MIS Quarterly Executive

Volume 21 | Issue 3 Article 5

September 2022

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The rapid growth of Instacart, a grocery delivery service, shows that the innovative use of digital resources can create a market niche with lucrative returns. Versatile and easily accessible digital resources can revolutionize how established firms do business by developing new ways of coping with digital innovations and market turbulence. The Instacart case demonstrates how companies can orchestrate digital resources to navigate an evolving business landscape, value creation patterns and value capture challenges in a digital world, and provides five recommendations for orchestrating digital resources.[1,2]

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Value Creation and Value Capture in a Digital World

Increasingly, digital technologies provide the backbone for products, services and business operations. The fusion between physical and digital is revolutionizing global collaborative and competitive landscapes, creating a so-called "digital world." With advancing accessibility, functionality and customizability, digital technologies and the business value they encapsulate have become competitive resources for sustained performance.[3] Businesses are automating and optimizing operational processes (e.g., real-time inventory tracking), and engaging customers and employees in open collaborative innovation.[4] Companies that do not "go digital" risk seeing others encroach on their customer bases with more compelling digital offerings (e.g., recall how Netflix overthrew Blockbuster).

The collaborative and competitive dynamics in a digital world affect both *value creation*—i.e., organizational actions that generate end-user utility through the final product or service—and *value capture*—i.e., the realizable profit determined by a focal company's power relationships with related economic players (e.g., customers, suppliers and retailers). New digital solutions, in particular, allow organizations to reduce physical barriers, tap into external

1 Gabriele Piccoli is the accepting senior editor for this article..

2 The authors thank Gabriele Piccoli and the members of the review team for their constructive input throughout the review process.

3 Piccoli, G., Rodriguez, J. and Grover, V. "Digital Strategic Initiatives and Digital Resources: Construct Definition and Future Research Directions," in *Proceedings of the 41st International Conference on Information Systems*, ICIS 2020, Hyderabad, India, December 2020.

4 De Falco, S. E., Renzi, A., Orlando, B. and Cucari, N. "Open Collaborative Innovation and Digital Platforms," *Production Planning and Control* (28:16), October 2017, pp. 1344-1353.

DOI: 10.17705/2msqe.00067

resources and capabilities, reach a critical mass of customers and pursue more participatory forms of engagement.[5] By effectively leveraging digital resources, organizations can refine their value creation chains, create or enter new markets and integrate separate markets.

A digital world also introduces new challenges. In addition to known rivalries, organizations may have to face new competitors that invade their markets in unpredictable ways. The taxi industry, for example, was disrupted by ride-hailing apps such as Uber and Lyft, which provided appealing features like simplified bookings, card-friendly payment, fare-splitting options and hassle-free tracking functions. Businesses may also face "winner-takes-all scenarios," where the emergence of a "winner" is often accompanied by multiple "losers." Much as organizations desire to win in the digital world, the odds are against them. Though the few winners know how to successfully deploy digital technologies in their competitive landscapes, most executives struggle to leverage digital resources while navigating the tensions between value co-creation for the ecosystem and value capture for their own organization.[6]

In this article, we present a strategic framework using the case of Instacart (a North American home delivery service for groceries and other goods). The framework encapsulates the evolving business landscape, value creation patterns and value capture challenges that jointly determine how companies orchestrate digital resources to secure strategic advantage. Instacart is an exemplar of strategies that we have seen implemented by a broad group of companies. We believe the framework and the lessons from the Instacart case can be generalized for both established and new companies. Accordingly, we provide five recommended actions that managers can take to translate the key lessons into practice. Our research methodology is summarized in the Appendix.[7]

A Brief History of the Rapid Rise of Instacart

Despite challenges that Instacart has faced and may yet face, it has the distinction of being the first company to implement a viable grocery delivery service at scale. Apoorva Mehta, an electrical engineer and formerly a supply chain function worker at Amazon, founded the company in 2012 when he was just 25. The idea was to "Uber-ize" a network of temporarily idle transportation resources for grocery home delivery services. Instead of eliminating humans with technology-enabled gains in productivity, Instacart recruits an underemployed workforce (e.g., students, parents) as personal shoppers. They receive Instacart orders on their smartphones, shop at participating local superstores and deliver the orders within the time frames set by customers.

Originally launched in San Francisco, California, Instacart is now present across the United States and Canada. In March 2020, before the Covid-19 pandemic shut down much of the world, Instacart was available to 85% of American and 70% of Canadian households.[8] With the surge in demand for grocery deliveries during the pandemic, Instacart experienced phenomenal growth. From late 2020 to April 2021, its valuation doubled to $39 billion, and it raised a further $265 million of funding in 2021.[9]

Instacart was not the only, and definitely not the first, company to experiment with grocery delivery, but it is now the market leader. Over the past 20 years, there have been, numerous experiments in this market, including Webvan, Amazon Fresh, Google Express, Uber's Corner Store and, more recently, FreshDirect, which is one of a continuing stream of new entrants to this

5 For more on initiatives enabled by digital resources in general, see Piccoli, G., Rodriguez, J. and Grover, V., op. cit., December 2020.

