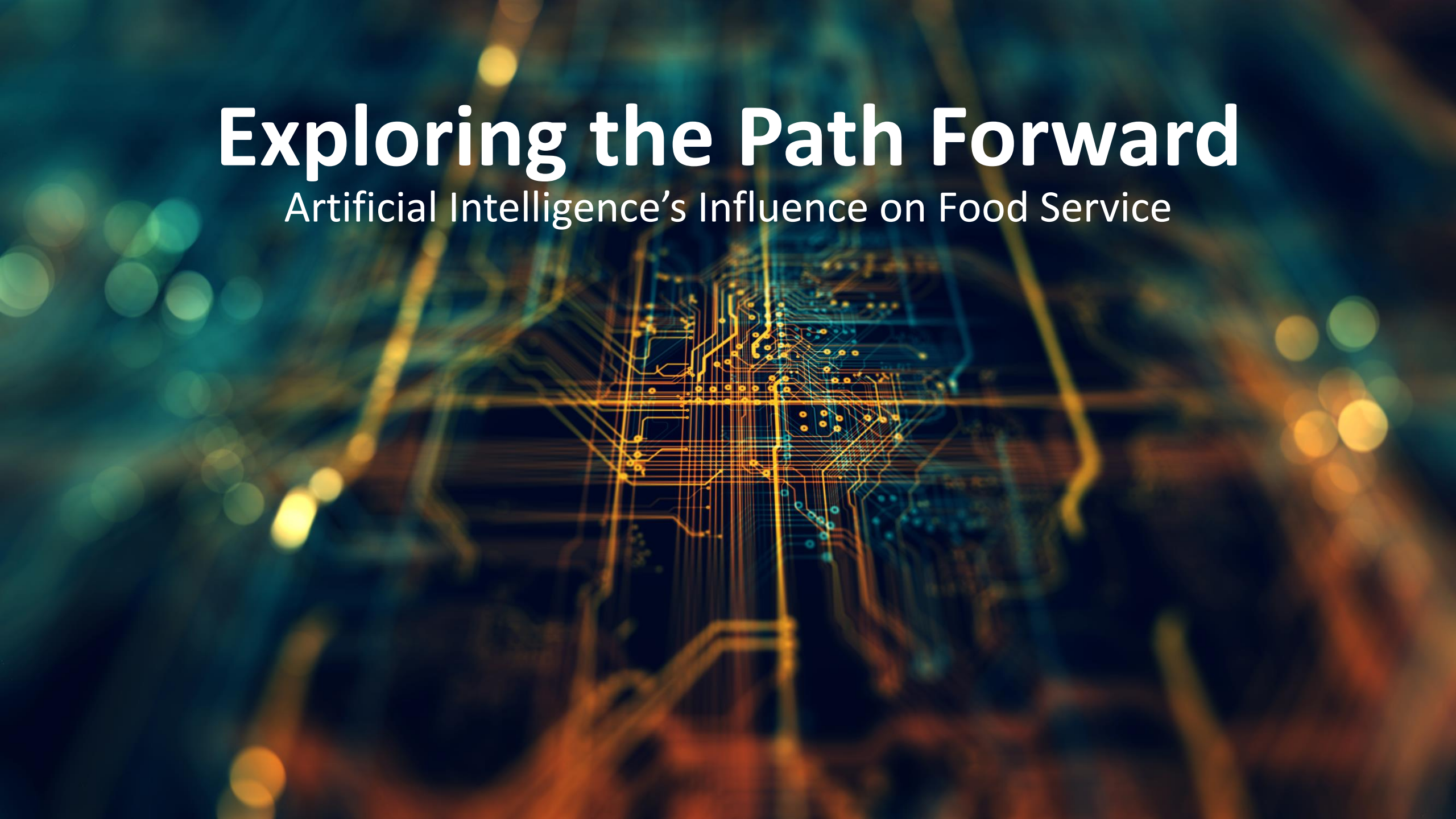


Exploring the Path Forward

Artificial Intelligence's Influence on Food Service





Peter Russell FIH

Chairman's Representative and Chief Technology Officer for Russell Partnership. Fellow of the Institute of Hospitality & ISHC board member.

UK's leading Food, Nutrition, Technology & Wellbeing Collection, delivering creative & commercially viable results to over 600 clients across 30 countries.

We deliver support across multiple sectors, including hotels, business, government, higher education and major events.

