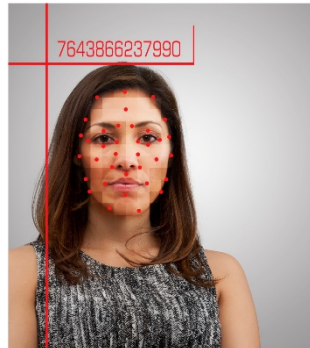
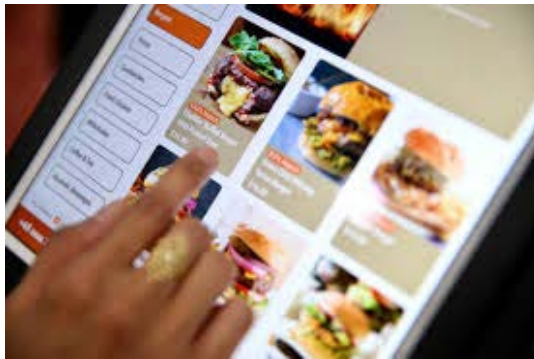


# *How Can We Ensure that Digital Technologies are Used to Support Healthy and Sustainable Diets in a Post-COVID Era?*



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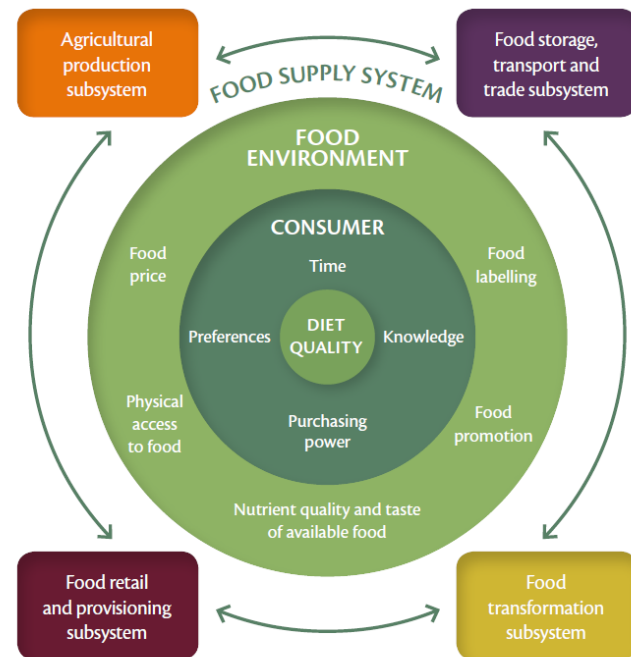
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FOODS, AND EXERCISE  
VIRGINIA TECH.

# Digital Technologies & Food Systems

- **Digital technologies** are electronic tools, systems, devices and resources that generate, store or process data.
- **Examples:** AI & deep learning, drones, precision agriculture, blockchain technology, robotics, virtual and augmented reality used in food systems to improve how we grow, distribute, market and purchase foods at local, national and global levels.

## Food systems and diets

Food systems comprise the growing, harvesting, packing, processing, transforming, transporting, marketing, consuming and disposing of food.



**Source:** Global Panel on Agriculture and Food Systems for Nutrition. *Food Systems and Diets: A Handbook of Essential Policies*. 2019. [https://www.glopan.org/wp-content/uploads/2019/12/GlobalPanel\\_Handbook.pdf](https://www.glopan.org/wp-content/uploads/2019/12/GlobalPanel_Handbook.pdf).

**Industrial IoT (IIoT)** enables the automation of repetitive tasks, facilitates efficiency of production and delivery processes, and allows businesses to connect directly with consumers.