6 Huber, T. L., Kude, T. and Dibbern, J. "Governance Practices in Platform Ecosystems: Navigating Tensions between Cocreated Value and Governance Costs," *Information Systems Research* (28:3), October 2017, pp. 563-584.

7 Our analysis of the Instacart case built on Deighton, J. and Kornfeld, L. *Instacart and the New Wave of Grocery Startups*, Harvard Business School Case 515-089, April 2015. We also reviewed Instacart press releases, publicly available recordings of interviews with Instacart executives and other information retrieved online.

8 *InstaCart availability in the United States and Canada in 2020*, Statista, January 27, 2020.

9 *Instacart Valuation Doubles to $39 Billion With New Funding, Bloomberg*, March 2, 2021, available at https://www.bloomberg.com/news/articles/2021-03-02/instacart-valuation-doubles-to-reach-39-billion-with-new-funding.

market. Though numerous attempts continue to be pursued, there have also been many failures. In an effort to fend off quickly rising competitors such as DoorDash, Instacart postponed its plans for an initial public offering (originally expected in late 2021) to strengthen its services.[10] It is thus both timely and relevant to examine how Instacart orchestrates digital resources to secure its current market edge over competitors.

A Strategic Framework for Leveraging Digital Resources

Whether Instacart will continue to be successful in the long term is yet to be settled, but this case provides several useful lessons. Key insights derived from our analysis of the Instacart case and from the digital resource literature led us to construct the strategic framework shown in Figure 1. Our analysis highlights three contextual factors that jointly influence the orchestration of digital resources: the evolving business landscape, value creation patterns and challenges to value capture. Instacart's pursuit of strategic advantage is grounded in a quickly evolving business landscape and its journey is inspired and driven by emerging value creation and capture possibilities.

An Evolving Business Landscape

In a much-connected world, Instacart and other companies have been building up their resource inventory internally as well

10 See: 1) Jin, B. "Instacart Pushes Off Public Offering to Focus on Grocery Services Growth," *The Information*, November 16, 2021; and 2) Tepper, T. "10 Company IPOs To Watch," *SWVA Today*, June 10, 2021.