OVERVIEW

Understanding the Power of AI

Food Service and AI

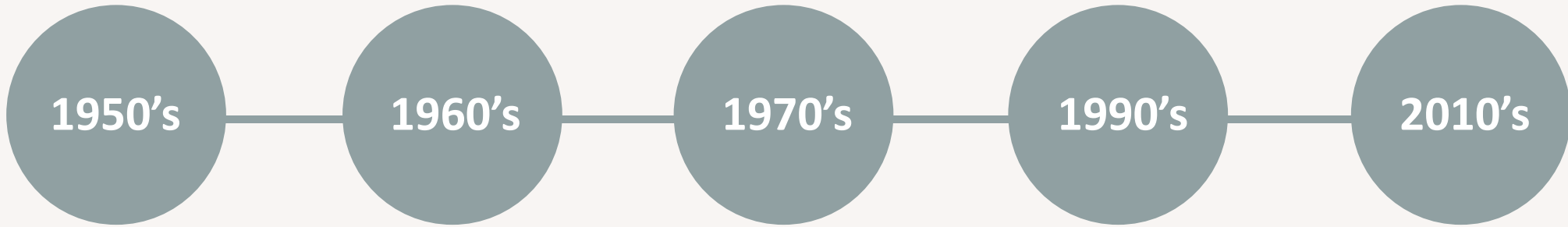
Enhanced Operations

Embracing AI for Sustainable Growth

Addressing Challenges and Ethical Considerations

Concluding Thoughts

BRIEF HISTORY OF AI



Alan Turing proposes the Turing Test and the term AI is born

Eliza language processing system and Shakey launched

First AI winter, followed by second winter in 1988

Deep Blue IBM Chess Computer beats Kasparov

Launch of language assistants, chatbots and EU Ethics guidelines

TYPES OF AI

There are four types of artificial intelligence which are detailed below. These can also be categorised as Narrow AI (Weak) and General AI (Strong).



