and modern data analytics solutions, businesses can have real-time data right at their fingertips, empowering them with data-driven insights and giving them the opportunity to make more informed decisions at a faster pace.

CENTRALIZED OPERATIONS
By adopting integrated digital systems, businesses can bring together data and processes from the entire organization into one system that can handle marketing, sales, customer support, merchandising, and so on. This results in greater efficiency, optimized collaboration, and better visibility across the organization.

SCALABILITY AND FLEXIBILITY
Once past the initial investment and set-up, many digital solutions are easy to scale up or down as required, with a less heavy impact on budgets. Infrastructure such as cloud servers, for example, is set up so that businesses can use what they need at a given time and spend
accordingly, and adapt their usage to any unexpected changes, quickly and efficiently.

PROACTIVE PROBLEM SOLVING
With insights provided by AI-powered analytics and rich troves of data, businesses can have a holistic picture of their own operation as well as the broader market. This way, they can make accurate predictions about developments coming down the line, helping them adjust accordingly and avoid over-investing in the wrong things or performing last-minute pivots that incur additional costs.

STREAMLINED STAFF
With automation and more centralized operations, the businesses can allocate their human resources more efficiently as well, freeing employees from repetitive and mundane tasks and re-skilling them towards higher-value roles. Teams in different locations can coordinate more efficiently, reducing costly bottlenecks and maintaining consistency in operations.

A key thing to keep in mind with a lot of advanced technologies is that many of them are still in their infancy, or have just started providing added value for retailers. This means that, as far-fetched or impractical an idea might sound today, retailers still have to consider future implications carefully and determine how it can impact their business. Here, continuous collaboration with startup businesses and small tech providers can help - more often, such teams are at the forefront of technological developments, either riding them or creating them themselves, and as such can offer valuable advice and guidance on the ideas and technologies that will make an impact in the near future.

As far-fetched or impractical an idea might sound today,

retailers still have to **consider future implications carefully** and **determine how it can impact their business**.
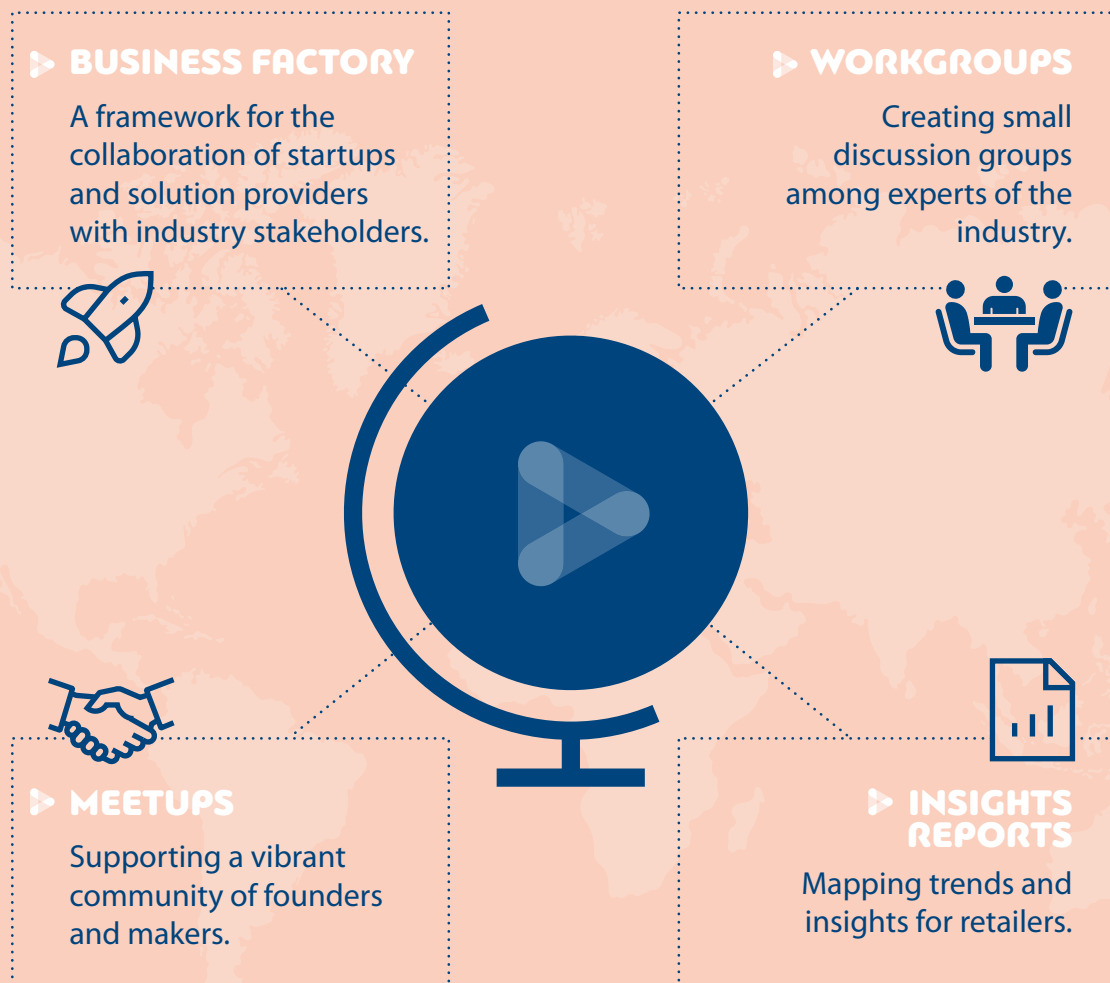
Cardlink Innovation Hub

