

PHOTON®

Restaurant Revolution

Untangling AI & Automation for your Restaurant's Future

Restaurant Revolution

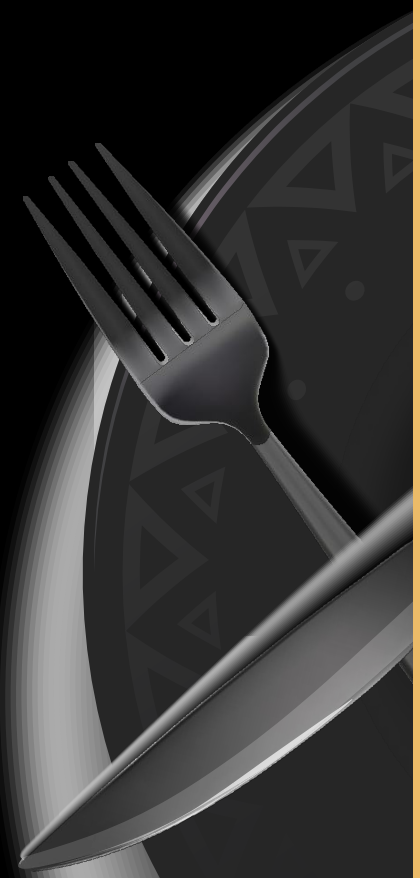


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Quick Bite:
The Executive Chef Summary

The restaurant industry stands at a transformative crossroads, where operational efficiency, customer experience, and profitability converge through the strategic use of AI and automation. From the early days of formal dining in France to today's digital-first landscape, **technology has continually reshaped restaurants.** However, the rush to adopt disparate tech solutions—accelerated by the COVID-19 pandemic—has left many restaurants grappling with fragmented "tech-spaghetti," resulting in inefficiencies, subpar customer experiences, and fragmented data.

This white paper outlines the current industry challenges, both general and restaurant-specific, such as rising operational costs, shifting consumer expectations, and the complexities of managing multiple tech platforms. It then explores AI-driven solutions that directly address these challenges, from optimized inventory management to personalized customer experiences. Finally, **Photon's tailored AI strategy provides a roadmap for restaurants to streamline operations, enhance customer loyalty, and achieve sustainable growth in a rapidly evolving market.** With Photon's guidance, restaurants can leverage AI and automation to thrive in the future.



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“Embracing AI & Automation in the restaurant industry isn't just about adopting new technology; it's about re-imagining the dining experience to anticipate and adapt to guests' unique preferences in real time. Transforming each interaction blends the core ingredients of personalized insight, efficiency, and culinary delight into a unique 'dish' made for the customer. This revolution allows our clients to see beyond just serving food to creating memorable, curated experiences that keep their guests coming back.”



Mukund Balasubramanian
Co-Founder and CTO of Photon

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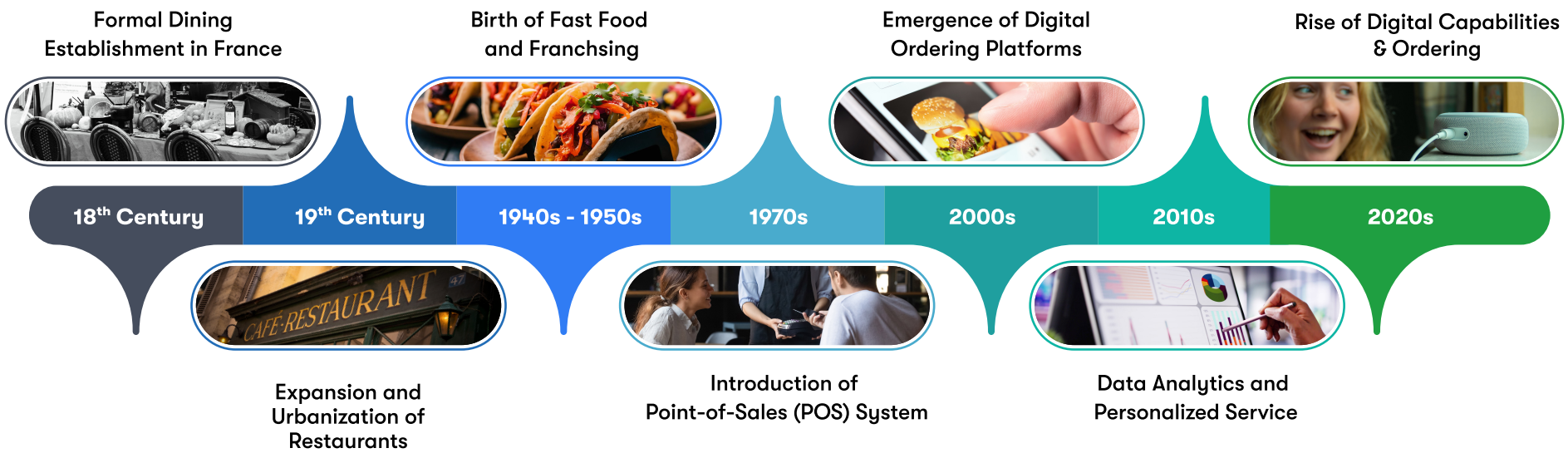
The Appetizer:

A Little Slice of History

The restaurant industry has evolved significantly, moving from family-run eateries to global, tech-enabled establishments that set the standard today. This journey highlights a constant drive for innovation, as restaurants adapt to changing times and technology.

In the 18th century, France saw the first formal dining spaces emerge as social hubs where locals and travelers enjoyed quality meals. By the 19th century, restaurants were woven into urban QSR giants like McDonald's, which pioneered efficiency through franchising and process standardization, enabling rapid growth across the globe.

In the 1970s, Point-of-Sale (POS) systems revolutionized order management and inventory tracking, adding precision to restaurant operations. Entering the 21st century, digital platforms like Uber Eats and DoorDash extended dining beyond physical locations, while data analytics enabled restaurants to personalize service, marking technology as an essential ingredient in today's operations.



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Yesterday's Special, Today's Tech Challenges

The restaurant experience has evolved dramatically over the past 15 years. Largely driven by smartphones, data collection and the COVID Pandemic.

2007

The Rise of the Smartphone and Online Ordering

With smartphones becoming mainstream around 2007-2008, consumers could now order food online with more ease, bringing new convenience and driving restaurants to integrate online ordering capabilities.

2009

Introduction of Branded Mobile Apps

Many restaurant brands launched their own apps, allowing direct customer interaction, seamless ordering experience, and exclusive offers, fostering customer loyalty and engagement.

2013

Emergence of Third-Party Delivery Companies

Platforms like DoorDash, Grubhub, and UberEats in the mid-2010s expanded delivery options, bringing new revenue but also high fees and integration challenges for restaurants.

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The rapid adoption of digital tools and consumer preferences changing has left the restaurant industry with a complex and often disjointed tech stack. Challenges like high fees from delivery platforms, expensive SaaS subscriptions, fragmented customer data and sub-optimal tools that are challenging to integrate.

As a result, restaurants must now focus on streamlining technology and adopting a strategic mindset to solve these issues and create an environment for long-term digital success.

2015

Loyalty Programs, Data Collection, and Personalization

Loyalty programs and modern POS systems enabled restaurants to collect valuable data on customer preferences, which fueled personalized marketing efforts like tailored coupons and recommendations.

2020

The COVID-19 Pandemic and the Surge in Digital Ordering

The pandemic in 2020 forced an immediate shift to digital ordering, pushing restaurants to rapidly adopt technology for delivery, pickup, and contactless options.

2021

The “Tech-Spaghetti” Problem

The rush to digital left many restaurants with a disjointed tech stack, resulting in inefficiencies and fragmented data due to multiple, poorly integrated tools.

Today

Generative AI & Automation Arrive

Almost overnight Generative AI crashed onto the scene. Allowing for new capabilities that will radically transform the technological and consumer experience. Similar to COVID, how brands react to this change has the potential to define them for years to come

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Spaghetti? I Didn't Order Spaghetti!

Today, the restaurant industry faces a complex tech-spaghetti of challenges that must be addressed. Some challenges are specific to the industry – while other pressures are industry-agnostic.



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Industry-Agnostic Pressures

1. Consumer Discretionary Spending

Due to rising interest rates, economic uncertainty, and increasing costs, consumers have seen **discretionary spending decline in recent years.** As demands on essential expenses grow, consumers have been forced to reprioritize non-essential spending, such as dining out.