Reactive AI



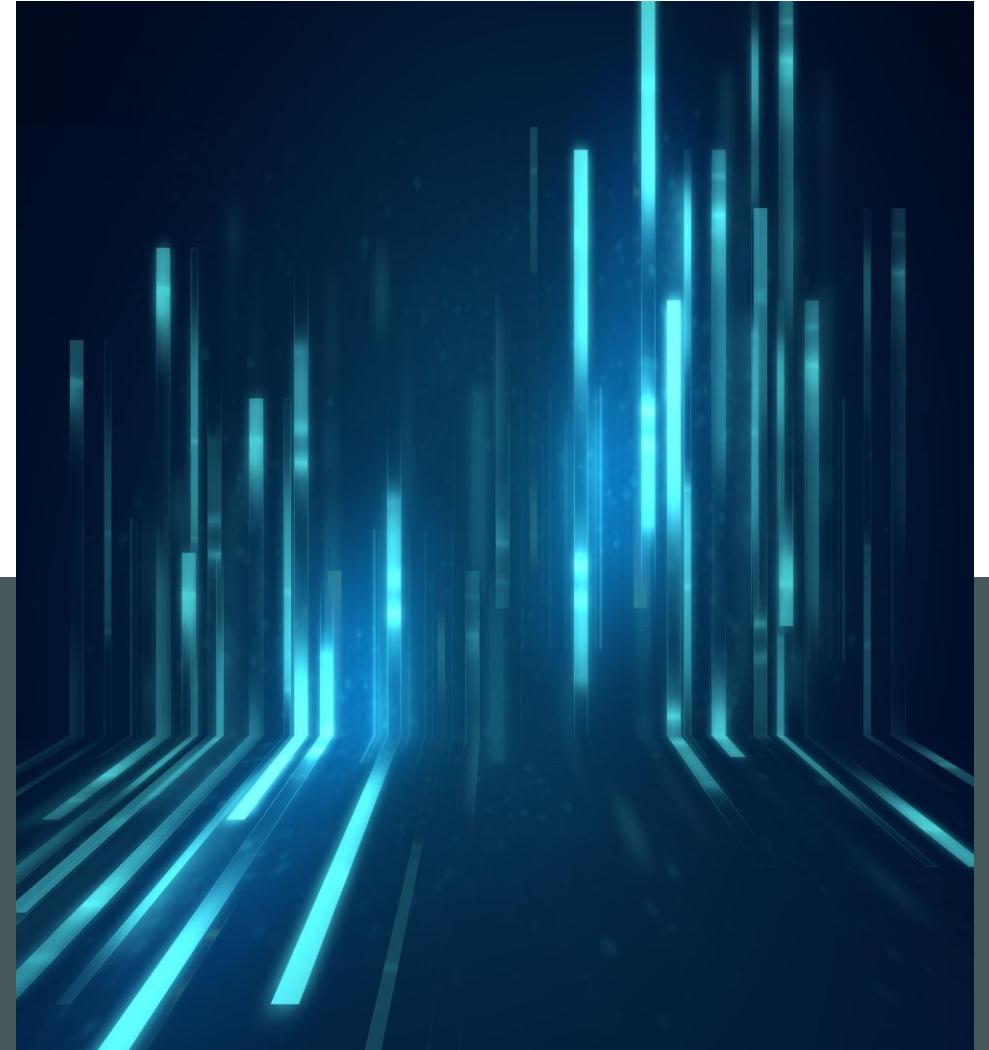
Limited
Memory



Theory of
Mind



Self-aware



TYPES OF AI

Reactive AI

Reactive AI is designed to perform specific tasks without the ability to learn from past experiences or adapt to new situations.

Chess-playing programs like IBM's Deep Blue are a classic example of reactive AI. Deep Blue could evaluate the current state of a chessboard and make optimal moves based on predefined rules, but it couldn't learn or improve from one game to the next.

Theory of Mind

Theory of Mind AI aims to understand and interpret the beliefs, intentions, and emotions of other entities, such as humans.

Virtual assistants like Siri or Alexa are beginning to incorporate elements of theory of mind. They can recognise voice tone and attempt to understand user emotions or intent to provide more context-aware responses.

Limited Memory

Limited Memory AI systems have the capability to learn from past experiences to some extent, making them more adaptable than reactive AI.

Self-driving cars use limited memory AI to navigate. These vehicles continuously collect data from sensors and cameras to make real-time driving decisions, taking into account the immediate environment and learned patterns from previous trips.

Self-aware

Self-aware AI is a highly advanced concept where machines possess self-awareness, understanding their own existence, emotions, and consciousness.

Self-aware AI remains a theoretical concept in the realm of science fiction, and we have not yet developed AI systems that possess self-awareness in the way humans do. This concept is still the subject of philosophical and ethical debates in the field of AI.

AI EXAMPLES

- **Virtual Assistants:** Apple's Siri, Google Assistant, and Amazon's Alexa use natural language processing and AI to respond to voice commands, answer questions, and perform tasks.
- **Recommendation Systems:** Netflix, Amazon, and Spotify use AI to analyse your viewing or listening habits and suggest content that you might like.
- **Social Media Algorithms:** Facebook and Instagram use AI to curate your feed, showing you content that is more relevant to your interests and interactions.
- **Chatbots:** Many websites and customer service portals employ chatbots to provide instant responses to customer queries and guide users through tasks.
- **Autonomous Vehicles:** Companies like Tesla are developing self-driving cars that use AI for navigation and decision-making.
- **Voice Recognition:** Voice recognition technology, used in applications like speech-to-text conversion and voice-controlled devices, is powered by AI.
- **Smart Home Devices:** AI is integrated into smart home devices like thermostats (e.g., Nest), security cameras, and lighting systems to provide automation and control.
- **Email Filters:** Email services like Gmail use AI-based spam filters to automatically categorise and filter incoming emails, keeping your inbox organized.
- **Language Translation:** AI-driven translation services like Google Translate can translate text and even spoken language in real-time.
- **Content Creation:** AI is used in content creation tools like GPT-3-powered writing assistants to generate human-like text, assist with writing.



Today I will be examining the wider industry view of artificial intelligence and how this will impact the sector.



Strategic fit and return on investment analysis are essential when considering and implementing artificial intelligence into food service.