# Past & Current Food Ecosystems

Figure 1: The food ecosystem in the past

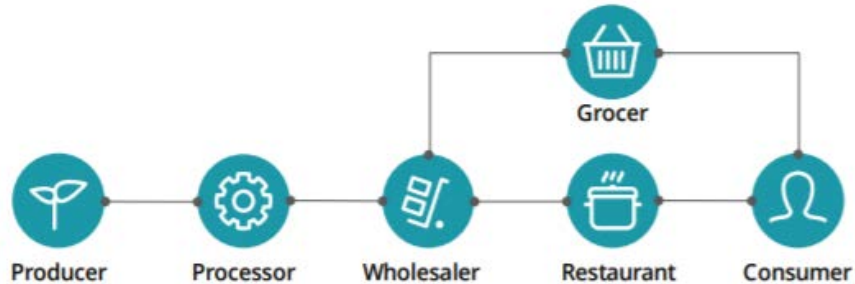
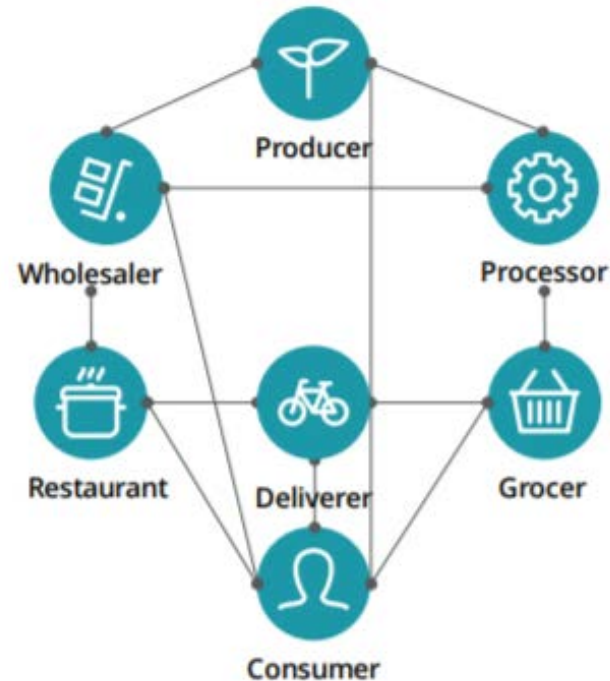


Figure 2: The food ecosystem today

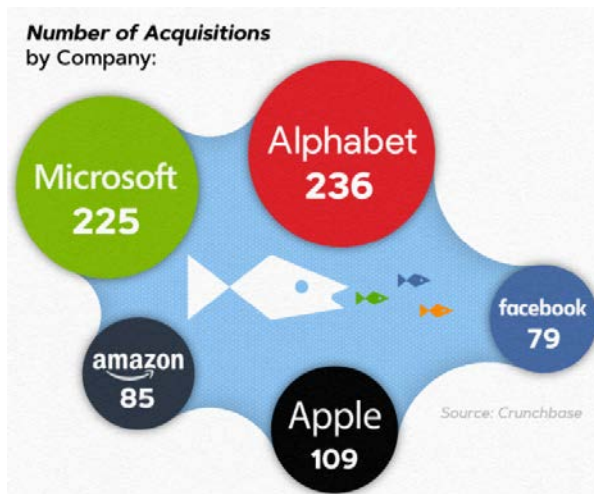


**Source:** Deloitte. *Future of Food: How Technology and Global Trends are Transforming the Food Industry*. 2019.



# Food Environment Actors

- Food manufacturers
- Food retailers
- Chain restaurants
- Delivery firms
- Digital tech firms