2. New Tech Demands

Despite the available technology, many businesses, including restaurants, **still rely on manual systems** for processes like inventory management and staff scheduling. This results in inefficiencies, such as overstocking or under staffing, which were amplified during the pandemic.

3. Changing Consumer Preferences

Consumers today expect faster, more convenient service, and often prefer contactless options for ordering and payment. Many businesses have struggled to keep up with these demands, especially during and since the COVID-19 pandemic, which accelerated the adoption of digital-first experiences like online ordering and digital payments.

4. Rising Costs across the Board

Wages, food prices, and rent are all on the rise, putting **pressure on profit margins in most industries**. COVID-19 also added costs for sanitation and safety protocols, further tightening profit margins for many businesses, including restaurants.

Restaurant-Specific Pressures

1. Data Left on the Back Burner

While many restaurants collect data from POS systems, loyalty programs, and online orders, they often fail to leverage it effectively. **Activating data should lead to more personalized marketing, improved menu offerings, and better operational decision-making**. However, slow adoption of AI and automation, along with integration challenges, has kept data underutilized.

2. Wage & Labor Pressures

Labor shortages and increased wage demands have further driven up labor costs, making it challenging for restaurants to retain full staffing levels, especially in high-turnover positions. This has led to **increased operating expenses and difficulties maintaining consistent service quality.**

3. Third-Party Delivery (3PD) Challenges

The rise of third-party delivery companies has intensified competition, as traditional restaurants must now compete with delivery-only operations that avoid dine-in overhead costs. This shift has forced many brands to rethink their strategies, using ghost kitchens or driving customers to branded loyalty apps to retain control over the customer experience.

4. Appetite for Value

Economic pressures have reshaped consumer expectations as diners seek more value in their dining experiences. **Rising food prices have led customers to prioritize customization and affordability, often using loyalty points and discounts to reduce costs**. Many now prefer quality and trusted brands over taking a chance on a new restaurant



These issues, mixed together with the post-Covid digital transformation leftovers, are challenging to face. Consumer needs have shifted, digital capabilities essential for success are evolving rapidly, and P&L pressures are tightening the belt even more. This is where AI, Automation, and fresh thinking must enter the room.

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Snack-Size Samplings:
Insights from our Digital-First AI Engineers

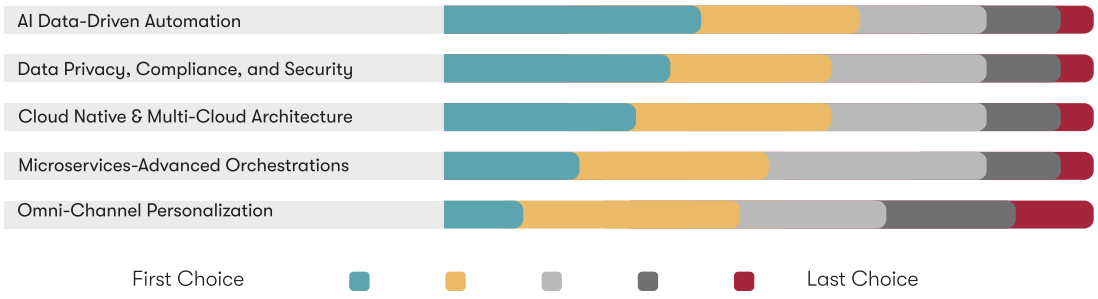
Insights are pulled from quarterly survey of Photon's 1,000+ digital-first engineers

Summary from Photon Engineers: **AI-driven automation is the most essential capability of the future for restaurants.**

Key Themes:

- Integration with existing systems, and managing budgets, are the biggest **tech barriers** to Automation & AI Developments
- Short-sighted vision by leaders is viewed as the biggest **process barrier** to healthy, long-term AI & Automation development
- Absence of dedicated data experts and data storytelling is viewed as the biggest **people barrier** to improving data capabilities

As you envision the best-in-class Retail & Restaurant tech stack of the future, which capability will be most essential?



Quotes from Photon Digital-First AI Engineers

"**A critical capability for AI Transformation will be seamless integration** with onsite Hardware and POS system at the Kitchen, Restaurant seating area, Store's inventory, etc."