ROADMAP

Short-Term Goals

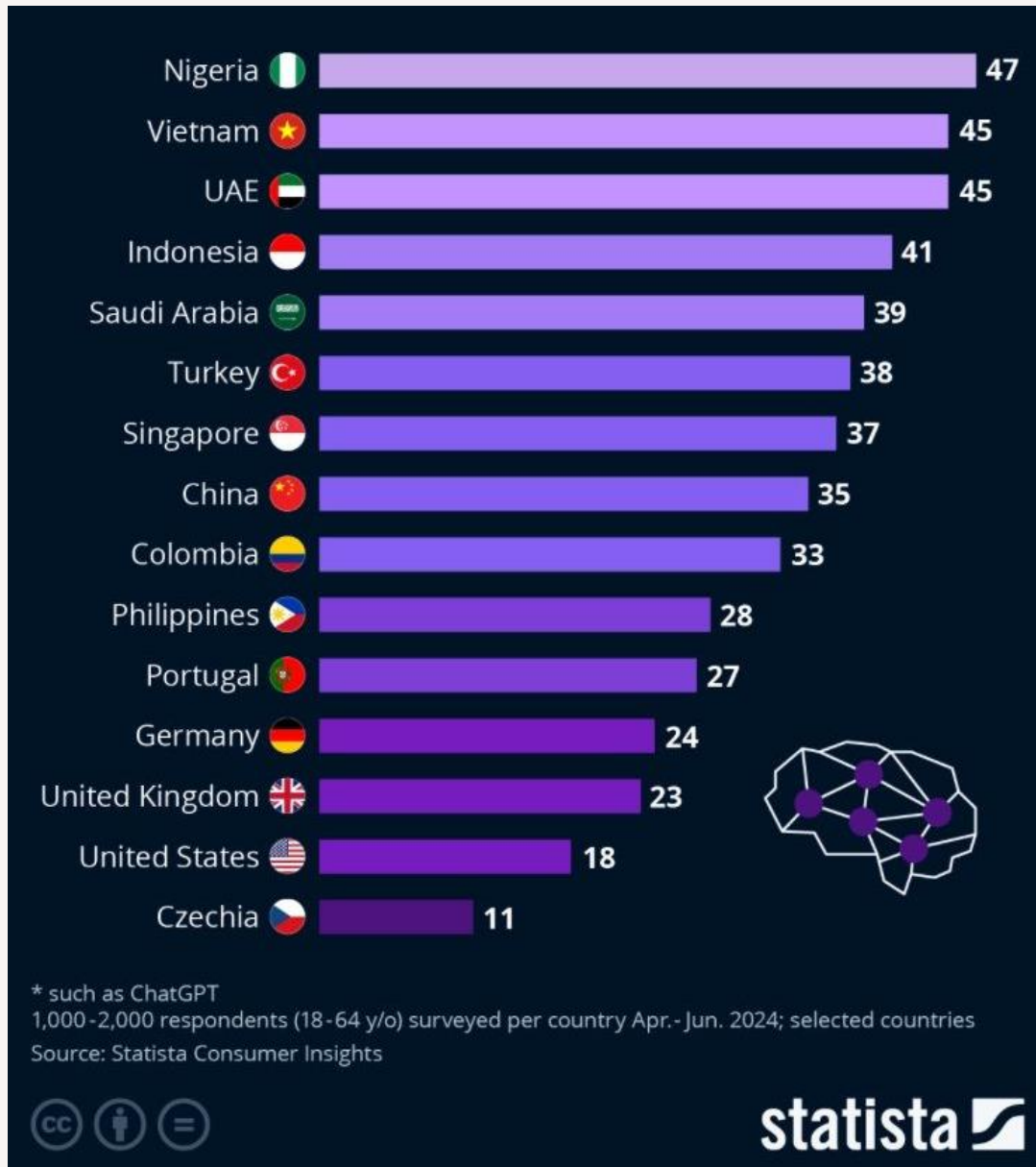
1. **Inventory Management:** Introduce AI systems for real-time tracking and forecasting of inventory to reduce waste and manage costs efficiently.
2. **Personalised Meal Planning:** Use AI driven meal plans which are tailored to special diets.
3. **Nutritional Analysis:** Implement tools for detailed nutritional analysis to ensure compliance with health guidelines.

Medium-Term Goals

1. **Integrated Devices:** Integrate IoT devices for food safety monitoring with alerts.
2. **Predictive Maintenance:** Implement AI-driven systems to predict maintenance needs and optimise repairs and down time.
3. **Predictive Analytics:** Utilise AI models to predict demand trends based on historical data and external factors.

Long-Term Goals

1. **Autonomous Services:** Investigate the use of AI-driven robots and autonomous systems for tasks.
2. **Sustainability Through AI:** Continue to leverage AI for sustainability efforts, optimising energy consumption, reducing waste, and identifying eco-friendly practices.
3. ...



Who's (Not) Excited About AI?