Figure 1: The Strategic Framework

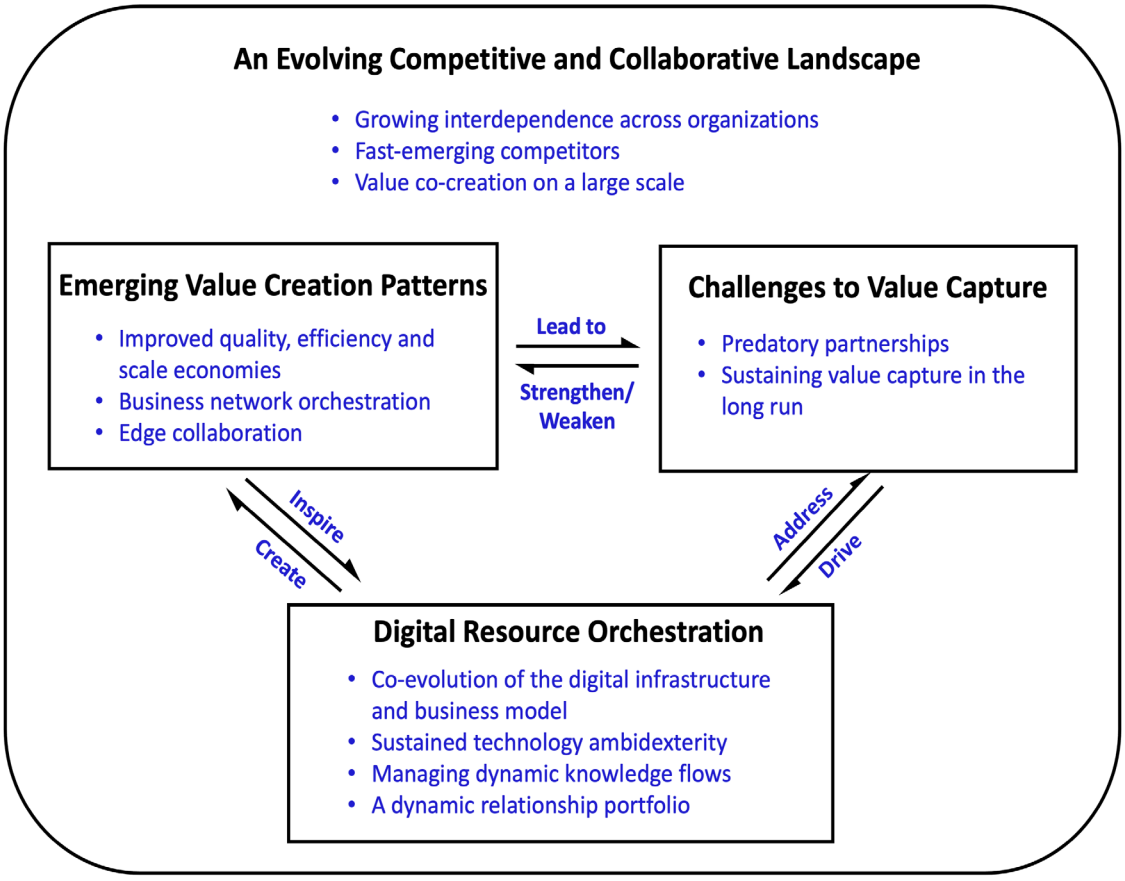

Table 1: Collaborative and Competitive Dynamic Landscape in a Digital World

Landscape Patterns	Implications	Examples
Growing interdependence across organizations	Companies from different industries can combine their strengths for shared benefits.	Uber and Spotify have collaborated to allow Uber users to connect their Spotify accounts to car radios during their rides—a practice that adds to the personalization value for both companies.[11]
	Even competitors can co-create value as long as they have compatible goals.	To compete with online travel agencies such as booking.com, Airbnb is building partnerships with selected hotels (i.e., its previous competitors) to diversify its urban lodging options—an effort to rebrand itself as an "end-to-end travel platform."[12]
Quickly emerging competitors	Competitors can come from adjacent markets.	Uber entered the food delivery service and Google moved into smartphone production.
	Industry boundaries are becoming increasingly blurred.	Instacart expanded the scope of its delivery services to include apparel and beauty products. The automobile industry is becoming the mobility industry, as vehicles are evolving into portable computers on wheels.[13]
	The impact of merger practices is becoming more profound and complicated.	With the acquisition of Lynda.com, LinkedIn provided a stronger bundle of employment-oriented services, extended its reach to college seniors, who are key subscribers of Lynda.com, and disrupted the online education market with its capabilities to provide job-seeking support.[14]
Value co-creation on a larger scale	Organizations can use digital platforms as hubs for large-scale value co-creation.	Instacart has provided an innovative solution for convenient grocery shopping by matching the desire of shoppers to earn extra money and the need of grocers to extend their customer base and generate more profit.

as externally through complex relationship networks with stakeholders. Specifically, we found three emerging patterns of collaborative and competitive dynamics: 1) growing interdependence across organizations; 2) quickly emerging competitors; and 3) value co-creation on a larger scale. Implications and examples of these patterns of an evolving landscape are summarized in Table 1.

Emerging Value Creation Patterns

The processes leading to customer satisfaction, company profits and other benefits enabled by digital technologies are sometimes unclear within quickly changing value networks. Through our analysis, we found three emerging value creation patterns that companies like Instacart have successfully leveraged: 1) improved quality, efficiency and scale economies; 2) business network orchestration; and 3) edge collaboration.[15] Table 2 provides explanations and examples.

Challenges to Value Capture

Value capture is a function of power and bargaining processes among the players involved in value co-creation. Even if joint digitally enabled

11 Madhavan, M. *Better Together*: 9 *Examples of Collaboration in Marketing*, ReferralCandy, November 8, 2016, available at https://www.referralcandy.com/blog/marketing-collaboration-examples.

12 Bosa, D. *Airbnb to Collaborate on New York City Hotel*, CNBC, April 28, 2019, available at https://www.cnbc.com/2019/04/28/airbnb-is-partnering-with-rxr-realty-to-convert-new-york-city-commercial-properties-into-a-new-category-of-urban-lodging.html.

13 Gurbaxani, V. and Dunkle, D. "Gearing Up for Successful Digital Transformation," *MIS Quarterly Executive* (18:3), September 2019, pp. 209-220.

14 Wagner, K. *Three Reasons LinkedIn Broke the Bank for Lynda.Com*, Vox, April 9, 2015, available at https://www.vox.com/2015/4/9/11561324/three-reasons-linkedin-broke-the-bank-for-lynda-com.

15 Our use of the term "edge collaboration" is based on edge computing, a method of optimizing data processing by taking some portion of an application, its data or services away from one or more central nodes to the edge of the network.