"The pricing comes from a different place, the product comes from a different place, the ordering system is different. **Integration is the biggest challenge**"

"Predictive analytics is top...wherever brands can infuse AI to predict better, **it helps with overall supply chain and cost**"

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Order's Up! AI & Automation on the Way!

The rapid adoption of technology over the last decade, combined with the forced digital shift during the pandemic, has left many restaurants **struggling with a disjointed spaghetti-mess** of a technology stack. The need to integrate various systems—POS, online ordering, delivery services, loyalty programs, and customer feedback channels, to name a few—has become one of the **biggest challenges** for restaurant tech leaders.

Managing this fragmented network requires significant investment, strategic vision and tactical nuance not only in the technology itself but also in the support infrastructure. Restaurants dealing with multiple, siloed systems can face up to 30% higher operational costs compared to those with integrated systems, primarily due to redundant subscriptions, excessive maintenance needs, and increased IT demands. Fragmented systems create data silos, limit insights into customer behavior, reduce efficiency, and nurture inconsistent service experiences.

AI and automation are set to **reshape the restaurant industry** by providing overarching capabilities that transform operations, efficiency, and customer engagement. Industry leaders are implementing AI to automate inventory management, streamline drive-through service, and personalize customer experiences, showcasing the **substantial impact** of these technologies.



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AI & Automation Are the Next Big Battles

AI-Powered Inventory & Waste Management

Example: McDonald's optimized its supply chain to reduce waste and manage stock better. By analyzing real-time sales data with AI, McDonald's **reduced food waste by 20%**, providing fresher ingredients and streamlining costs that contributed to a significant improvement in supply chain efficiency.

Enhanced Customer Experience

Example: Starbucks' Deep Brew platform uses AI to analyze customer preferences, making personalized menu recommendations. By fostering engagement through Starbucks' mobile app, this tool **increased average order values and boosted customer satisfaction**.

Precise and actionable AI solutions offering **practical, real-world applications** can be tailored to tackle specific pain points. These solutions are greatly needed within the restaurant industry, especially those targeting operational inefficiencies, data challenges, system integration gaps, customer experience challenges, and overall profitability goals. Let's explore how AI tools **directly address the challenges** we've discussed, such as inventory management, scheduling, and customer engagement.

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AI & Automation:
What's on the Menu?

The menu of AI & Automation is robust and extensive. **Business & Tech leaders must be thoughtful and strategic** about which of the capabilities need to be developed, and in which to order.

These objectives are viewed as top menu items of capability development to date in the Restaurant space.

Optimized Inventory Management

AI tools analyze real-time data to forecast demand accurately, reducing waste and ensuring popular items are always available. McDonald's AI-Driven Inventory System cut food waste by 20%, translating to substantial annual savings while improving menu reliability and customer satisfaction.

Predictive Maintenance for Equipment

AI monitors kitchen equipment health, preventing breakdowns and reducing repair costs. Chipotle's Predictive Maintenance System reduced downtime by 15%, saving significantly on emergency repairs and enhancing kitchen efficiency.

Enhanced Service with AI Chatbots

AI chatbots streamline orders, handle custom requests, and improve upselling, reducing wait times and increasing revenue. Wendy's AI Chatbots have achieved a 15% reduction in drive-through wait times and a 10% boost in per-transaction revenue.

Efficient Staffing and Scheduling

AI-driven scheduling aligns staffing levels with peak hours, optimizing labor costs and service quality. Starbucks leveraged this approach, forecasting traffic patterns to cut labor costs by 8% and boost service during high-demand periods.



What's on

Hyper-Personalization

AI enables tailored menu suggestions based on customer preferences, enhancing engagement and driving higher average orders. Starbucks' Deep Brew platform customizes recommendations, resulting in a 5% increase in ticket size as customers add suggested items.

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the Menu?

Targeted Loyalty Marketing

AI-driven loyalty programs analyze customer behavior, enabling personalized promotions and increasing engagement. McDonald's Loyalty Program saw a 12% increase in app engagement as a result of targeted offers, boosting customer loyalty.

Data Analytics: Efficiency & Speed

AI-powered data analytics platforms provide real-time insights into sales, customer behavior, and inventory trends, enabling quicker and more informed decision-making. For example, insights on peak traffic times and menu popularity allow managers to adjust offerings dynamically, enhancing service quality and revenue potential.

