

RESEARCH NOTE

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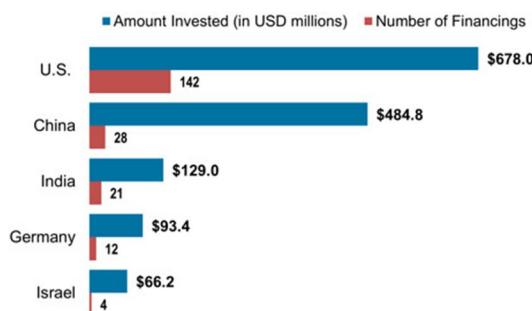
SUBJECT: **Food Technology Research Note**

The Food Technology industry focuses on optimizing how we harvest, process, ship, prepare and distribute food and improving the food experience at the consumer level. This industry has attracted significant investment and attention from investors, and the following research note outlines the sectors, market dynamics and themes that represent a compelling opportunity for future investments.

Corporate and venture equity investment in Agriculture and Food Technology totaled \$269 million across 41 deals in the third quarter of 2014, up 48% and 41% YoY in dollars invested and deal volume, respectively. According to CB Insights, of the deals in the online/mobile food & grocery space over the last eight quarters, 51% were seed/angel rounds, 41% were Series A or B deals and the remaining 8% were Series C or later.

	Seed / Angel	Series A	Series B	Series C	Series D	Series E+
% of deals	51.2%	29.6%	11.2%	4.8%	2.4%	0.8%
Avg deal size	\$0.73M	\$5.25M	\$8.15M	\$28.43M	\$35.19M	\$88M
Median deal size	\$0.48M	\$3.5M	\$6.75M	\$28.5M	\$30M	\$88M
Deal growth (yoY)	+28.57%	+108.33%	+150%	0%	+100%	N/A

Geographically, the U.S. leads VC funding for food and beverage startups, with \$678 million invested in 2013.



Source: Dow Jones VentureSource | VentureWire

MARKET OVERVIEW

Food Tech products and services can be categorized in three ways: (i) Business-to-Business ("B2B") (e.g., **Farmers Edge**), (ii) Business-to-Business-to-Consumer ("B2B2C") (e.g., **GrubHub**) and (iii) Business-to-Consumer ("B2C") (e.g., **NatureBox**). The scope of this research note will include B2B models (Agriculture Technology, Supply Chain Enablement, Restaurant Enablement), B2B2C models (Dining Services, Local Marketplaces, Online/Mobile Ordering) and B2C models (Grocery Delivery, Direct Goods/Meals, Communities, Taste Analytics).

MARKET OPPORTUNITY

- **B2B**
 - The global agriculture system includes \$2 trillion in farm assets (Kaufman Foundation)
 - Innovation Endeavors estimates global net farm revenues to be \$120 billion
 - Research and Markets forecasts the precision farming market to reach \$6.3 billion by 2022, growing at a 13% CAGR from 2015-2022
 - U.S./Canada wholesale food service industry is \$220 billion (Na'ama Moran, Sourcery CEO)
 - Technomic estimates the 2014 total U.S. restaurant and bar industry to be \$431 billion
 - Restaurant technology spend is expected to increase, with nearly half of restaurant operators expecting to devote more resources to customer-facing technology in 2014 and about a third planning to invest in front- and back-of-the-house technology

Restaurant operators who say they will devote more resources to technology in 2014

	Family dining	Casual dining	Fine dining	Quick-service	Fast casual
Customer-facing technology	41%	50%	51%	43%	57%
Front-of-the-house technology	28%	35%	23%	39%	47%
Back-of-the-house technology	24%	30%	19%	33%	38%