Table 2: Value Creation Patterns in a Digital World

Patterns	Explanations	Examples
Improved quality, efficiency and scale economies	With digital resources, companies can collaborate and innovate on new products, services or business models.	Enhanced connection (e.g., timely communication and automated progress tracking) between customers and shoppers is key to Instacart's offering. Healthcare practitioners can benefit greatly from readily accessible electronic health records that break down operational silos of healthcare agencies.
Business network orchestration	By forming a community of collaborators, organizations benefit from a diverse resource base, while reducing the risk of opportunistic players in the value network.	Extending beyond the role of intermediary, Instacart has orchestrated digital resources to coordinate stakeholder engagement and build collaborative networks to "grow the size of the pie." Through constant identification, engagement and optimization of hard-to-copy collective resources (e.g., best data flow management practices established through experiential learning), Instacart has so far successfully protected its market and expanded into new ones.
Edge collaboration	Edge collaboration refers to the optimization of digital resource portfolios for value creation. Organizations can ensure highly efficient network operation and maximize the value derived from digital resources.[17]	The LEGO Group excels at edge collaboration. To support operational excellence, LEGO developed an enterprise system for intra-organizational coordination, knowledge management and supply chain management. For product innovation, LEGO leverages open innovation platforms that invite novel ideas from LEGO fans and strengthen the involvement of passionate builders in product development and design. For marketing, LEGO has launched social media campaigns to strengthen its digital presence and channels. Finally, to avoid distraction from its core business, LEGO has outsourced application maintenance to another company with domain expertise.[18]

initiatives are expected to increase overall value creation, a company may fail to capture greater proportional value relative to competitors. Some grocers, for example, have reported that although partnering with Instacart increases revenues, the commission charged by Instacart means that they do not make any profit.[16]

Our analysis identified two challenges to value capture. The first is "predatory partnerships," where the intention to acquire the source of competitive advantage from partnering organizations is disguised as collaboration. In fact, Instacart has been criticized for requiring and collecting data from partnering grocers, and the question "will Instacart become a grocer?" has been around for years. The second is sustaining value capture in the long run. Instacart and other companies with novel business models are particularly vulnerable to the unforeseeable and potentially neglected factors that can affect value capture. Implications of these challenges and examples are set out in Table 3.

16 Kang, J. "Instacart Looked Like a Savior. Now Stores Aren't So Sure," *Wall Street Journal*, December 28, 2020.

17 Shi, W., Cao, J., Zhang, Q., Li, Y. and Xu, L. "Edge Computing: Vision and Challenges," *IEEE Internet of Things Journal* (3:5), October 2016, pp. 637-646.

18 El Sawy, O. A., Amsinck, H., Kraemmergaard, P. and Vinther, A. L. "How LEGO Built the Foundations and Enterprise Capabilities for Digital Leadership," *MIS Quarterly Executive* (15:2), June 2016, pp. 141-166.

Table 3. Challenges to Value Capture in a Digital World

Challenges	Implications	Examples
Predatory partnerships	No partnership is static in a dynamic business environment.	Didi Chuxing (a Chinese ride-sharing service provider) launched ride services in Mexico in early 2018 to compete with Uber, even though the two companies had announced a strategic partnership in 2017. One year after its Mexican debut, Didi captured, on average, 30% of the market share in cities where it operates.[20]
	Precautions are needed to mitigate potential threats.	Microsoft created separate divisions for its applications and operating systems groups, allowing the company to deal with competitors who were also complementors (e.g., purchasing third-party apps) and to prevent its complementors from partnering with its competitors. [21]
Sustaining value capture in the long run	Digitally enabled scalability potential without effective management measures can negatively affect business performance.	As Instacart rapidly expanded its army of shoppers to meet booming demand during the pandemic, the company struggled to deal with surging complaints about shoppers stealing customers' groceries. [22] In 2018, Didi suspended its carpool service indefinitely and fired two senior executives after two female customers were murdered in a three-month period.[23] Regulatory pressure and a public backlash resulting from such incidents can lead to long-lasting damage to the business.
	Companies should watch out for the sustainability of their critical resources.	To ensure customer safety, ride-hailing apps such as Uber and Didi had to establish rigorous driver background checking systems.
	Businesses must stay both operationally efficient and agile to salvage their value share in the face of disruptors.	Facing Airbnb-like sharing-economy threats, some conventional hotel chains still manage to grow their revenues by adjusting their own value networks. For instance, Wyndham Worldwide Corporation, a global hospitality organization, acquired several sharing-economy vacation rental startups to increase its competitiveness. The Hilton hotel group established cross-sector partnerships with Uber to tap into its rich customer information database.[24]

Lessons Learned from the Instacart Case

Instacart has achieved four strategic outcomes from its endeavors to orchestrate digital resources: 1) coevolution of the digital infrastructure and business model; 2) sustained technology ambidexterity;[19] 3) managing dynamic knowledge flows; and 4) a dynamic relationship portfolio. These outcomes are summarized in Table 4, along with the actions taken by Instacart to achieve each outcome, the drivers for those actions and how the actions relate to the strategic framework shown in Figure 1. The lessons relating to each of the strategic outcomes are described below.

19 For a primer on IT ambidexterity, see Lee, O. K., Sambamurthy, V., Lim, K. H. and Wei, K. K. "How Does IT Ambidexterity Impact Organizational Agility?" *Information Systems Research* (26:2), June 2015, pp. 398-417.

20 Saleem, R. *Uber Losing Latin America to Chinese Entrant Didi Chuxing—Will the Company Ever Turn Profitable If It Cedes its Bastion?* WCCF TECH INC, November 12, 2019, available at https://wccftech.com/uber-losing-latin-america-to-chinese-entrant-didi-chuxing-will-the-company-ever-turn-profitable-if-it-cedes-its-bastion/.