Streamlining Technology Integrations

AI-driven platforms integrate disparate systems such as POS, CRM, and inventory management, providing a unified view of operations and simplifying data flow. By consolidating tech systems, restaurants reduce manual tasks, cut down on data silos, and improve overall operational efficiency, enhancing both front-of-house and back-of-house alignment.

Tech Cost Reduction Through Automation

Automation minimizes redundancies and reduces tech costs by streamlining workflows and eliminating unnecessary systems. Through automated scheduling, payroll processing, and inventory management, restaurants like Domino's have cut operational costs significantly, allowing them to reallocate resources to high-impact areas.

Demand Forecasting: Location Specific, Day Part Optimization

AI models predict demand based on location and time, optimizing menu offerings and staffing for specific day parts. By forecasting high-traffic periods for breakfast, lunch, or dinner, restaurants can align resources accordingly, reducing waste and ensuring high-demand items are available when needed.

As we all know, the key ingredients of success in any restaurant is **speed, accuracy and efficiency**. And that is precisely what AI & Automation offers – the ability to do more with less and do it with quickly. How data is captured, stored and activated will continue to determine success of AI in the restaurant space. AI is too powerful of a tool to not be leveraged to improve data capabilities and ultimately improve the experience of the customer.

The menu of AI & Automation **can be overwhelming at first glance**. Selecting the right options that will positively impact the P&L, customer experience and employee experience must be approached thoughtfully. Tailoring a strategic vision, a robust execution plan and the appropriate measurement systems is essential. **Photon has created a successful AI strategy implementation plan** that is here to help.

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Hyper-Personalization:
A Peek into the Kitchen

Customers today are more willing than ever to share personal data with brands they love and trust. However, customers expect personalized experiences in return - enter Hyper-personalization. AI is the fuel that hyper-personalization capabilities run on and will become table stakes in the near future for digital restaurant experiences.

What is Hyper-personalization?

- Hyper-personalization uses real-time data, AI, and analytics for tailored 1-1 customer experiences.
- It goes beyond traditional personalization by leveraging individual behaviors and preferences.
- Provides a cohesive, consistent experience across digital and physical channels.

What Can It Do?

- Delivers precise product recommendations and relevant promotions.
- Enhances satisfaction and loyalty through highly personalized experiences.
- Creates a competitive advantage by anticipating and meeting customer needs.

Do Customers Want It?

- Customers increasingly expect personalized, relevant interactions with brands.
- Customers are ready and willing to share more data with brands they love, but expect hyper-personalized offerings in return.
- When executed well, it fosters deeper loyalty and brand affinity.



How Can AI & Automation Help?

- AI & Automation ensures timely, consistent personalization across digital and physical touchpoints.
- Generative AI quickly creates dynamic, human-like content tailored to individual customers.
- Together, AI and automation make hyper-personalization scalable and efficient.

What Organizational Capabilities Need to Be in Place?

- A strong and unified data infrastructure for secure data collection, storage, and analysis.
- Alignment between Technology, Marketing, Restaurant Operations and Customer Service.
- Skilled data and AI talent to tell compelling stories and activate insights.

What are the Benefits?

- Ease of Experience: Builds customer trust and engagement.
- Increases loyalty, lifetime value, and revenue with deeper customer connections.
- Offers a strong ROI, offsetting tech investments through increased engagement and conversions.

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Photon's Chef's Special: Custom Solutions Tailored to Taste

Transforming digitally is a daunting task, requiring meticulous thought and planning. A **structured framework and governance structure** that anchors the team to a North Star, cascading objectives and thoughtful KPIs is essential for success.

To effectively navigate the landscape of organizational transformation, leaders should formalize and rally behind their **Digital North Star**, share it broadly and create champions for change to create positive momentum. This momentum will accelerate and clarify the ultimate destination for your transformational journey.

Following this, establishing and activating a **governance structure, such as an AI Transformation Center**, to ignite your AI & Automation Transformation journey is critical. Start with "No Regret Moves" – build on proven successes tailored to your brand's unique challenges and strengths. This approach enables you to begin small, adapt with each new use case, and scale rapidly with every incremental success.

Weaving in the frameworks introduced in **Photon's PAVE AI White Paper** will help kick-start a AI & Automation transformation. From our Restaurant Value Chain to the cascading elements of our AI Nerve Center, Use case prioritization and start small, scale fast toolkit. Photon has found this approach to been instrumental for success.

