Cartify

Innovation in shopping

Product by: Cartify team

Introduction

Cartify is an innovative solution designed to revolutionize the traditional supermarket experience and redefine the shopping process. Leveraging advanced machine learning and computer vision, Cartify delivers real-time, personalized product recommendations to customers as they shop, driving increased engagement and boosting sales for retailers. Additionally, Cartify promotes sustainability by digitizing the checkout process, eliminating the need for paper receipts (thermal paper), reducing waste, and enhancing convenience for shoppers. With its potential to significantly improve customer satisfaction and operational efficiency, Cartify is positioned to lead the future of retail technology and transform how supermarkets operate globally.

WHAT IS CARTIFY

Cartify revolutionizes the retail experience by seamlessly integrating in-store shopping with cutting-edge computer vision and image processing technology. The platform consists of two main components:

- **Cartify for Shoppers**

  Customers can effortlessly scan products using their smartphones, automatically adding items to a digital cart within the Cartify app. Once shopping is complete, the cart information is sent to the store for digital verification, eliminating the need for traditional checkout lines or barcode scanning. Customers can pay directly through the app and leave the store without any manual processes or paper receipts. This efficient, eco-friendly solution streamlines the shopping experience, offering a seamless and modern alternative to conventional methods.

- **Cartify for Groceries (AIaaS - AI as a Service)**

  Grocery stores can use Cartify to upload their product catalog and train a custom computer vision model. During checkout, the model identifies products without the need for traditional barcode scanners. Additionally, when shoppers enter the store, they can scan a QR code to access the store's trained model, simplifying their shopping process and enhancing convenience.

By combining these two components, Cartify not only enhances the customer experience but also empowers retailers with a scalable, sustainable, and innovative solution to modernize their operations.

Why Cartify

Traditional grocery checkout processes rely on barcode scanners and paper receipts, which are inefficient, costly, and environmentally unsustainable. Additionally, large grocery stores often lack personalized product recommendations, relying instead on manual employee interventions to promote related products or discounts.

Solution

Cartify revolutionizes the grocery shopping experience by replacing barcode scanners and paper receipts with an AI-powered camera system. Using advanced computer vision and machine learning, Cartify enables seamless multi-product detection and checkout, eliminating the need for physical scanners and reducing paper waste. Furthermore, Cartify ML-driven recommendation engine provides real-time, personalized product suggestions, enhancing customer satisfaction and driving sales.

Key Features

- **Camera-Based Scanning:** Replace barcode scanners with AI-powered cameras, compatible with tablets, mobile devices, or standalone cameras.
- **Multi-Product Detection:** Simultaneously scan multiple items for faster checkout.
- **Digital Receipts:** Eliminate paper receipts, reducing costs and environmental impact.
- **Personalized Recommendations:** Offer real-time product suggestions and discount alerts based on customer shopping behavior.
- **Queue Reduction:** Allow customers to scan items via the Cartify app, reducing wait times and improving the shopping experience.

Benefits

- **For Businesses:** Significantly reduce operational costs by eliminating the need for barcode scanners, which typically cost $200 to $1,000 each. Cartify also boosts sales through targeted recommendations and enhances overall customer satisfaction.

- **For Consumers:** Experience a faster, more personalized shopping journey with real-time insights and seamless, hassle-free checkouts.

Cartify is more than just a tool—it's a game-changing solution for modern grocery stores. By harnessing advanced AI and ML technologies, Cartify streamlines operations, enhances efficiency, and delivers tangible benefits to both businesses and consumers.

Where Cartify should be used?

Cartify is designed to transform retail operations across a wide range of environments, including supermarkets, hypermarkets, and convenience stores. Its scalable platform is tailored to meet the needs of both retailers and consumers, offering a seamless and efficient shopping experience.

Retailer/Grocery Application (Web, Mobile, Box):

The grocery application is a core component of Cartify, available on web and mobile platforms. It empowers retailers to:

- Manage Multiple Branches: Add and manage store branches with ease, assigning operators to each location.
- Product Management: Add, modify, and update product information in real-time, ensuring accurate inventory tracking.
- Checkout Process: Choose between centralized or distributed checkout systems to suit store needs.
- Checkout Analytics: Gain valuable insights into sales trends, customer behavior, and operational efficiency.
- Training and Detection Services: Train the AI model to recognize store-specific products and enable seamless product scanning using integrated image recognition technology.

- QR Code Integration: Each store branch is assigned a unique QR code, allowing consumers to connect to the store's trained AI model for a personalized shopping experience.

MVP Demp: YouTube

Consumer Application (Web, Mobile):

The consumer application enhances the shopping experience by enabling users to:

- Scan and Shop: Use their mobile devices to scan products via the Cartify app, reducing checkout times and eliminating long queues.
- Personalized Recommendations: Receive real-time product suggestions and discount alerts based on their shopping history and preferences.
- Seamless Integration: Scan the store's QR code to access the trained AI model and enjoy a faster, more efficient shopping experience.
- Checkout Analysis: Track their shopping habits and receive tailored recommendations for future purchases.

MVP Demp: YouTube

What Does Cartify Bring to Us?

Cartify offers two innovative business models designed to revolutionize the retail industry. These models not only generate significant revenue but also provide advanced technology solutions tailored to the needs of modern retailers and consumers. Below, we detail how each model works and the value it delivers.

1. Cartify (AIaaS):

The Cartify AI as a Service (SaaS) platform enables retailers to seamlessly integrate advanced shopping technology into their operations. This model is ideal for supermarkets,

hypermarkets, and other retail environments seeking to enhance efficiency and customer satisfaction.