21 Cusumano, M. A. and Gawer, A. "The Elements of Platform Leadership," *MIT Sloan Management Review* (43:2), April 2002, pp. 51-58.

22 See: 1) Brown, D. "'Refund My Money!' Customers Accuse Instacart Shoppers of Stealing Their Groceries," USA TODAY, April 8, 2020; and 2) Matarese, J. "Instacart Customers Complain of Theft," WCPO 9 News, June 9, 2020.

23 *Didi Chuxing Suspends Carpool Service after Woman Killed*, BBC News, August 26, 2018, available athttps://www.bbc.co.uk/news/world-asia-china-45313074.

24 See: 1) Constantiou, I., Marton, A. and Tuunainen, V. K. "Four Models of Sharing Economy Platforms," *MIS Quarterly Executive* (16:4), December 2017, pp. 231-251; and 2) Zhang, C., Kettinger, W. J., Kolte, P. and Yoo, S "Established Companies' Strategic Responses to Sharing Economy Threats," *MIS Quarterly Executive* (17:1), March 2018, pp. 23-40.

Table 4: Actions Pursued by Instacart from Inception in 2012 to Fall 2020 and Their Strategic Outcomes

Actions Taken by Instacart	Drivers for the Actions	How the Actions Relate to the Framework (Figure 1)	Strategic Outcomes
Designed a business model that outsources the cost of warehousing and inventory to local grocers so that the company could focus on its digital infrastructure for superior customer service.	The enhanced connection between shoppers and customers in near real time made the Instacart business model of grocery fulfillment both appealing and feasible.	Enables *value co-creation at a larger scale* (evolving business landscape) through *business network orchestration* (value creation patterns). Because the business model has a low imitation barrier, Instacart faces challenges to sustain its value capture capability in the long run (challenges to value capture).	**Coevolution of the digital infrastructure and business model (Relates to Lesson 1)**
Updates the digital infrastructure frequently to embrace new features and functions to improve customer experiences (e.g., order replacements).	Instacart is committed to improving online grocery experiences with its superior digital infrastructure.	Enables Instacart to fend off *quickly emerging competitors* (evolving business landscape) and helps it to *sustain the ability to capture value in a digital world* (challenges to value capture).	
Continuously improves the product catalog and introduces new technology-enabled ordering options supported by its digital resources.	Instacart needs to constantly refine the processes and services associated with its app.	Addresses the need to fend off *quickly emerging competitors* (evolving business landscape) and provides *high-quality, smooth and consistent user experiences* (value creation patterns).	**Sustained technology ambidexterity (Relates to Lesson 2)**
Acquired the platform company Unata to offer retail partners the option of configuring their own online storefronts and building their own brands using their own retailing experiences.	Instacart relies on continual experimentation and customization to address the company's changing business needs.	Grocery stores and Instacart are *increasingly interdependent* (evolving business landscape). Unata platform functions provide new *edge collaboration* opportunities (value creation patterns) for Instacart and help Instacart *strengthen its strategic partnership* (challenges to value capture) with grocery stores.	
Uses a data stream of order-fulfilling details to optimize the delivery logistics engine.	Instacart has vast, robust customer data that can be mined to improve the app and generate business insights.	Addresses the need to fend off *quickly emerging competitors* (evolving business landscape) and *sustains Instacart's value capture capability in the long run* (challenges to value capture).	**Managing dynamic knowledge flows (Relates to Lesson 3)**
Established a simple and easy-to-use online help center to communicate app-related information to users.	Large volumes of customer inquiries can be organized into categories.	Enables Instacart to provide *quality, quick and consistent answers to customer inquiries* (value creation patterns).	
Adopted various digital systems (e.g., loyalty and referral programs) to improve customer relationships.	Instacart aims to constantly improve customer satisfaction.	Enables Instacart to fend off and protect itself from *quickly emerging competitors* (evolving business landscape) and *predatory partnerships* (challenges to value capture).	**A dynamic relationship portfolio (Relates to Lesson 4)**
Regularly invites new grocers to join the platform, and has expanded its partnerships to include apparel and beauty product retailers.	Instacart aims to keep expanding its client base.	Facilitates *value co-creation* (evolving business landscape) and takes advantage of the *scale economies* of mobile apps (value creation patterns) to expand the client base. A large client base protects Instacart from *predatory partnerships* (challenges to value capture) as the market reaches saturation.	
Launched an advertising platform to expand relationships with brands, allowing the latter to promote products in Instacart search results.	Instacart aims to strengthen its partnerships with brands and advertisers.	Strengthens the *interdependence* (evolving business landscape) between Instacart and brands that distribute through retail, and that facilitate *business network orchestration* (value creation patterns).	