Postmates

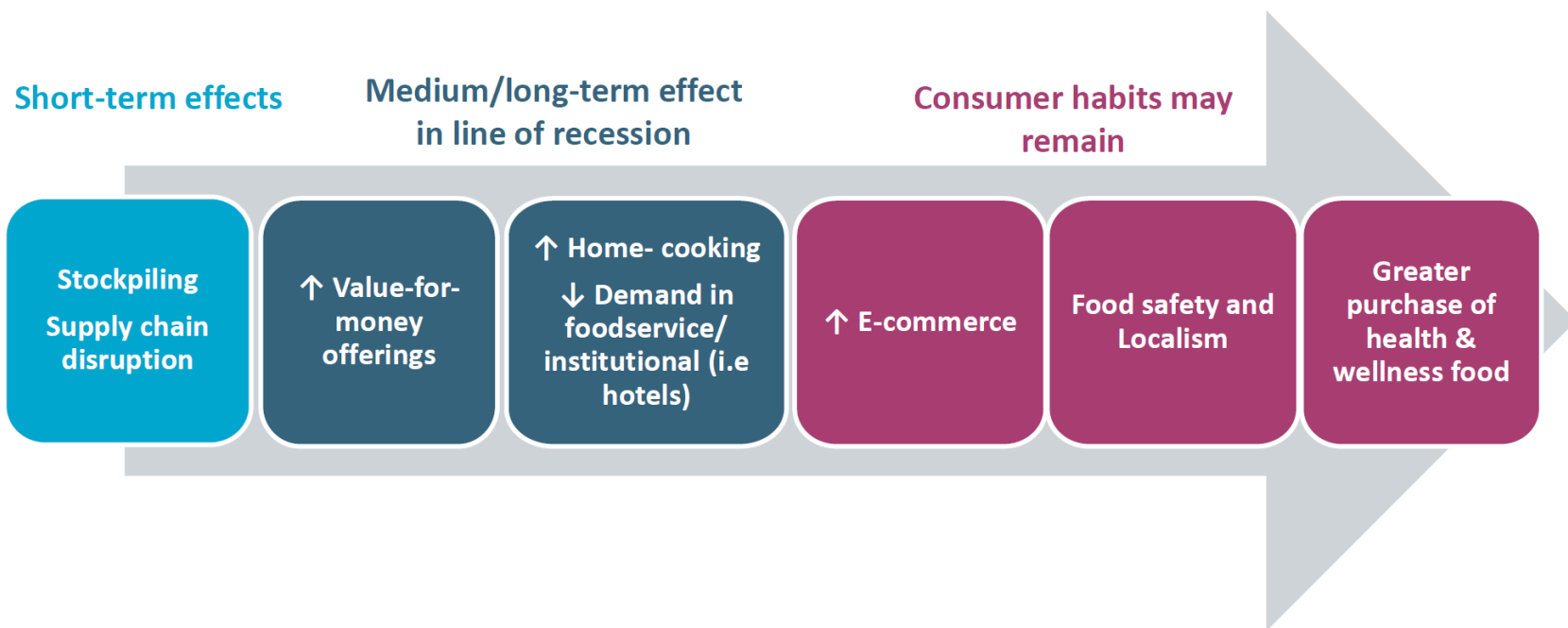


# Post-COVID Food Retail Trends

LONG-TERM IMPLICATIONS

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## Food and Nutrition in Light of COVID-19: Key Takeaways