Key Features and Benefits:

- Customizable Product Recognition: Retailers can train Cartify's AI model to recognize and highlight specific products, such as local or seasonal items, using our high-performance GPUs and infrastructure.

- Data Management Flexibility: Retailers can choose to store customer and inventory data locally or leverage our scalable cloud storage solutions, ensuring full control over their database.

- Custom Discount Systems: Retailers can implement tailored discount and promotion strategies, allowing them to attract and retain customers while maintaining pricing autonomy.

- Revenue Streams for Cartify: This model generates revenue through subscription fees, cloud storage services, AI features for training like epochs, model size, etc. Additionally, the data collected helps us improve the shopping experience and drive future innovations.

Why It Matters:

The AIaaS model empowers retailers to deliver personalized shopping experiences, streamline operations, and reduce costs, all while maintaining control over their data and pricing strategies.

2. Cashierless Store (Box):

The Cashierless Store solution takes retail automation to the next level by enabling fully autonomous shopping experiences. This model eliminates the need for manual item verification, significantly reducing labor costs and enhancing operational efficiency.

Key Features and Benefits:

- Advanced Image Recognition: Our AI-powered system uses neural networks and image recognition algorithms to accurately track items and prevent theft.

- Seamless Customer Experience: Customers can independently confirm their purchases using devices like Raspberry Pi, reducing wait times and improving convenience.

- Scalable Infrastructure: We provide the necessary infrastructure for retailers to implement cashierless systems, making it easy to adopt and scale.

- Revenue Streams for Cartify: This innovative offering positions Cartify as a leader in autonomous retail technology, increasing market share and fostering loyalty among retailers.

Figure 1

Why It Matters:

The Cashierless Store model not only reduces operational costs for retailers but also enhances the shopping experience for consumers by offering faster, more secure transactions. Additionally, it opens new opportunities for individuals to operate their own retail branches using Cartify's technology, further expanding our market reach.

Market analysis

Cartify targets two distinct markets, each with unique needs and opportunities for growth. By addressing the pain points of both large retailers and smaller businesses, as well as tech-savvy consumers, Cartify is positioned to become a leader in retail innovation.

Primary Market

The primary market for Cartify includes supermarkets, hypermarkets, and large retail chains. These businesses are constantly seeking ways to modernize their operations and enhance the shopping experience for their customers. Key characteristics of this market include:

- **Need for Efficiency:** Large retailers are focused on streamlining processes, reducing operational costs, and improving checkout speeds.
- **Digital Transformation:** They are investing in technologies like automation, AI, and data analytics to stay competitive in a rapidly evolving retail landscape.
- **Customer Experience:** They aim to provide seamless, personalized shopping experiences to attract and retain customers.

Secondary Market

The secondary market comprises smaller retailers and tech-savvy consumers who are eager to adopt innovative shopping technologies. Key characteristics of this market include:

- **Smaller Retailers:** These businesses often lack the resources to invest in expensive technologies but are interested in affordable, scalable solutions that can improve their operations.
- **Tech-Savvy Consumers:** Modern shoppers expect convenience, personalization, and automation. They are drawn to retailers that offer advanced features like mobile scanning, digital receipts, and real-time recommendations.

Market Size

The European supermarket and grocery store sector is a significant industry, with total revenue projected to reach €1.6 trillion by 2024, growing at a compound annual growth rate (CAGR) of 4.5% over the five years leading up to 2024. This growth is attributed to factors such as technological advancements and the increasing demand for digital solutions.[1]

The sector is also a major employer, with over 8.5 million people working in supermarkets and grocery stores across the European Union and the United States. [2] This highlights the importance of operational efficiency, a key driver for adopting solutions like Cartify's, which can help retailers manage labor more effectively while enhancing customer satisfaction.

The global smart retail market, encompassing AI-based physical stores, is experiencing significant growth. In 2023, the market was valued at approximately $38.09 billion and is projected to reach $227.29 billion by 2030, growing at a CAGR of 29.1% from 2023 to 2030.[3] This growth is driven by factors such as the increasing adoption of IoT and AI technologies in the retail sector, the growing demand for personalized shopping experiences, and the need for operational efficiency.

Given the market's structure, where a few key players dominate each country, Cartify can provide value to both large chains and smaller retailers by offering scalable, cutting-edge technology that enhances customer experience and improves operational efficiency, thus addressing the industry's evolving needs.