The Retail Innovation Hub aims to become an integral part of a broader innovation ecosystem, attending to technology companies and startups in the retail ecosystem, as well as big corporations fostering innovation. It consists of a series of initiatives with the ultimate goal of enhancing innovation in retail.

MISSION

The Retail Innovation Hub by Cardlink is a regional platform with the ambition to facilitate the evolution of retail in the digital era. It is created by Cardlink, the biggest provider of electronic payments solutions in Greece, and the innovation experts of Found.ation. It is a place where retail experts and technology leaders shape the future of the industry, exchange knowledge and insights, learn how to adjust to the digital transformation landscape, and keep up with the latest developments.

ACTIVITIES

▷ BUSINESS FACTORY

A framework for the collaboration of startups and solution providers with industry stakeholders.

▷ WORKGROUPS

Creating small discussion groups among experts of the industry.

▷ MEETUPS

Supporting a vibrant community of founders and makers.

▷ INSIGHTS REPORTS

Mapping trends and insights for retailers.

Business Factory

Catalyzing innovation in retail

Innovation stands as a key driver of success. Companies that embrace new ideas, technologies, and partnerships often find themselves at the forefront of their industries. Recognizing this imperative, Cardlink, in collaboration with its strategic partner Found.ation, introduced in 2022 the Business Factory, part of Retail Innovation Hub by Cardlink, a structured and agile framework designed to foster innovation, collaboration, and the development of cutting-edge solutions.

A platform for innovation

The Cardlink Business Factory serves as a dynamic platform, bringing together startup teams, technology solution providers, and industry stakeholders. At its core is a shared vision: to accelerate the conversion of needs into solutions, and available products into successful business partnerships. This collaborative environment nurtures the development of new tech products and services, empowering the sector to innovate faster and offer a superior, more unique customer experience.

The success of the first cycle

As the success of the inaugural Business Factory cycle demonstrated, this initiative is more than just a program, it's a catalyst for change. The first cycle, launched in 2022, brought forth remarkable success stories, showcasing the power of collaboration and innovation.

From that first cycle emerged four promising partnerships with Finclude, Shiplemon, Simpler, and Throo. These collaborations were not just about theoretical discussions; they were about real-world solutions. Together with Cardlink, these partners explored innovative ideas, creating products and services that are set to revolutionize the retail industry.

The second cycle unfolds

Now, in its second cycle, Cardlink's Business Factory continues to build on its momentum, attracting innovative minds and fostering fruitful collaborations. This cycle, launched by Cardlink, a member of Worldline, aims to build upon the achievements of the first cycle. It is a testament to Cardlink's unwavering commitment to innovation and collaboration. This cycle marks another chapter in the ongoing journey to reimagine and reshape the retail industry through innovation.

Business Factory's first cohort of
STARTUPS SHARE THEIR EXPERIENCE

1. How was your experience from your participation at the Retail Innovation Hub's Business Factory? What was the most important benefit for you? Did it live up to your expectations?

2. What steps must be taken to support innovation in the retail sector in Greece? What are your expectations from 2024 in your sector?