Lesson 1: Design a Coevolutionary Path for Digital Infrastructure and Business Model

Instacart scaled rapidly, as its digital infrastructure and business model coevolved. A key contributor to Instacart's agile business model is its adaptive digital infrastructure—its arrangement of shared technological components such as hardware, software and digital platforms.[25] More generally, an effective digital infrastructure not only offers useful functionalities to both internal and external stakeholders but also possesses the flexibility to meet diverse integration needs and to assimilate new technologies effectively. Packaged digital solutions, in particular, allow organizations to build reliable and cost-effective operational systems, and to easily scale up and down as needed. Instacart has become an expert in incorporating readily available digital components to optimize its business model, as explained by Nick Elser, Head of Engineering at Instacart:[26]

> *"To scale production databases, we use Amazon RDS; to serve images and assets to our customers, we turned to Cloud Front; to cache data, we turn to ElastiCache; to scale up our increasing size of machine learning instances, we turn to Amazon EC2. … All of these are APIs (application programming interfaces) to solve incredibly difficult problems for infrastructure."*

Quality connections have laid the groundwork for Instacart's innovative business model. By connecting shoppers and customers for grocery fulfillment, Instacart outsources warehousing and inventory costs to local stores, delivery costs to underemployed persons and transportation costs to shoppers' personal vehicles.[27] Meanwhile, Instacart continuously updates its digital infrastructure to discover and acquire new business value. For example, the company applies predictive analytics and dynamic behavioral incentives to match customer orders and available shoppers in near real time. When a customer places an order with a store, Instacart immediately transmits the order to a personal shopper, together with a map of the store superimposed with the most efficient picking path. The Instacart app also lets customers track the personal shopper's progress and request changes. Instacart can also readily integrate its infrastructure with potential partner grocers.

Lesson 2: Foster Technology Ambidexterity

Instacart has pursued technology ambidexterity—the *exploitation* of existing digital resource bases for efficiency gains as well as *exploration* and experimentation with emerging technologies. Instacart is optimization-driven and constantly improves its shopping app and grocery delivery services by both implementing incremental updates enabled by the existing digital resource base and carrying out radical changes that require the adoption of new technologies (e.g., mobile checkout for shoppers).

Technology exploitation can be an affordable way to strengthen competitive advantages. For example, Instacart has rolled out new ordering options (the "fast & flexible" and "order ahead" functions), which allow lower priority orders to be shifted further down the schedule so that shoppers can focus on customers with more immediate needs.[28] Moreover, Instacart is able to tweak the app's functions to address emerging issues. For instance, the company quickly adjusted its tipping system to deactivate any customer who regularly removed tips after delivery, following a recent "tip-baiting" outcry (tip-baiting is when customers bait shoppers with a big tip and then reduce the tip to zero after they receive their groceries).[29]

Technology exploration has become a strategic process at Instacart that enables the company to scan for emerging technologies, experiment with potential candidates and adapt them dynamically when opportunities or threats arise. In particular, Instacart monitors digital trends and embraces new technologies with foreseeable benefits. For instance, the use of predictive analytics helps Instacart forecast the number of

25 Piccoli, G., Rodriguez, J. and Grover, V., op. cit., December 2020.

26 Elser, N. *Instacart Scales Its Production Database Using AWS*, YouTube video, July 17, 2015, available at https://www.youtube.com/watch?v=J1G0NYN1rSs.

27 Deighton, J. and Kornfeld, L., op. cit., April 2015.

28 Perez, S. *Instacart Adds New Features Aimed at Opening More Delivery Windows*, TechCrunch, April 8, 2020.

29 Mascarenhas, N. *Instacart Makes Changes to Tip Policy Following Shopper Complaints*, TechCrunch, June 5, 2020.

personal shoppers required to be on call at any given moment, taking into account estimated order picking, packing and delivery times.[30] Another example of technology exploration is Instacart's 2018 acquisition of Unata, a white-label platform that provides grocers with tailored digital storefronts. As summarized by Instacart CEO Apoorva Mehta, the company's partnering grocery retailers can now:

> *"Benefit from Instacart's scale, Unata's highly configurable technology and the deep grocery industry integrations this acquisition will enable."*[31]

The pursuit of technology ambidexterity is a never-ending journey. Although the return on investments in digital initiatives can be challenging to assess, not investing equates to losing. Digital businesses are particularly vulnerable to imitation. Executives need to balance technology exploitation and exploration to support their primary business objectives. In the case of Instacart, the company concentrates its digital efforts on improving the customer experience. Specifically, Instacart continuously improves its algorithm-based order predictability, a core digital asset of the company, as described by the company's CEO:[32]

> *"The experience for a shopper when you are delivering in New York is actually quite different than the experience a shopper in Chattanooga has. The experience when you are delivering to an apartment building which has no elevators is quite different than what you have when you are delivering to a single-family home. … How do you make sure there is predictability across those orders—that is something we are actively working on. But I want to be very candid: we are not going to rush into this. We've done that before, and we haven't done it right. We are going to be slow and we are going to be deliberate."*

30 Deighton and Kornfeld, L., op. cit., April 2015.

31 Crook, J. *Instacart Acquires Toronto-based Unata*, TechCrunch, January 16, 2018.

32 *Instacart CEO | Full Interview*, YouTube video of interview with Apoorva Mehta at the Code Commerce conference, September 18, 2018, available at https://www.youtube.com/watch?v=YOKqAIMh-iA.