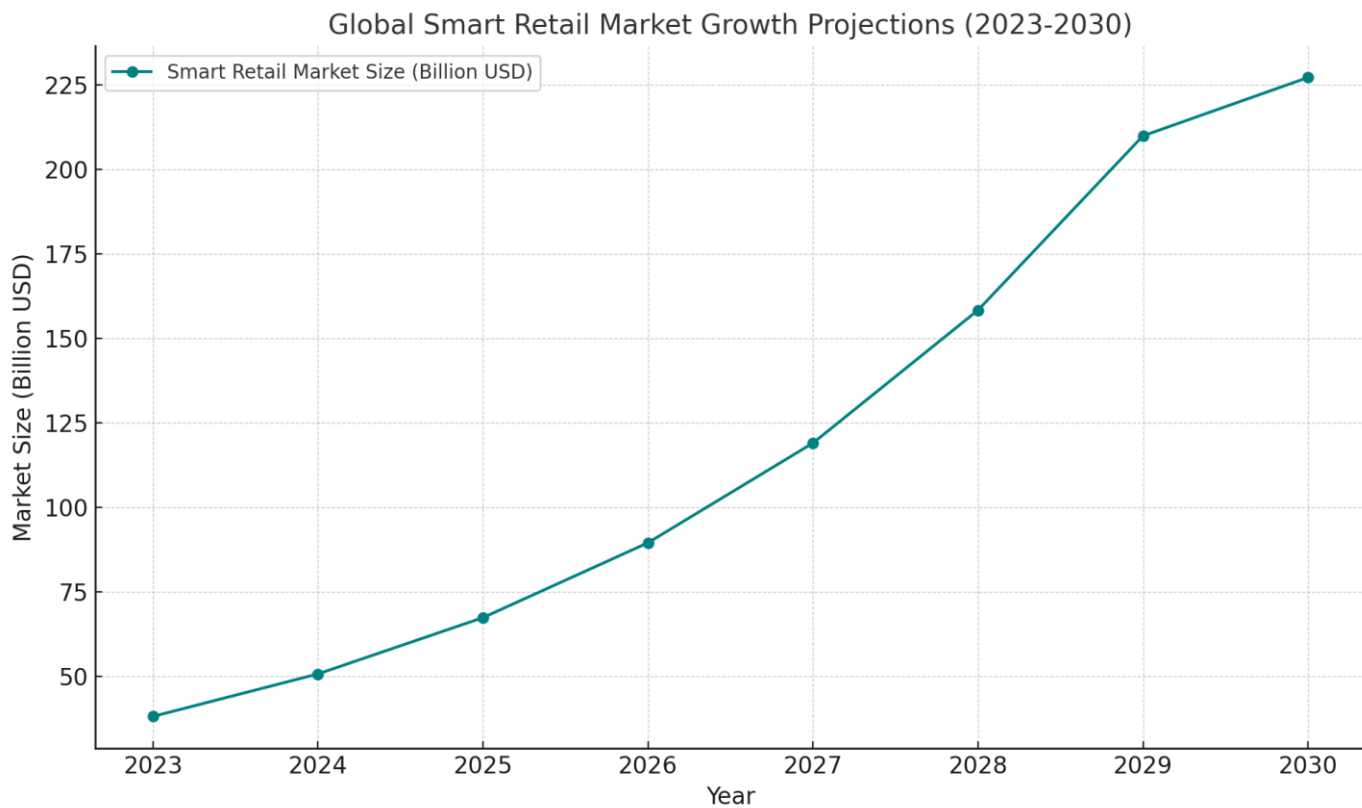[1] https://www.ibisworld.com/europe/industry/supermarkets-grocery-stores/200577/
[2] https://www.oracle.com/retail/grocery/grocery-stores-economy/
[3] https://www.grandviewresearch.com/industry-analysis/smart-retail-market

Global Smart Retail Market Growth Projections (2023-2030)

Figure 2

Revenue Model

Cartify simplifies and enhances the shopping experience for supermarkets through a scalable digital platform. Here's how it works for retailers like grocery or supermarkets.

- Subscription: Supermarkets subscribe to Cartify, gaining access to its advanced AI and data processing capabilities.

- Free Services: Basic tools like a management dashboard to track store activity and customer purchases are available at no cost.

- **Premium & Enterprise:** Like: expressing Discounts, personal recommendation, remote-shopping

- **Paid Services:** Retailers can unlock advanced features like:

- AI-powered product recognition (batches, epochs, etc. in training phase)
- Personalized dashboards
- Recommendation systems tailored to their needs

- **Commercial Services:** Cartify offers advertising opportunities:
  - For groceries: Promoting their products within the platform.
  - For consumers: Targeted ads to enhance shopping experience.

- **Advanced Training Parameters:** Retailers requiring more intensive AI model training can opti for higher-tier plans that include:
  - Increased training epochs
  - Larger batch sizes
  - Access to more powerful computing resources (additional fees apply).

- **Training Limitations and Fees:** Basic training services are capped at a certain level, with additional fees for exceeding the limit per training session.

- **Prediction Checkout Services:** Cartify provides predictive insights, such as:
  - Checkout demand forecasting based on weather, expected foot traffic, and customer behavior.
  - This service incurs additional fees for real-time updates and detailed forecasting reports.

- **Product Catalog Limitations:** A standard subscription allows for managing up to 20,000 products. Additional fees are required for managing inventories beyond this threshold.