Finclude

1. Retail Innovation Hub's Business Factory was an interesting experience for Finclude's team, but it also proved that most innovation activities are set not to have a real commercial impact but rather a validation of concept for the participating parties. The team benefited from validating some ideas related to SMB offerings and how acquirers would be able to utilize Finclude services. We would expect future programs to have a stronger commitment from the participating business to actually put something in production, even as a pilot for the startup to get the full benefit of collaboration with a large enterprise.

2. Digitalization of the retail sector is inevitable, which combined with the change of consumer behavior towards mobile-first payments (e.g. mobile wallets, BNPL, A2A payments etc.) will create a lot of opportunities for disruption both online and offline within the store. Greek retailers and acquirers should embrace this change and work closer with innovators to launch products and services to cater consumers' digital behavior.

Ioanna Stanegloudi
Co-Founder & Chief Risk Officer, Finclude

Shiplemon

1. The Retail Innovation Hub's Business Factory was a great experience for us. As a new growing startup, having the ability to directly discuss with market leaders in the ecommerce and payment sectors, was a great way for us to collect feedback for our product and discuss innovative solutions that will benefit both parties. We also liked the fact that there is a frame on the discussion and we used modern tools to collaborate, draw our conclusions and move forward faster.

2. I believe that in order to support innovation in the retail sector both the government as well as the private companies should be more open to trying new solutions, experimenting, and giving opportunities to new innovative startups. We see that the retail and the ecommerce in Greece is growing adding more and more solutions to facilitate and improve the current process to complete a transaction (online or offline) and we believe that logistics, courier services, payment providers and solutions that touch the physical and the digital world will have a big impact in the next day of the retail sector in 2024 and beyond.

George Avgenakis
Co-Founder, Shiplemon
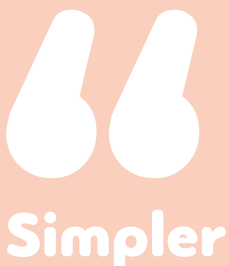
Simpler

1. At Simpler, we are really happy to be a part of the Retail Innovation's Hub Business Factory, and our experience was nothing less than positive. Throughout the process of the Business Factory, we had the opportunity to connect with retail experts, and discuss the future of the industry. One of the most notable benefits was to have the opportunity to collaborate in real-time with key stakeholders from Cardlink, on jointly tackling real consumer problems through innovative solutions.

2. To support innovation in the Greek retail sector, we must further invest in technology adoption, foster collaboration with high-impact startups and most importantly, prioritise customer-centric approaches and solutions. This year, we strongly expect to witness more and enhanced omni-channel experiences, the era of personalised shopping journeys, as well as sustainable practices driving growth in our sector. Moreover, we foresee Omnichannel strategies and initiatives to become key enablers for excelling and growing.

Alex Kyriakopoulos
Co-Founder, Simpler

Innovation Workgroups

Leveraging the power of experienced leaders and tech experts of the local community, Cardlink invited selected stakeholders from Greek and international companies to take part in closed group discussions that would produce real insights and a rare insider's view of the challenges and their solutions.

▶ Retail Tech Communities Workgroup

Technology executives, developers and other experts gathered to map out retail innovation, deep diving in technologies like big data, machine learning and IoT, prioritizing the transformation of the sector and accelerating the tech leap with the customer at the center.

▶ Retail Innovation Leaders Workgroup

A workgroup that brought together the thought leaders, top level executives and stakeholders of the industry and aimed to facilitate the evolution of retail in the digital era. Executives from the companies L'OREAL Hellas, Kotsovolos, Oracle, OPAP, Eurobank, Vodafone, Microsoft, PwC, Quest Group (you. gr), Cardlink, Found.ation, Velocity.Partners, Stanton Chase, istorm, and Venture Friends participated in the workgroup.

▶ Leaders Think Tank Vol. 3

Automation has been transforming the business landscape across all sectors, including retail. This event brought together a selected group of executive members from the Greek corporate ecosystem for a comprehensive exploration of the intersection between cutting-edge technologies and the retail industry. It was an engaging discussion where leaders from the retail industry came together to offer their perspectives and expertise on Automation in Retail. The goal was to explore the realms of machine learning, computer vision, robotics, and payments/logistics, shedding light on the transformative potential of automation within the retail sector.