Source: National Restaurant Association, *Restaurant Trends Survey*, 2013

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- The market for subscription fees for reservation management software and commissions is projected to develop into a \$10+ billion market by 2022 (Project Q Management estimates)
 - **B2B2C**
 - Euromonitor estimates that the U.S. spends \$204 billion annually on dining
 - Takeout represents about a third, or ~\$67 billion, of the overall dining market
 - Intermediaries (e.g., GrubHub) have an addressable revenue opportunity of \$8-9 billion (BMO Capital Markets research report)
 - IBIS estimates the market for food service contractors (companies that provide food services at institutional, governmental, commercial or industrial locations) to be \$42 billion in 2014

- **B2C**

- The Bureau of Labor Statistics estimates that food expenses accounted for 13% of the average consumer annual expenditure
- Business Insider estimates that Americans spend \$600 billion a year on groceries
 - Currently, online grocery shopping is one of the smallest retail segments of the food and beverage retail industry, accounting for less than 4% of total sales
 - Growth in online sales is expected to be buoyed by same-day delivery services, specialty grocers and meal-preparation businesses
 - Market research group Packaged Facts estimates that online grocery sales will grow from \$23 billion in 2014 to nearly \$100 billion in 2019, capturing 12% of total grocery spending
- According to Nutrition Business Journal, the natural and organic food segment is expected to reach \$61 billion by 2015 and will continue to grow to \$113 billion in 2020, representing a CAGR of 11% from 2013 to 2020
 - The Agricultural Act of 2014 will spur continued growth in the organic industry through provisions that provide \$20 million annually for organic research and agricultural extension programs and \$12 million for certification cost-share assistance

MARKET TRENDS

We organized the market trends first by business model (B2B, B2B2C and B2C) and then by category to align with the Food Tech market map.

B2B Trends

Agriculture Technology (AgTech) – Tools and techniques used to control the growth and harvesting of animal and vegetable products

- The inputs of agriculture are increasingly costly, both financially and environmentally
 - The farming industry uses ~70% of the available freshwater supply for cropland comprising ~12% of the earth's surface (Innovation Endeavors)
 - Increasing land costs require farmers to be more efficient to remain profitable
 - Better, sustainable solutions are necessary to minimize the negative environmental footprint of tillage and fertilizer, which are the primary contributors of methane and nitrous oxides
 - AgTech companies must address the challenge of not only increasing current food production by 70% for an estimated 9.6 billion global population in 2050, but doing so in a sustainable and scalable manner (Innovation Endeavors)
- Precision Agriculture emerged as a farming management framework that uses GPS services, sensors and Big Data analytics to conserve water and improve crop yields
 - Provides ways to make cost-effective, targeted responses to crop stresses and other traditionally costly situations

Supply Chain Enablement – Tools aimed to make smarter purchasing decisions; includes the processes involved in transporting food from the pre-consumption phase during harvest, storage and transport to the end destination

- Managing suppliers in the food industry is inefficient, with \$165 billion worth of food wasted every year in the U.S. (Innovation Endeavors)
 - Food companies, restaurants, caterers and corporate kitchens have struggled to digitally source and manage their suppliers, and many companies still rely on pen and paper methods
- Supply chain software is mission-critical for food production companies to better track food inventory, minimize environmental impact through shipment tracking, predict fluctuations in the global supply chain and improve inter-company communications
 - Food-related supply chain management is particularly complex given the perishable and temperature-sensitive nature of inventory
 - Traceability of individual products is critical in the event of an outbreak or recall
 - Retailers and suppliers are increasingly leveraging predictive intelligence to forecast key parameters that they need to make informed decisions regarding inventory management, procurement and consumer marketing activities

Restaurant Enablement – Tools used to improve the operational efficiency and customer experience in restaurants

- Restaurants are implementing tabletop technology
 - Recent implementations at casual dining restaurant chains include:
 - **E La Carte** has 100,000 tablets installed in Applebee's ~1,860 U.S. restaurants and signed an agreement to install tablets in 200+ U.S. Johnny Rockets locations
 - **Ziosk** installed 45,000+ tablets in Chili's 823 U.S. restaurants