Lesson 3: Manage Dynamic Knowledge Flows

A digital world increases access to knowledge, and Instacart has developed diverse knowledge discovery and creation mechanisms. For instance, it has a database of user data collected from multiple sources and analyzes this data to generate exclusive insights into customer behavior.[33] Moreover, usage data collected from customers and shoppers enables the company to identify timely opportunities for service improvement. For example, Instacart analyzes detailed order fulfillment information with various data science and machine learning tools to optimize the efficiency of the logistics engine and predict shopping trends.[34] And Instacart's collaboration with retailers gives it an additional vast data set to mine.

The large data sets available to Instacart also offer opportunities to explore important social issues, such as community social impacts and the development of inclusive working environments for shoppers. To compensate for its capability gaps in this area, Instacart seeks external expertise—for example, by collaborating with universities and researchers. Several challenges that Instacart faces (e.g., trust in a digital environment, dynamic pricing techniques and corporate social responsibility demands) are important research topics to examine.

Instacart also uses its digital environment to help shoppers and customers stay informed. In addition to in-app notifications, it has established easy-to-use communication channels, including a web-based help center with clear content categories and a prominent search bar, where answers to the most frequently asked questions can be easily accessed online. Instacart also uses social media to train users and disseminate information. As the company learns more about the problems and challenges its customers, shoppers and grocers face, it is more able to assist them in real time.

33 *How Instacart Uses Data to Improve the Grocery Delivery Experience*, Segment.io, Inc, June 2020, available at https://segment.comundefined.

34 For more on how Instacart is leveraging customer data, see: 1) Xiao, J. It *All Depends, tech-at-instacart*, Feb 13, 2018, available at https://tech.instacart.com/it-all-depends-4bb7b22e854b; and 2) Ye, A. *How Instacart Uses Data Science to Tackle Complex Business Problems*, Towards Data Science, March 30, 2020, available at https://towardsdatascience.com/how-instacart-uses-data-science-to-tackle-complex-business-problems-774a826b6ed5.

Companies with strong learning capabilities are more likely to excel in data and knowledge creation and acquisition, explore external data and knowledge resources in greater depth and breadth, and effectively control the allocation and integration of data and knowledge resources. By faithfully executing the motto "steal shamelessly" from Sam Walton, the founder of Walmart, Instacart skillfully applies the lessons learned from its competitors, partners and app users, and is strategically building its knowledge repository.[35]

Lesson 4: Build a Dynamic Relationship Portfolio

Relationships are increasingly important in a digital world, and there are few technological barriers to establishing, revising or terminating a relationship. Instacart has successfully leveraged the connectivity enabled by digital technologies to its advantage and established a dynamic relationship portfolio—a fluid composition of business relationships with customers and value chain players. To drive continuous value innovation in a digital world, executives need to shift their focus from transactional performance to real-time, platform-enabled relational intelligence.

There are three key players in Instacart's platform ecosystem: customers, shoppers and grocers. *Customers* delegate the grocery buying tasks and receive much of the value created by Instacart. To date, the majority of Instacart's revenue comes from surcharges on store prices, order delivery fees and the annual subscription fees paid by customers for Instacart Express, which provides unlimited free deliveries. The Instacart Express membership model is just one of the various digital features Instacart has devised to improve its relationships with customers.

Shoppers fulfill delivery orders placed by customers. They get a source of income as well as the freedom to work whenever they want. Through its service platform, Instacart flexibly engages two types of shoppers: full-service shoppers and in-store shoppers. The former shop for the items in the store and deliver them to the customers; the latter, who are employed both by Instacart and by the store, pick and pack items in the store and make sure the order is ready for the customer to pick up.[36] Shoppers' earnings are based on a commission of the total cost of an order, and full-service shoppers get 100% of the gratuity offered by customers. Nonetheless, Instacart has long been criticized for its underpaid workforce, a challenge that the company needs to carefully address.

Grocery retailers sell their goods through the Instacart app. By making use of Instacart's fast and affordable third-party delivery service, they can increase sales, reach a broader audience, acquire new customers and promote their stores using Instacart's advertising service.[37] However, grocers risk a predatory partnership when they give Instacart access to their data and share their business practices.