By combining these revenue streams, Cartify ensures a balanced approach that supports both operational efficiency and customer engagement while offering scalable, value-added services tailored to the needs of modern retailers.
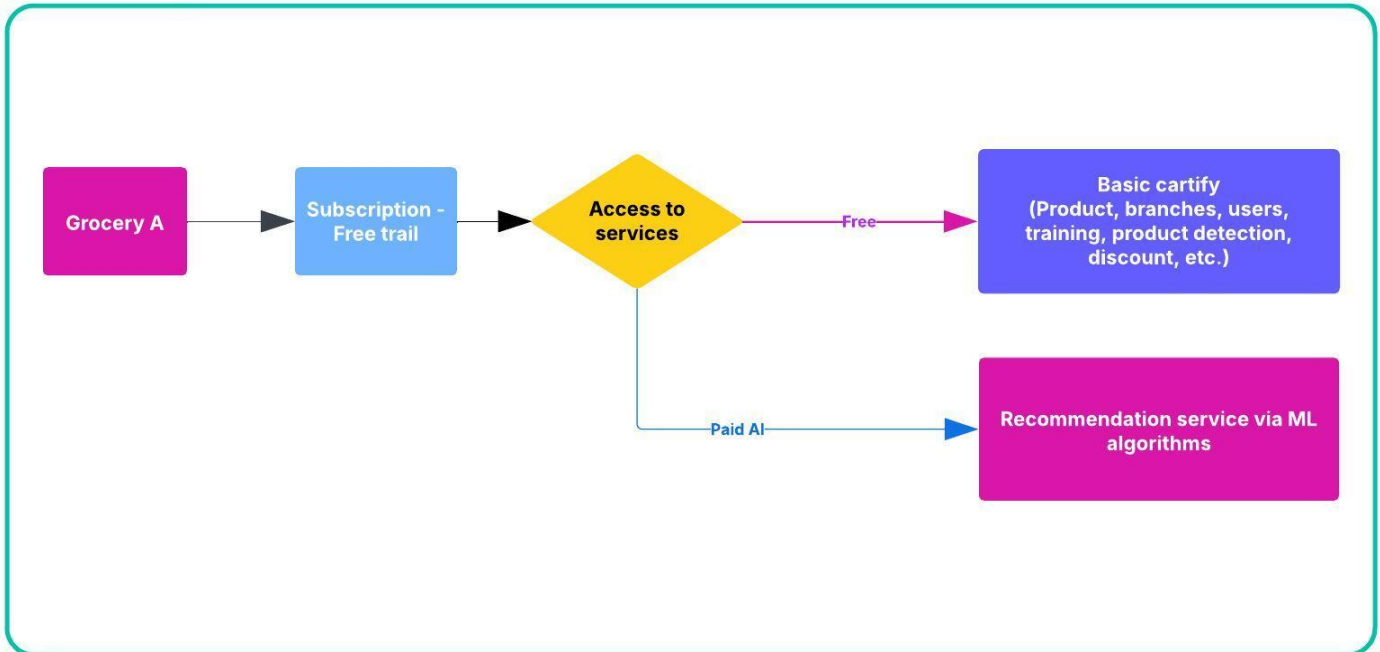
Figure 3 – Store Section

Let's figure out how Cartify works for the grocery side.

- **Start**: A grocery can subscribed for a free trail

- **Product Recognition**: In checkout section they can detect product easily.

- **Training**: Main branches can train their product to share between branches

- **Discount service**: Branches can dedicate discount per products

- **Branches**: Each grocery can add branches and located the current location of branches on the map.

- **User & roles**: Main grocery can add users and specified roles and branches to them.

- **Recommendation service**: Groceries can have their own product recommendation.
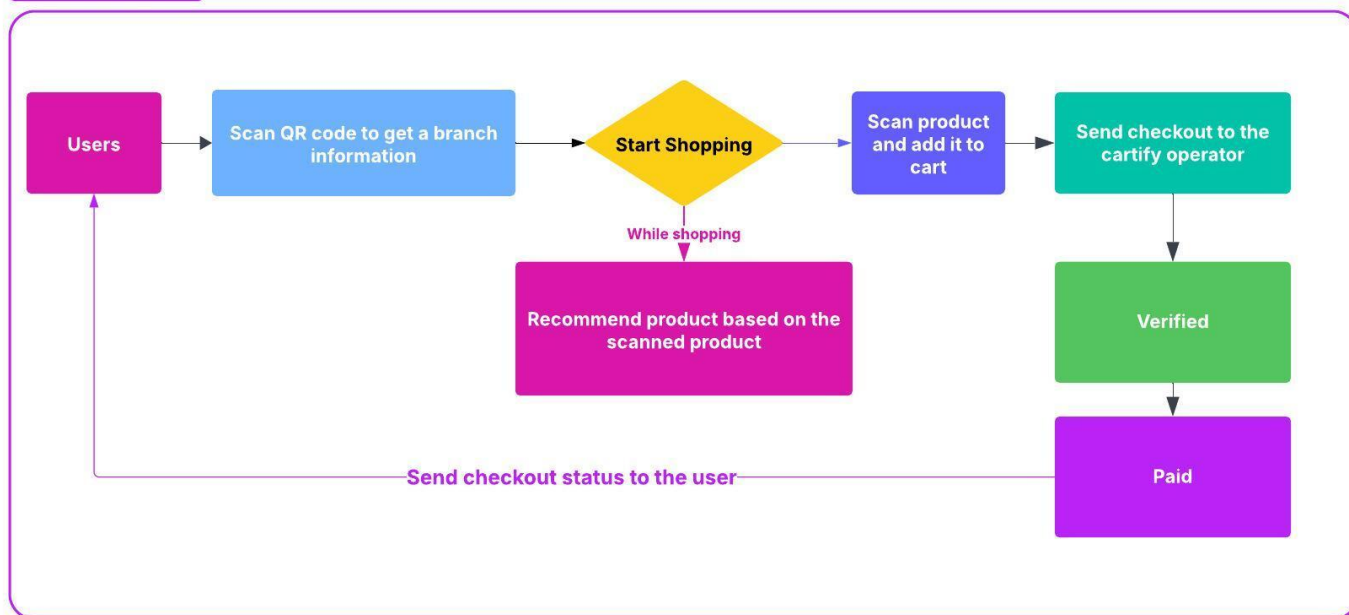
Figure 4 - Customer app

Now, let's figure out how Cartify works for the customer side.

- **Start**: The customer opens the Cartify app on their device.

- **Product Recognition**: The app uses deep learning technology to automatically detect and recognize the product the customer wants to buy.

- **Add to Cart**: Once the product is identified, it is added to the customer's digital shopping cart.

- **Shopping Continuation**: The customer can continue adding products, and the app will repeat the detection process for each item.

- **End of Shopping**: When the customer finishes shopping, they confirm that the shopping process is done.

- **Payment Selection**: The customer is prompted to choose a payment method (either online or in-store).

- **Verification (if needed)**: If any products need further verification, the customer will be prompted to place them in a designated area for scanning or validation.

- **Complete Payment**: Once all items are verified, the customer completes the payment.
- **End**: The process concludes with the customer receiving confirmation of their purchases and exiting the app.