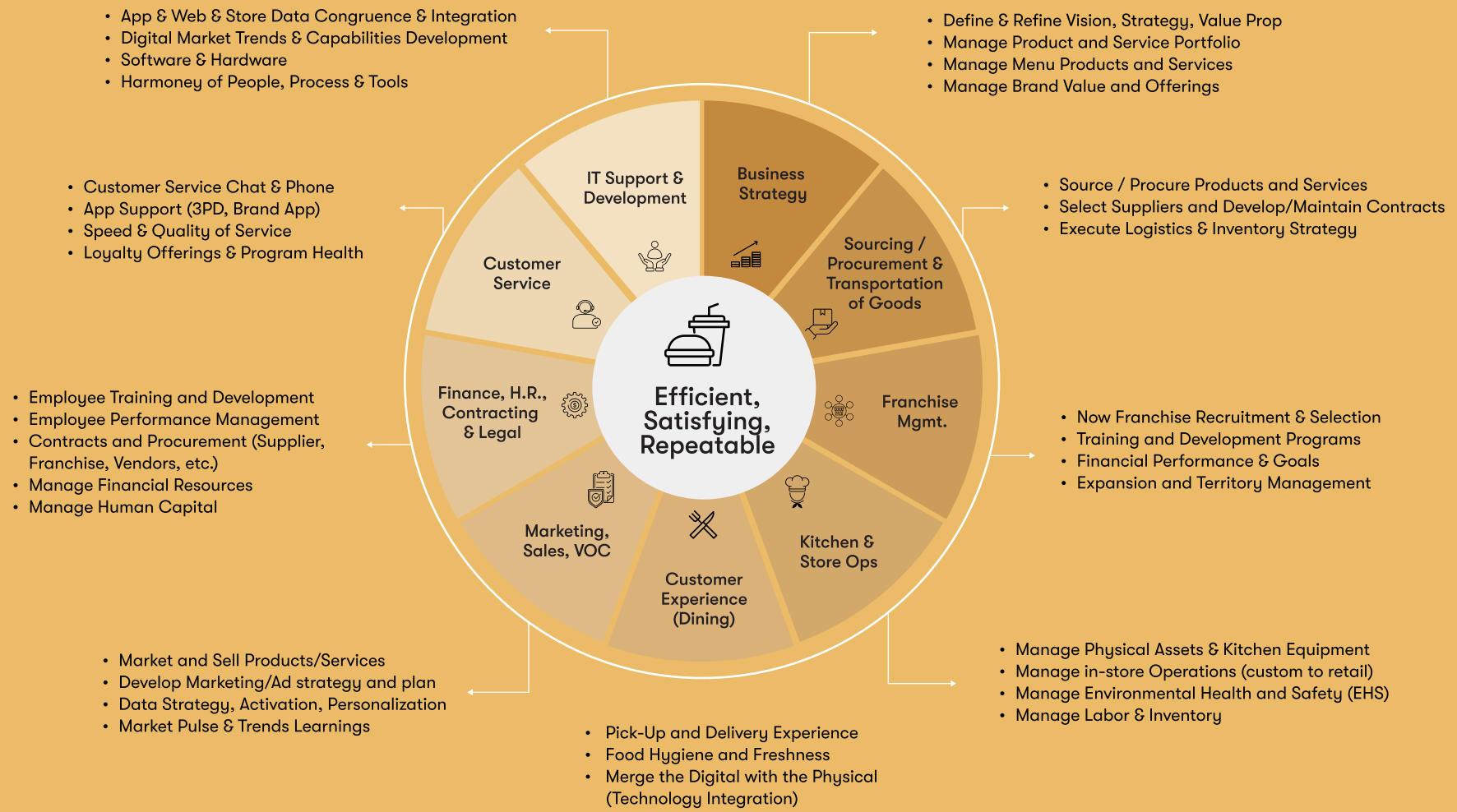


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Restaurant Value Chain

All great transformations require a North Star Vision. A short, powerful and pithy statement of intent will act as a guide for the transformation. The North Star should align perfectly within the corporate wide vision, yet be contextualized to bring a digital / AI Transformation to life. Once the North Star is ratified, launch an AI Transformation Nerve Center. This Nerve Center is a high performing group driving continual cross-functional transformation. Measuring and reporting on KPIs central to the transformation.