Meetups

Aiming to help the community understand the innovation opportunities and discovering champions, the organizers of Retail Innovation Hub engaged with tech communities in the form of meetups sponsorship. Being part of the discussion is an effective first step to set the spark of true innovation in the wider ecosystem.

Retail Innovation Hub Summit

The RIH Summit shines a light on the transformative efforts of the RIH, our powerhouse for retail innovation, and all its previous and current activities as well as its plans for the future. We reveal the groundbreaking results of our open innovation initiative, the Business Factory. Learn how we collaborated with dynamic startups, set to redefine the retail industry, and what they are bringing in the Cardlink "ecosystem".

RETAIL INSIGHTS REPORTS

"RETAIL IS CHANGING" Insights Report

"Retail is changing" is the first Insights Report of the Retail Innovation Hub. It was created by Found.ation following research and analysis of everything discussed at the Retail Leaders Workgroup, the first initiative of the Retail Innovation Hub by Cardlink. It presents the insights and challenges discussed, and suggestions for moving forward, coming from important executives of the Greek business ecosystem, retail experts who have in-depth knowledge of the challenges that widely affect the industry, have a big impact, and need solutions.

DOWNLOAD

"RETAIL TECH CHALLENGES AND SOLUTIONS"
Insights memo

The many issues discussed in the 1st Retail Tech Communities Workgroup are included in the Retail Insights Memo, a short report gathering the tech experts' opinions on pressing matters of the industry. Among others: the problem of returns that can be turned into an opportunity from which merchants can benefit, the ever-increasing influence of Generation Z buyers in the retail sector, the impact of the GDPR legislation in Europe, as well as issues such as the ROI justification of innovation, especially for small businesses.

DOWNLOAD

RETAIL INNO ATION HUB
BY cardlink

"THE STATE OF INNOVATION IN RETAIL 2023" Insights Report

The annual report on The State of Innovation in Retail 2023 reflects Cardlink's ongoing commitment to empowering businesses in the retail sector. In a year marked by "permacrisis" the report outlines Cardlink's efforts to navigate challenges and drive growth through innovation. As part of the Worldline family, Cardlink's dedication to technology-led solutions and value creation is evident throughout the report, showcasing its role in shaping a sustainable payment world.

RETAIL INNO ATION HUB BY cardlink **INSIGHTS**REPORT

The State of Innov tion in Retail 2023

How technology and startups are changing the industry

Retail Innovation Hub by Cardlink

DOWNLOAD

"AUTOMATION IN RETAIL" Insights Report

The Insights Report: Automation in Retail, from discussions at the Leaders Think Tank Vol.3 and Found.ation's insights, explores automation's impact. It highlights the "phygital" model's rise, blending physical and digital retail experiences. Artificial intelligence's role in boosting sales and personalized customer interactions is emphasized. Additionally, AI, machine learning, and robotics are integral to modern retail supply chains, improving operational efficiency. The report advocates open innovation through startup collaborations for accelerated cutting-edge solutions.

RETAIL INNO ATION HUB BY cardlink **INSIGHTS**REPORT

Aut mation in Retail

As consumer preferences continue to evolve, retailers must leverage automation to stay agile and responsive to changing market dynamics. **What are the challenges they will face and where should they focus?**

DOWNLOAD

The Retail Innovation Hub invites all technology companies and startups in the retail ecosystem, as well as big corporations, to join their forces in fostering innovation.

BE A PART OF IT!   https://cardlink.gr/innovation/

ABOUT CARDLINK, A WORLDLINE BRAND

Cardlink was founded in 2004 and is the largest payment service provider in Greece. Cardlink, a Worldline brand, helps businesses with their day-to-day transactions with quality, security and speed. The Cardlink team monitors developments in the field of electronic payments and adopts the latest technologies and services that continuously improve the trading experience in physical and electronic commerce. Since September 2021, Cardlink has been member of Worldline [Euronext: WLN], the European leader in the payments services.

cardlink.gr

ABOUT WORLDLINE

Worldline [Euronext: WLN] helps businesses of all shapes and sizes to accelerate their growth journey – quickly, simply, and securely. With advanced payments technology, local expertise and solutions customised for hundreds of markets and industries, Worldline powers the growth of over one million businesses around the world. Worldline generated a 4.6 billion euros revenue in 2023.

worldline.com

This report has been powered by Found.ation within
the framework of the Retail Innovation Hub by Cardlink.

Environmentally friendly paper certified by FSC and PEFC.
Recycling product.