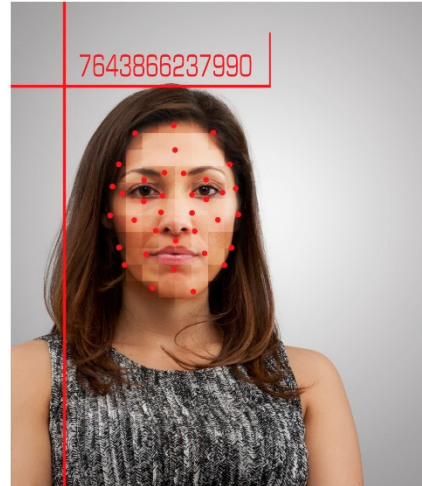
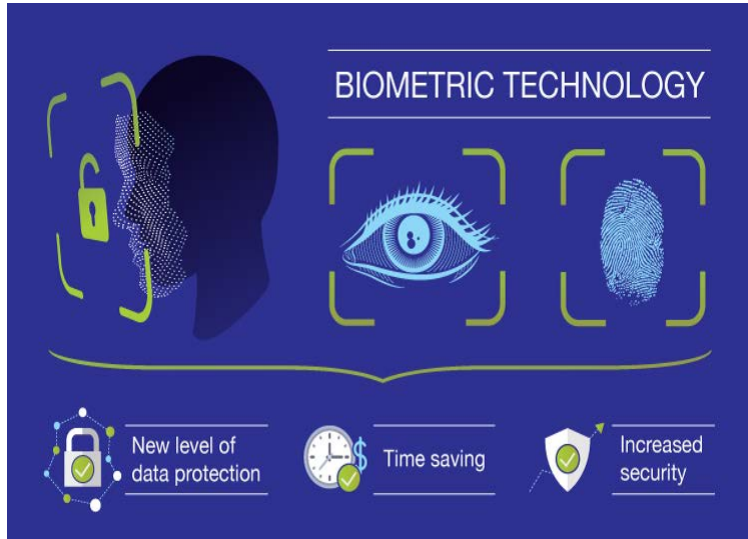


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**Source:** Euromonitor International. April 21, 2020.

# Biometric Authentication



Use of physical information to identify, verify or confirm human features and a person's identity.

- **Examples:** smartphone's fingerprint scanning, voice or facial recognition software to access our mobile devices.
- **Benefits:** convenient when making repeated online purchases without entering passwords to access websites or apps
- **Drawbacks:** Government & corporate monitoring of populations; privacy data collected and sold to third-part advertisers; software flaws; and hackers can change or steal your identity.

# Digital Tech & Food Retailers











- **Digital technologies** provide easy, cashless and efficient e-commerce process where customers can use self-order kiosks and digital touchscreens to order groceries or meals.
- **Biometric data** confirms a customer's identity and store information about preferred payment, previous orders, and allows automatic purchases from a mobile device.
- **Algorithmic nudging** by AI-enabled software to predict and personalize a customer's choice based on age, mood, order history, time of day, weather and popular items sold.



## Potential of technology/tool to encroach on individual privacy, by type of privacy

Level of concern: ● Low ● Medium ● High

	 Traditional identifiers	 Behavior and actions	 Thoughts and feelings	 Images	 Biological data	 Personal communication	 Location and space	 Association/group privacy
Commercial sensors	●	●	●	●	●	●	●	●
Wearables	●	●	●	●	●	●	●	●
Virtual assistants	●	●	●	●	●	●	●	●
Geolocation	●	●	●	●	●	●	●	●
Biometrics	●	●	●	●	●	●	●	●
Web browsing, email, IM	●	●	●	●	●	●	●	●
Social media	●	●	●	●	●	●	●	●
Drones	●	●	●	●	●	●	●	●

Source: Deloitte Center for Financial Services.

**Source:** Deloitte Insights. *Reimagining Customer Privacy for the Digital Age. Going beyond compliance in financial services.* Deloitte Development LLC. 2019. <https://www2.deloitte.com/content/dam/Deloitte/br/Documents/financial-services/Deloitte-reimagining-consumer-privacy-for-digital-age.pdf>

# Summary

- Digital technologies (DT) are transforming food systems.
- Consider impact of DT on the human experience where access is a human rights issue and DT must address equity.
- Recognize ethical challenges related to how we **can** and **should** use DT to inform public- and private-sector policies to promote safe, healthy and sustainable diets and food systems worldwide.
- Governments must develop comprehensive privacy policies and regulatory frameworks to guide responsible use of AI-enabled DT that may promote misleading or deceptive marketing of unhealthy products and misuse personal data collected.
- Food system actors that engage in food-related e-commerce must substantially strengthen their privacy & marketing policies to protect customers increasingly making online purchases.
- Consumers must understand benefits and risks of using their biometric data to make online food purchases thru digital platforms.