Competitor Analysis

Cartify will be compared with other competitors in this section to clarify what will change in the retail industry.

Competitor	Features	Differentiation
GetZippin	**Cashierless store, high-tech device integration**	**No need for high-tech, use innovative AI deep learning models to prevent abnormality**
AiFi	**Cashierless store, high-tech device integration**	**No need for high-tech, use innovative AI deep learning models to prevent abnormality**
Scandit	**Scan barcodes using SDK and useful for developers**	**Scan products using the app software and share AI models between registered supermarkets**
Futureproofretail	**Scan barcodes using the app, manage dashboard for supermarkets**	**Scan products using the app and share AI models and allow the supermarkets to train their local product and recommend their product when customers do the shopping using machine learning algorithms, low prices**

Go-to-market

Cartify is designed to serve both groceries and individual consumers, each with tailored marketing channels to maximize reach and engagement.

1- **Advertising:** Utilize a mix of online campaigns and eye-catching billboards to effectively promote Cartify to supermarkets and consumers.

2- **Trade Shows and Conferences**: Showcase Cartify capabilities at retail technology events, offering live demonstrations to industry professionals and decision-makers.

3- **Influencer and Shopper Collaboration:** Cartify go-to-market strategy combines online ads, billboards, and trade show participation to showcase its capabilities. Influencer partnerships with retail and tech experts, along with user-generated content and engagement in smart shopping communities, will build trust and amplify its reach.

Customer Acquisition

1- **Pilot Program with Early Adopters**: Partner with innovative supermarket chains to launch a pilot program, offering early access to Cartify in exchange for valuable feedback, case studies, and testimonials. These partnerships will establish proof of concept and enhance credibility with future clients.

2- **Strategic Partnerships:** Collaborate with retail tech companies and supply chain technology vendors to integrate advanced features, expanding Cartify capabilities and appeal to a broader market.

3- **Free Trail:** Given the innovative nature of Cartify—eliminating barcode scanners and traditional checkout methods—offering a risk-free trial can encourage grocery stores to experience its benefits firsthand. This hands-on approach reduces hesitation, builds confidence in the technology, and accelerates adoption by showcasing its efficiency and ease of use in a real-world setting.

Financial Projections

To estimate financial growth, we will project revenue streams from:

- **AIaaS Subscriptions**: Cloud-based AI services for checkout-free supermarkets, including inventory system at **€599 per branch**.

- **Advanced learning**: Additional scan products (e.g., more images, annotations) or conversion from free trial to an **enterprise version at €200 per 6 months**.

- **Machine Learning Recommendation Services**: Personalized product recommendations for stores at **€300 per branch**.

- **Discount service**: Dedicate discount to the consumers based on the previous shopping.

Year 1: Initial Market Entry & Pilot Expansion

- **Customer Base**: Partnering with **3 grocery brands**, covering at least **3,000 supermarkets** (3 brands × 1,000 branches each).

- **Revenue Breakdown**:

    - **AIaaS Subscriptions**: **€1,497,000 × 3 = €4,491,000/year** (3,000 branches × €499 per branch)

    - **Recommendation & Other AI Services**: **€1,200,000 × 3 = €3,600,000/year**

    - **Total Year 1 Revenue: €8,091,000**

Year 2 & 3: Scaling Across Europe & Premium Features

- **Growth Strategy**:

    - Expand beyond pilot brands to **major supermarket chains** across Europe.

    - Increase marketing & sales efforts to accelerate adoption.

    - Introduce **premium AI features**, a **consumer-facing app**, and **commercial AI services**.

- **Projected Revenue by Year 3**: over **€50 million**, driven by enterprise contracts and wider adoption of AI-driven automation.

Year 3 to 5: Hardware Expansion & AI-Powered Stores

- **Diversification**: Introduce **hardware solutions** for cashier-less operations, including:
  - **Smart Store Kits**: Raspberry Pi-based edge computing systems for real-time checkout.
  - **AI-Powered "Cashier-Less Store-in-a-Box"**: A modular setup enabling retailers to transition fully to autonomous shopping experiences.
- **New Revenue Streams**: Selling AI-powered **hardware kits and licensing** proprietary cashier-less store technology to retailers and direct-to-consumer segments

Cartify Shop

Cartify's Shop is a pivotal component that significantly contributes to revenue generation for groceries. Here's how it works:

- **Model Training and Generation**: When groceries train their AI models, a unique file is generated for each model. This file represents the AI model and is capable of detecting products based on the images provided by the groceries.
- **Model Marketplace**: Cartify's Shop serves as a marketplace for these AI models. Groceries can list their models for sale, making them accessible to a broader audience.
- **Target Audience**: The primary customers for these models are businesses and entrepreneurs aiming to establish cashier-less grocery stores. These models enable seamless product detection and streamline the shopping experience by eliminating the need for traditional checkout processes.

  By offering a platform for groceries to sell their AI models, Cartify not only enhances revenue opportunities but also fosters innovation in the retail sector. This approach

empowers groceries to monetize their AI investments while supporting the growth of cashier-less technology.

Implementation Strategy

To successfully launch Cartify as an AI-as-a-Service (AIaaS) product in the grocery industry, the development process will be divided into six key phases. Each phase will focus on delivering value incrementally, ensuring continuous improvement and faster delivery to users. Feedback from users and stakeholders will be actively gathered and incorporated to refine and enhance the product throughout its lifecycle.

Phase 1: Core Development and Testing (12 months)

- **Objective:** Build, test, and refine the core software and AI model for Cartify.

- **Key Activities:**

  - Develop the foundational AI model for product recognition and checkout automation.