- **Altametrics** partnered with Buffalo Wild Wings to trial its iPad-based menus
- Tablets reduce expenses and improve efficiency
 - \$0.42 cost per hour per tablet compared to waiters' federal minimum tipped wage of \$2.13 per hour (The Slate Group)
 - Eliminates expenses related to hiring and training full-time waiters
 - Improves restaurant supply chain with real-time inventory management and updates
 - Restaurants with tabletop tablets experience an average 5.3% increase in sales and 7-10 minute improvement in table turnover (TechCrunch)
- Improved customer experience
 - Dine at their own pace, ordering and paying directly from the tablet
 - Individualized experience with different gaming and music offerings

Consumers who say they would be likely to use a smartphone or tablet for restaurant-related activities

	All adults	Age 18-34	Age 35-44	Age 45-54	Age 55-64	Age 65+	Children under 18 in household
Look up locations or directions	67%	88%	78%	63%	60%	31%	80%
Order takeout or delivery	52%	74%	62%	45%	39%	20%	67%
Use rewards or special deals	50%	70%	58%	47%	38%	21%	65%
Make a reservation	46%	59%	60%	38%	40%	22%	56%
Look up nutrition information	42%	55%	46%	38%	35%	23%	54%
Pay for your meal	24%	43%	22%	16%	16%	9%	32%

Source: National Restaurant Association, *Technology Innovations Consumer Survey*, 2013

- Restaurants are using analytics platforms to optimize operations (e.g., manage workforce efficiency, improve sales) and develop a better understanding of consumer preferences to inform improvements in food and service
 - **Avero** tracks purchases and voided items at point of sale to return an average 5% or \$250,000 annually for casual restaurants
 - **Food Genius** aggregates data from restaurant menus to determine pricing, food and marketing trends
 - **Swipely** allows restaurants to see new vs. repeat customer spend, lists of their best and most recent customers and sales patterns during different hours of the day

B2B2C Trends

Dining Services – Services related to catering and other non-restaurant dining experiences, both for businesses and consumers

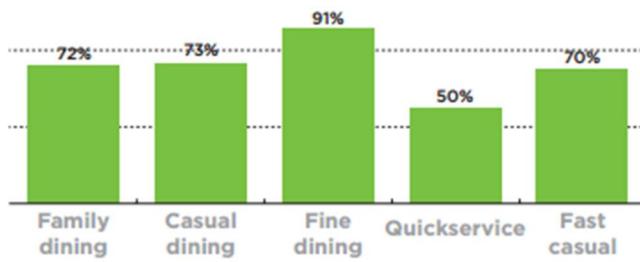
- 11% of U.S. employees receive regular lunches from their employers, up from 5% in 2013 (GrubHub)
 - 34% receive food for holidays and 22% receive for office celebrations
- There is growing desire for reliability, taste and variety as more companies offer in-office catering
 - **EAT Club** offers businesses and enterprises daily lunch services for employees to order entrées from 15 daily options using a web ordering system or an iPhone app
 - No order minimum, additional tips or fees
 - Seek to improve employee experience by providing lunch on a recurring, on-demand basis
- Emergence of meal-sharing ("Airbnb of food"), buoyed by the rise of the sharing economy and consumers' desire for restaurant-quality experience without paying a restaurant price

- **EatWith** provides a platform that connects diners and hosts, creating a unique social experience where guests get to know one another while also eating an authentic, home-cooked meal
- **Kitchit** provides a Kitchit Academy-certified chef to a customer's home, where the chef cooks a meal and handles kitchen cleanup

Local Marketplaces – Platforms that facilitate online marketplaces for local, independent farmers

- Demand for local, unprocessed foods for healthy diets ("Farm-to-dining-room-table")
 - Growth in the sector is driven by growing consumer discretionary budgets and consumer preferences shifting away from processed foods towards healthier foods

**Percent of restaurant operators who say
their customers are more interested in locally
sourced items than they were two years ago**