Next, leverage the restaurant value chain. **Validated by Industry C-Suite leaders, this chain will operate as the chess board for AI use cases**. Mapping P&L pressures, customer and employee pain points to this value chain will help illuminate where resources should be placed. Creating a basis of investment and uplift is critical to enhance capabilities and success for the business.



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Transformation Tool Kit

The restaurant of tomorrow will be powered by AI & Automation – with the potential to overcome inefficiencies and transform experiences. Photon's battle tested and market proven AI approach provides a clear path forward. With the right tools and strategy, the journey to a smarter and optimized restaurant model is within reach. Your to-go box of success awaits.



Vision and Value Chain Definition

Define the AI vision, set a guiding North Star, and map out the AI value chain to align with strategic business goals.

Establishment of AI Transformation Center

Establish the AI Transformation Center (ATC) to drive AI initiatives, activate PATH principles, and foster innovation across the organization.

Use Case Development

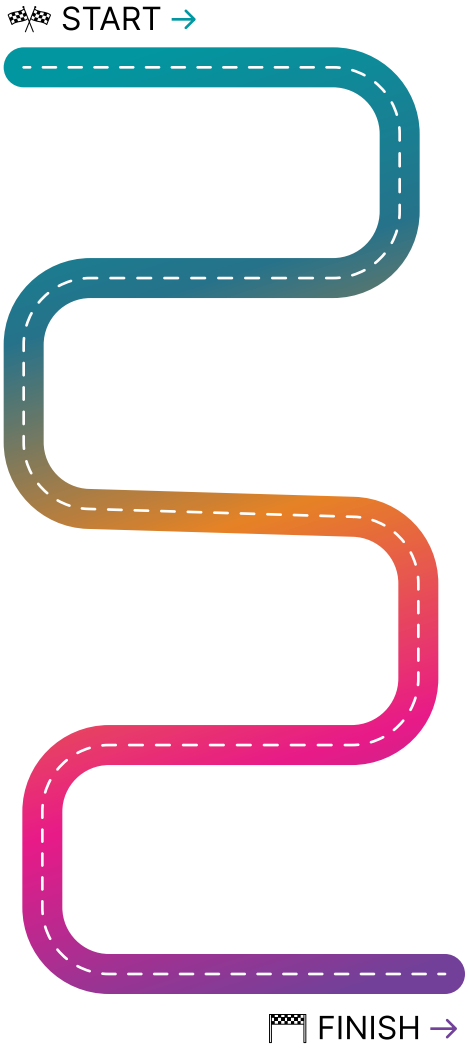
Identify and construct robust use cases, linking them together to form connected use case chains that leverage AI capabilities effectively.

Secure Investment, Create Momentum

Securing investment to fund low-effort, high-impact AI-driven use cases is critical to launch a virtuous cycle of AI transformation

Start Small, Scale Fast

Build and deploy AI-driven use cases, putting them into action to realize tangible business benefits and drive transformation.



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Success Story

Photon leveraged AI-powered forecasting to create a labor forecasting tool for a 100+ location restaurant chain. Using historical data—orders, POS, labor records, punch-ins, weather, events, and seasonality—the tool optimizes labor and inventory down to 15-minute intervals, improving efficiency and resource management.

Improving customer experience

Employee experience

Inventory management

Conclusion: Your To-Go Box is Ready!

The restaurant of tomorrow will be powered by AI & Automation – allowing restaurants the ability to overcome inefficiencies and transform experiences. Photon's battle tested and market proven AI approach provides a clear path forward.

Leveraging Photon's Transformation Tool Kit of solidifying a digital vision, launching an AI nerve center and prioritizing use cases to improve employee and customer experiences will kick-start the journey to a smarter and optimized restaurant. **Your to-go box of success awaits!**



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Partner with Photon today to do more with less, accelerate your business success, and enhance efficiency. Together, let's shape a future where possibilities are limitless.

Discover how Photon can revolutionize your enterprise. Reach out to us at sales@photon.com to schedule a workshop or a personalized session. Let us demonstrate the transformative power of our AI Value Engine and how it can be tailored to elevate your business operations.

Connect with us today and start shaping the future of your enterprise.

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