  - Test the software in controlled environments to ensure accuracy and reliability.

  - Iterate based on internal testing and early feedback from pilot users.

Phase 2: Market Entry and Consumer App Development (12 months)

- **Objective:** Launch Cartify in the market and develop the consumer-facing app.

- **Key Activities:**

  - Partner with early-adopter grocery stores to deploy Cartify in real-world settings.

  - Develop and test the consumer app, enabling shoppers to scan products and manage digital carts.

  - Collect feedback from both retailers and consumers to improve functionality and user experience.

Phase 3: Advanced ML Services and Feedback Integration (12 months)

- **Objective:** Enhance Cartify with advanced machine learning services and refine based on user feedback.

- **Key Activities:**

  o Develop additional ML-driven features, such as personalized product recommendations and inventory management tools.

  o Gather and analyze feedback from users to identify pain points and areas for improvement.

  o Optimize the AI model and software to improve performance and scalability.

Phase 4: Refactoring and Preparation for Future Projects (24 months)

- **Objective:** Refactor and modernize Cartify's infrastructure to support future innovations.

- **Key Activities:**

  o Refactor both the grocery and consumer apps to improve performance, scalability, and maintainability.

  o Prepare Cartify for next-generation projects, such as cashier-less grocery stores and online shopping integrations.

  o Lay the groundwork for seamless integration with new technologies and business models.

Phase 5: Cashier-less Supermarket Solution Development (24 months)

- **Objective:** Develop a standalone software solution for cashier-less supermarkets.

- **Key Activities:**

  o Build and test a cashier-less checkout system for both individual consumers and grocery stores.

  o Enable fully automated shopping experiences, eliminating the need for traditional checkout processes.

- Pilot the solution in select stores and refine based on real-world usage and feedback.

Phase 6: Online Shopping Integration (12 months)

- **Objective:** Expand Cartify's capabilities to include online shopping features.
- **Key Activities:**
  - Develop and test an online shopping platform integrated with Cartify's AI and ML services.
  - Enable seamless transitions between in-store and online shopping experiences.
  - Gather feedback from users to optimize the online shopping interface and functionality.

Key Principles for Success

1. **Agility:** Release features as soon as they are developed to ensure faster delivery and continuous improvement.
2. **User Feedback:** Actively gather and incorporate feedback from users and stakeholders at every phase.
3. **Scalability:** Design the software and infrastructure to support future innovations and growing user demands.
4. **Sustainability:** Ensure that all developments align with Cartify mission to provide eco-friendly and efficient solutions.

Operations Plan

To enhance support in this industry by eliminating barcode scanning, it would be beneficial to improve scalability in technical support and infrastructure.

Platform Deployment

- A phased rollout starting with smaller retailers to test and prove the model.

- Larger chains will be integrated through partnerships with retail technology providers.

Customer Support

Offer 24/7 technical support, detailed onboarding processes, and video tutorials for retailers using the platform.

Technology Infrastructure

Cartify operates on scalable cloud infrastructure, providing flexibility for retailers to choose between local data storage or cloud solutions.

Employees

When establishing a company, hiring the right employees is crucial for smooth operations and growth. The basic employees that most companies should consider hiring include:

Executive & Administrative Roles:

- **CEO (Founder)** – $0 to $100,000 (early-stage founders often take minimal or deferred salaries)

- **CTO (Founder | Co-Founder)** – $0 to $120,000 (depends on funding stage and workload)

- **General Manager (Co-Founder)** – Min: $50,000 | Considerable: $100,000

Finance & Accounting:

- **Accountant/Bookkeeper (Outsource)** – Manages financial records, payroll, and taxes.

Sales & Marketing:

- **Sales Representative –** Min: $40,000 + commission | Considerable: $80,000 + commission

- **Marketing Specialist –** Min: $50,000 | Considerable: $90,000

- **Customer Service Representative –** Min: $30,000 | Considerable: $50,000

- **Camera man 1:** (Outsource) : Min 30,000

- **Video Editor 1:** (Outsource): Min: 40,000

Operations & Production

- **Back-end developer 1 (Senior):** $75,000 | Considerable: $90,000

- **Front-end developer 1 (Mid-level):** $60,000 | Considerable: $75,000

- **AI-Engineer 1 (Mid-level):** $60,000 | Considerable: $75,000

- **Dev-Ops engineer (Mid-level):** $50,000 | Considerable: $65,000

- **Product manager:** $40,000 | Considerable: $65,000

Human Resources (HR):

- **HR Manager –** Min: $60,000 | Considerable: $80,000

IT & Support:

- **IT Specialist –** Min: $50,000 | Considerable: $100,000

Data center implementation

- **Data center technician (Outsource):** Min: 10,000

- **System Administrator 2:** Min $60,000 | Considerable: $90,000 ($140,000)

- **Database Administrator (DBA) 1:** Min $50,000 | Considerable: $75,000

- **Network Engineer 1:** Min $70,000 | Considerable: $90,000

- **Cybersecurity Engineer 1:** Min $100,000 | Considerable: $120,000

- **Storage & Backup Specialist 1:** Min $60,000 | Considerable: $85,000

- **Cabling Technician (Outsource):** Min $60,000 | Considerable: $70,000

- **Data Center Operator (Shift-Based) 2:** Min $60,000 | Considerable: $75,000 ($180,000)

Required Devices & Equipment

To ensure an efficient working environment for Cartify's technical team (developers, DevOps, etc.), the following hardware, software, and infrastructure are needed:

1. Workstations & Computing Devices

- **Laptops / Desktops (7 units)** – High-performance laptops or desktops for developers and engineers.