Source: National Restaurant Association, *Restaurant Trends Survey*, 2013

- Online platforms provide a broader opportunity for local farmers and artisans who previously had selling opportunities limited to local farmers markets or wholesale and subscription-based food channels
 - Cloud-based software simplifies inventory monitoring for small businesses
 - Enables seamless communication between platform and producers, so consumers place orders only for goods that are readily available
 - **Farmigo** is a small farm-delivered food service, in which the farmer transports the ordered goods to a centralized packing hub where Farmigo repackages the orders before delivering them to community drop-off points
 - Farmers take 60-70% of the sale versus approximately 30% of the sale when they sell wholesale
 - Farmers are paid immediately, directly by the consumer, rather than the standard 30-60 days
 - **Good Eggs** provides a marketplace that allows customers to buy from nearby farms and vendors and handles all the logistics associated with packaging and delivery to the end customer

Online/Mobile Ordering – Web and mobile applications that facilitate ordering food from local restaurants

- GrubHub estimates 95% of takeout orders are still made over the phone using paper menus
 - \$67 billion takeout market that is transitioning from offline to online
 - Online/mobile ordering reduces the friction when ordering takeout and offers users discovery, choice, convenience and transparency by simplifying the order process
- **GrubHub** and **Just Eat** IPOed in April 2014; both platforms earn revenue through restaurant take-out rates of ~10-14% per order

- **GrubHub** is the largest online restaurant ordering service in the U.S. with roughly 30,000 restaurants and 4.2 million consumers in 800 U.S. cities and London
- **Just Eat** is a UK-based online takeout service with roughly 40,800 restaurants and 6.9 million consumers in 13 countries
- Online-only restaurants are emerging to enable restaurants to avoid some of the overhead expenses of maintaining a physical presence
 - Require fewer physical locations and can lease cheaper commercial real estate in low-cost locations
 - **Sprig** delivers affordable, organic, locally-sourced meals prepared by experienced chefs
 - **Munchery** offers cooked, plated and chilled meals to be dropped off during dinnertime hours to be reheated in homes or offices

B2C Trends

Grocery Delivery – Online/mobile grocery ordering and delivery

- The traditional grocery business is a high-friction experience
 - Shoppers must physically drive to stores, walk through aisles and stand in lines
 - U.S. consumers currently make an average of 4.8 trips to the grocery store per month (Statista)
- According to BCG, the online share of grocery shipping is growing at rates of 20-50% per year in leading markets outside the U.S.
 - The online channel is ripe for fast growth given the increasing number of broadband and mobile internet connections in the past five years, making consumer access easier
 - Retailers not willing to bear the costs of a full delivery model are considering a “click-and-collect” model which requires the consumer to pick up groceries ordered online either at the store or a fulfillment warehouse, where multiple deliveries can be made at once to reduce shipping costs

Direct Goods – Differentiated food products and packages

- Customers seek cheaper, sustainable and healthier alternatives due to rising monetary, environmental and health costs of meats, dairy and other food items
 - **Hampton Creek** indexes plants, categorizing data about each species and its varietal, and then uses its predictive models to determine what a given specimen could be used for in the kitchen
 - Its method for producing egg-like, plant-based foods is 48% more cost-effective than using traditional eggs
- Easy to prepare meals or even total meal replacements are desired by individuals who do not have the time, money or energy to spend preparing meals
 - **Soylent**, a nutritionally complete liquid food substitute, aims to engineer the healthiest, most affordable and convenient staple food ever produced
- New sustainable food sources are necessary if the world is to meet the 70% increase in current food production needed to support the global population in 2050
 - **Exo** sells cricket-based protein bars, with the intention of introducing a sustainable protein source into the market
- Subscription boxes meet a variety of dietary restrictions and needs and have gained substantial popularity
 - **NatureBox** is a \$20 per month subscription box service that has more than 100 snack items and many gluten-free, milk-free, soy-free, nut-free and egg-free choices