Food Service and AI

Focus Areas

- **Food Safety & Quality Control** – Monitoring and reporting systems
- **Blockchain** – Oversight of supply chain
- **Efficiency** – Manage costs through optimised processes
- **Data** – Leverage data for strategy and decision making

Current Examples

- **Automated Quality Control:** Companies like Bizerba UK have integrated AI-powered vision systems into their production lines to detect defects in food products, such as inconsistencies in color, shape, or size, ensuring high-quality standards and reducing waste.
- **Smart Sorting and Grading Machines:** Tomra Food utilises AI and machine learning in their sorting equipment to classify products by size, quality, or ripeness with precision, expediting sorting processes and enhancing product consistency.
- **Predictive Maintenance for Equipment:** Nestlé UK employs AI-driven predictive maintenance systems to monitor machinery performance in real-time, identifying potential breakdowns before they occur. This approach reduces downtime, extends equipment lifespan, and maintains steady production output.

Current Examples

- **Recipe Optimisation and Consistency:** Unilever has implemented AI to control and adjust ingredient measurements and cooking processes, ensuring consistent product quality. This is particularly valuable in batch production for items like sauces and baked goods, where precision is crucial for flavor and texture.
- **Energy-Efficient Processing Systems:** Premier Foods utilises AI-driven energy management systems to monitor equipment usage and optimise energy consumption. This strategy helps reduce power costs, minimise environmental impact, and increase operational efficiency in processes such as heat treatment and refrigeration.



Enhanced Operations

DRIVING EFFICIENCY & RETURNS





Embracing AI for Sustainable Growth

ADVANCING HOSPITALITY RESPONSIBLY

Planet



- AI can be utilised to analyse energy consumption and identify efficiency opportunities. This reduces carbon footprint.
- Sustainable practices resonate with environmentally-conscious individuals.

Associates



- AI can be utilised to drive work efficiency and in turn lead to better work-life balance and job satisfaction.
- Professional development and staff safety will also benefit from AI practices.

Community



- AI can promote local collaboration and support the utilisation of local produce.
- AI can support reduced food waste and send food to food banks and places where it is required.

Economic



- AI-driven data analysis will assist with identifying areas such as waste and drive overall profit.
- AI will drive labour cost saving and also yield competitive advantage.



Addressing Challenges and Ethical Considerations



KEY CONSIDERATIONS

Protecting data and being transparent/accountable in the age of AI is of high importance and will become increasingly more so.

Legal compliance and utilisation of third-party systems will require tight control and understanding. Education is of high importance.

Striking the balance between automation and the human touch will be an important balance to find.



Concluding Thoughts

How to shift our mindsets to utilise AI more

Where are the quick wins?

How will this work for me

How will we partner with AI to best effect

What skills will be required to work with AI

What can we do now?

Action Areas

Embrace a Learning Culture: Foster a culture where continuous learning about AI is encouraged. This includes staying updated on AI trends and understanding its potential applications.

Collaboration and Integration: Promote cross-functional collaboration between departments. AI can benefit various aspects of the business, and a collaborative mindset can uncover new opportunities.

Leadership Commitment: Ensure that leadership is committed to AI adoption. Their support and enthusiasm for AI initiatives can inspire the entire organisation.

Strategic Planning: Develop a clear AI strategy that aligns with business objectives and guest needs. This strategy should guide AI adoption and partnerships.

Vendor Selection: Carefully vet AI technology providers and partners to ensure they align with your brand values and offer solutions that meet your specific requirements.

Data Collaboration: Explore data-sharing partnerships with AI vendors to enhance AI's capabilities and insights while protecting guest data and privacy.

Action Areas

Data Literacy: Staff should have a basic understanding of data and how it's used in AI applications.

AI Awareness: Staff should be aware of AI capabilities and limitations to effectively collaborate with AI systems. USE GPT Where appropriate.

Interdisciplinary Collaboration: Encourage cross-functional teams where members bring diverse skills and perspectives to AI projects.

Start Small, Learn Fast: Begin with small-scale AI pilots and learn from the results. This iterative approach allows you to build AI capabilities gradually and effectively.

Stay Informed: Continuously educate yourself and your team about AI trends and developments. Attend workshops, webinars, and conferences to stay up to date.

Prioritise Guest Experience: Keep the guest at the centre of your AI initiatives. Ensure that any AI implementation directly enhances the guest experience, whether through personalisation efficiency, or improved service.



Peter Russell FIH

[linkedin.com/in/prussell007](https://www.linkedin.com/in/prussell007)