  - o **Estimated Cost:** $1,500 - $3,000 per device

- **Monitors (5 units)** – Dual monitors for increased productivity.

  - o **Estimated Cost:** $250 - $500 per unit

2. Networking & Internet

- **High-Speed Internet Connection** – At least 500 Mbps to 1 Gbps fiber connection for fast cloud access, video calls, and collaboration.

  - o **Estimated Cost:** $100 - $300 per month

- **Wi-Fi Router & Network Infrastructure** – Enterprise-grade routers for stable connections.

  - o **Recommended Brands:** Ubiquiti, ASUS, Cisco

  - o **Estimated Cost:** $200 - $1,000

- **VPN Subscription** – For secure remote access to servers.

  - o **Estimated Cost:** $10 - $50 per user per month

3. Office Furniture & Essentials

- **Ergonomic Chairs (5 units)** – Adjustable chairs for long working hours.

  - o **Estimated Cost:** $250 - $600 per chair

- **Office Desks (5 units)** – Spacious desks for multi-monitor setups.

  - o **Estimated Cost:** $300 - $700 per desk

- **Conference Table & Chairs (For Meetings)**

  - o **Estimated Cost:** $800 - $2,000

4. Mobile Devices (For App Testing & Development)

- **iPhones (1 units)** – Testing iOS apps.

  - o **Estimated Cost:** $800 - $1,200 per device

- **Android Phones (1 units)** – Testing Android apps.

  - o **Estimated Cost:** $500 - $1,000 per device

5. DevOps & Server Infrastructure

- **Cloud Services (AWS, GCP, Azure)** – Hosting servers, databases, and APIs.

  - o **Estimated Cost:** $500 - $5,000 per month (depending on usage)

- **On-Premises Servers (Optional, if required)** – If Cartify needs in-house data processing.

  - o **Estimated Cost:** $5,000 - $15,000 per server

6. Collaboration & Productivity Tools

- **Project Management Software** – Jira, Trello, Asana

  - o **Estimated Cost:** $10 - $30 per user per month

- **Version Control (GitHub, GitLab, Bitbucket)**

  - o **Estimated Cost:** Free - $10 per user per month

- **Communication Tools (Slack, Microsoft Teams, Zoom)**

  - o **Estimated Cost:** Free - $20 per user per month

7. Lara cable

  - o **Estimated Cost:** $2000

Total Estimated Budget:

- **Hardware: $13,250 - $26,500 (One-time)**

- **Software & Cloud Services: $1,620 - $8,150 (Monthly)**

Commercial & Digital marketing

Developing a comprehensive commercial and digital marketing strategy is crucial for effectively demonstrating Cartify's value proposition and reaching our target audience. Below is a proposed plan outlining key marketing initiatives along with estimated costs:

1. Social Media Marketing

Objective: Enhance brand awareness and engagement across major social media platforms.

- **Platforms:** Facebook, Instagram, LinkedIn, Twitter
- **Activities:**
  - Regular posting of engaging content (product updates, industry news, user testimonials)
  - Community management (responding to comments and messages)
  - Collaborations with influencers to expand reach
- **Estimated Costs:**
  - **Content Creation:** $6,000 - $10,000 per month
  - **Influencer Partnerships:** $500 - $5,000 per collaboration, depending on influencer reach
  - **Ad Spend:** $1,000 - $5,000 per month

2. Email Marketing

Objective: Nurture leads and maintain engagement with existing customers.

- **Activities:**
  - Sending bi-weekly newsletters with updates and promotions
  - Automated email campaigns for onboarding and retention
- **Estimated Costs:**
  - **Email Marketing Platform:** $50 - $200 per month
  - **Content Creation:** $500 - $1,000 per month

3. Public Relations (PR)

Objective: Increase brand credibility and reach through media coverage.

- **Activities:**
  - Press release distribution for major announcements
  - Pitching stories to industry publications

- **Estimated Costs:**
  - ○ **PR Agency Retainer:** $2,000 - $10,000 per month
  - ○ **Press Release Distribution:** $500 - $1,000 per release

4. Events and Webinars

Objective: Engage directly with potential customers and partners.

- **Activities:**
  - ○ Hosting webinars on industry topics
  - ○ Participating in trade shows and conferences
- **Estimated Costs:**
  - ○ **Webinar Platform:** $100 - $500 per month
  - ○ **Event Sponsorships:** $1,000 - $20,000 per event

Total Estimated Monthly Budget: $10,000 - $50,000

Other Requirements

Certainly, here's a breakdown of the external services and their estimated pricing to support Cartify operations:

1. AI & Machine Learning Services

- **ChatGPT API (OpenAI):** OpenAI offers various pricing plans for ChatGPT, including free and paid options. Paid plans are priced per user per month, with monthly plans for Plus and Team, and annual plans for Team and Enterprise.

2. Analytics & User Insights

- **Google Analytics:** Google Analytics provides both free and premium versions. The free version is suitable for most businesses, while the premium version, Google Analytics 360, starts at approximately $150,000 per year.

3. Cloud Services & Hosting

- **Amazon Web Services (AWS):** AWS follows a pay-as-you-go pricing model. Costs vary based on services used, such as EC2 for computing, S3 for storage, and RDS for databases. A small-scale application might incur costs starting from $100 per month, while larger applications can scale to thousands per month.

- **Content Delivery Network (CDN):** Services like AWS CloudFront or Cloudflare offer pay-as-you-go pricing. Costs depend on data transfer and requests but typically start at a few cents per GB of data transferred.

4. Payment & E-Commerce Integrations

- **Stripe / PayPal / Square:** These payment gateways generally charge a transaction fee of around 2.9% + $0.30 per successful transaction.