Communities – Online/mobile recipes and cooking communities

- Food communities provide consumers with access to various recipes and resources
 - **Foodily** offers a new way to search for recipes so one can easily browse through the broadest selection of recipes online from big name chefs to up-and-coming bloggers
 - Partnered with **FreshDirect** to launch **Popcart**, which allows users to order deliveries of ingredients directly from online recipes
 - **Yummly**, a recipe search and recommendation site, offers personalized, contextual meal recommendations according to user preferences, weather, time of day and location
 - **Salted** allows customers to stream unlimited cooking demos from more than 60 renowned chefs for \$10 a month

Taste Analytics – Applications that predict satisfaction with new foods/drinks or formulate tailored meals/diets for particular tastes and needs

- **Next Glass** is a wine and beer recommendation app that bases its recommendations on a scientific analysis of 20,000 bottles of wine and 4,500 bottles of beer
- **Delectable** is an app that uses proprietary technology to identify wine, label it and allow consumers to purchase it in-app, using experienced sommelier reviews alongside user-submitted feedback to assist in the purchase decision
 - Currently has over two million wines in its database
- **Zipongo** is a platform that provides personalized meal plans, virtual shopping lists and discounts on foods a customer is planning to buy
 - Partnerships with Trader Joes, Safeway and Whole Foods across the U.S.
 - Planning to roll out a personalization engine that can craft meals based on dietary wants and needs
 - In the long-term, it plans to integrate genetic data into the platform to create personalized, smarter diet plans

INVESTMENT THEMES

- **B2B2C Marketplaces** – We are interested in the marketplace model due to the high operating leverage and powerful network effects. There are **three** types of food-related marketplaces:
 - Traditional online marketplaces (e.g., **GrubHub**) provide a platform that brings together both buyers and sellers with low capital intensity and no inventory risk. These marketplaces are particularly interesting as they typically generate both platform subscription fees from businesses and transaction fees from consumer purchases. This theme is an extension of the marketplace thesis we developed as part of the commerce project, and after review of several marketplace opportunities, we are enthusiastic about seeking out prospects in the food tech vertical.
 - Logistics marketplaces (e.g., **GoodEggs**) provide a platform that brings together localized buyers and sellers by providing warehouses and logistics networks to facilitate the delivery of goods to the end consumer. Despite the more capital intensive business model, logistics marketplaces operate with a recurring revenue model (logistics/inventory management subscriptions plus transaction fees) similar to traditional online marketplaces.
 - Services marketplaces (e.g., **Kitchensurfing**) provide a platform for non-restaurant dining experiences by aggregating service providers. These marketplaces benefit from low capital intensity and have the opportunity to capitalize on consumer adoption of sharing economy models that provide convenient, cost-effective alternatives to traditional B2C solutions (e.g., Uber with cabs, Airbnb with hotels).
- **Restaurant enablement** – We are interested in restaurant enablement companies because they are similar to the SaaS models with which we are familiar while providing exposure to the restaurant industry's shift and growth online. As restaurants invest in technology to improve operational efficiency and meet rising customer expectations for convenience and entertainment, we see a large opportunity given the low penetration and high fragmentation in both the customer-facing and back-end technology segments.
- **Agriculture enablement** – We are interested in applying our SaaS knowledge to the multitrillion dollar agriculture vertical as the industry adopts new technologies for enabling precision agriculture. We like opportunities to invest in vertically-focused software platforms dedicated to managing, measuring and forecasting farming operations.
- In addition to the aforementioned three themes, we are interested in opportunistically reviewing investments in the **differentiated food** space. We are interested in companies that are able to carve out a sustainable market niche by providing a unique food offering (e.g., **Exo**) and/or companies with established branding and successful products (e.g., **Hampton Creek**). Subscription boxes (e.g., **NatureBox**) and similar models are preferable vs. traditional B2C commerce due to the attractive recurring revenue model.