- **Apple Pay & Google Pay:** These are integrated through payment gateways like Stripe, which handle the associated fees.

5. Security & Compliance

- **SSL Certificates:** Basic SSL certificates can be obtained for free through services like Let's Encrypt. Premium certificates range from $50 to several hundred dollars per year, depending on the level of validation and warranty.

6. Communication & Customer Support

- **Intercom / Zendesk / Freshdesk:** Pricing varies by platform and features. For instance, Intercom's plans start at $74 per month, Zendesk at $49 per month, and Freshdesk offers a free tier with paid plans starting at $15 per month.

- **Twilio / Firebase Cloud Messaging (FCM):** Twilio's SMS pricing starts at $0.0079 per message, with voice calls at $0.0085 per minute to receive and $0.014 per minute to make a call. FCM is free to use.

Note: Prices are approximate and subject to change. It's advisable to consult the official websites or contact service providers directly for the most current pricing information.

Data center

Data center is the crucial part of this business since we are going to embed thousands of images over and over. So, let's have a explanation about the requirements.

1. Storage Requirements

To support an AI-driven retail system, each global retail brand requires 50GB of storage. Given that we are initially targeting 10 brands, the total storage requirement is:

50GB×10=500GB

For optimal performance, we recommend using RAID 6 HDD arrays for cost-effective long-term storage and RAID 10 NVMe SSDs for high-speed data access.

2. AI Training Servers

To train AI models efficiently, two high-performance training servers are required. These servers will be responsible for deep learning tasks, requiring powerful GPUs and large memory capacity.

Recommended Specifications for Each Training Server:

Component	Recommended Model	Quantity	Estimated Cost (USD)
CPU	**2× AMD EPYC 7763 (64 Cores)**	**2**	**14,000**
GPU	**2× NVIDIA H100 (80GB)**	**2**	**40,000**
RAM	**1TB DDR5 ECC**	**1**	**10,000**
Storage	**4TB NVMe (RAID 10)**	**4**	**8,000**
Motherboard	**Supermicro X12DPT-B**	**1**	**2,000**
Power Supply	**2× 1500W (Redundant PSU)**	**1**	**1,500**
Cooling System	**Liquid Cooling**	**1**	**5,000**

Total Cost Per Server: $80,500

3. Cooling System

To maintain performance and prevent overheating, two industrial-grade **20kW** cooling units are required for the infrastructure.

Estimated Cooling Cost: $20,000

4. Additional Infrastructure Costs

Component	Estimated Cost (USD)
Server Racks (1 unit)	2,500
Networking Equipment (2× 10Gbps Switches, Routers, Firewalls)	5,000
Cabling & Power Distribution	4,000
UPS & Backup Power	7,500

Total Additional Costs: $19,000

5. Total Estimated Costs for 10 Brands

Infrastructure Component	Quantity	Total Estimated Cost (USD)
AI Training Servers	1	80,500
Cooling System	-	20,000
Additional Infrastructure	-	19,000

Grand Total Estimated Cost: $119,500

Estimated Monthly Maintenance Cost: ~$2,000

7. Cost Breakdown Per Brand

To provide a cost-per-brand estimate, we divide the total infrastructure cost among the 10 brands:

$625,300 \div 10 = 62,530$ USD per brand |

Estimated Cost Per Brand: $62,530

Estimated Monthly Maintenance Cost Per Brand: ~$800

Total Investment Required

1. **One-time Infrastructure & Data-center Equipment: $119,500**
2. **First Year Personnel Costs: $1,880,000**
3. **First Year Operational Costs: $797,400**
4. **Other operational costs: $263,500**

GRAND TOTAL REQUIRED: $ 3,060,400

Data centers in future

This infrastructure is designed to support AI-driven retail operations at a global scale with:

- Efficient AI model training using dedicated high-performance servers.
- Real-time inference capabilities with dedicated inference servers.
- Scalable storage solutions to manage and retain essential retail data.

Note: The above costs are estimates and may vary based on hardware availability, geographic location, and deployment strategy.

Exit strategy

Cartify possesses valuable assets, including accumulated data, machine learning models, and image processing technology, which can be monetized if the platform is no longer viable as a full-scale shopping solution. We could pivot the business towards offering high-performance computing resources, AI models, and cloud-based services. Our exit strategy includes the following potential pathways:

1. **GPU Rental Services:** We could repurpose our infrastructure to offer GPU rental services, similar to platforms like Google-Colab and Kaggle. This would allow developers and researchers to access high-performance computing resources for training AI models, running simulations, and other computationally intensive tasks.

2. **Open-Sourcing AI Models:** By open-sourcing our trained models—developed from supermarket datasets—we could contribute to the broader AI community while also monetizing premium versions, support services, or enterprise solutions for industries requiring detection systems.

3. **Subscription-Based API Services:** Our accumulated product data and AI capabilities could be provided as API endpoints for developers, enabling businesses to integrate Cartify technology into their own applications. This would follow a subscription-based model, ensuring a steady revenue stream.

4. **Cloud Storage Solutions:** Given the vast amount of product and image data collected, we could offer cloud storage services, either as a standalone offering or integrated with AI tools for seamless data access, analysis, and model training.

This pivot ensures that Cartify core assets remain valuable and adaptable, providing multiple avenues for future revenue and growth.

Conclusion

Cartify is poised to disrupt the retail sector through cutting-edge AI, machine learning, and automation technology. With a clear focus on providing a seamless, efficient, and eco-friendly shopping experience, it offers substantial benefits to both retailers and consumers. Through its flexible SaaS model, Cartify has the potential to scale globally and become the go-to solution for supermarkets looking to modernize and streamline their operations.

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