Instacart also works to strengthen its relationships with other partners, such as brands and advertisers (about 30% of all purchases made via Instacart are attributed to advertised products). For instance, the company has modified its self-serve advertising platform to allow brands to launch marketing campaigns with featured products—a strategic move to compete for advertisement dollars on ecommerce sites and search engines.[38] Moreover, as the dominance of online shopping grew during the Covid-19 pandemic, Instacart seized the opportunity to expand its partnership portfolio beyond the grocery industry. For example, it teamed up with Sephora, a beauty retailer, to bring same-day delivery of products to eligible cities in North America,[39] and with H&M Canada, an apparel retailer.[40]

Instacart dynamically revises its relationship portfolio to stay competitive. If a partner has taken actions that are considered

35 Ladd, B. *The Trojan Horse: Will Instacart Become a Competitor of the Grocery Retailers it Serves?*, Forbes, July 1, 2018

36 Jain, A. *Instacart Business Model: How the App Works & Why it Is Successful*, oyelabs, May 20, 2020, available at https://oyelabs.com/instacart-business-model/.

37 Muller, D. Grocers Advertise Partnerships with Instacart, Total Retail, September 6, 2016.

38 See: 1) Sullivan, L. *Instacart Launches Self-Serve Ad Platform, Offers Alternative to Google, Amazon*, MediaPost, May 26, 2020; and 2) *Williams, R. Instacart starts self-serve ad platform to connect brands with shoppers*, Marketing Dive, May 27, 2020.

39 Redman, R. *Instacart goes outside grocery again with Sephora partnership*, Supermarket News, September 24, 2020.

40 *H&M Canada Partners with Instacart to Offer Same-Day Delivery*, Cision, October 13, 2020, available at https://www.newswire.ca/news-releases/h-amp-m-canada-partners-with-instacart-to-offer-same-day-delivery-813973760.html.

detrimental or a relationship has become dysfunctional, the company can quickly adjust its interorganizational digital infrastructure to support new business relationships. For example, when Amazon bought Whole Foods—a major partnering retailer and investor of Instacart in its early days—Instacart quickly established a partnership with Walmart to pilot same-day U.S. delivery and fend off Amazon's entry into grocery delivery services.[41]

Recommended Management Actions for Putting the Lessons into Practice

From our analysis of the Instacart case, we provide five recommended actions that managers can take to put each lesson learned into practice within their specific business contexts. These actions, together with the overarching framework in Figure 1, will enable companies to orchestrate digital resources for strategic advantage.

1. Take Risks—There is No "Digital Box" to Constrain You

To succeed in a digital world, companies must be willing to take bold risks. They should be prepared to explore value propositions that are radically different or "fresh." Managers are frequently told to "think outside the box," but there is no "digital box" or digital limit. Executives should therefore not constrain their thinking when devising novel value-creation and value-capture mechanisms, especially when the cost of idea validation is minimal. Project complexity and execution costs should not automatically be showstoppers when probing and experimenting with digital visions for the company.

Going digital, at least in part, is no longer optional. To maintain the effectiveness of a business model, organizations must design flexible digital infrastructures that can accommodate new collaborative and competitive opportunities. Instacart pioneered online grocery delivery across North America without any physical assets. Other companies can learn from this experience and brainstorm ways of combining digital and physical infrastructural components to serve new purposes, applying digital features in novel contexts, and improving current processes and offerings with new digital solutions.

2. Build Resilience by Viewing Failures as Experiments

The more a company relies on digital resources to innovate, the more failures it may encounter—i.e., situations where technology exploitation or exploration efforts ultimately do not generate the anticipated outcomes. As digital initiatives become increasingly complex and protracted, some level of failure becomes almost unavoidable. Executives should expect this, internalize the lessons learned and move forward.

Executives need a mindset that views failures constructively—recognizing that digital success is often built on countless attempts, and that data and insights from past failures can inform future scenarios and successes. The iterative development of a firm-specific digital resource base is pivotal for building resilience and sustaining competitive advantage. In fact, thinking experimentally—conducting a handful of small experiments instead of a few major initiatives—helps companies to frame failures not as costly mistakes but as opportunities for learning.[42] This is what Instacart did to optimize its algorithm-based order predictability across different delivery scenarios and cultural settings (e.g., apartments vs. houses, large metropolitan areas vs. small cities).

3. Leverage Third-Party Infrastructure and Services to Fill Knowledge Gaps

The root cause of plateauing continuous business improvement can often be traced back to knowledge gaps. A company should constantly gather data and learn from it to cope with unpredictable business environments. Executives should consider using third-party analytics and data centers to generate valuable insights. As companies increasingly integrate knowledge management routines into their operations, combining internal and external infrastructures to optimize knowledge acquisition is now both feasible and rewarding.

41 Bursztynsky, J. *Walmart and Instacart partner for same-day U.S. delivery in fight against Amazon's Whole Foods*, CNBC, August 11, 2020.

42 Thomke, S. "Building a Culture of Experimentation," *Harvard Business Review* (98:2), March-April 2020, pp. 40-47.

Data discovery, storage and analysis performance can be outsourced or made more efficient by using third-party providers. Many e-commerce platforms like Shopify offer analytics and reports to their clients by analyzing combined data such as visitor records, store transactions and customer feedback. For new ventures, third-party data services can facilitate business development by increasing the scope of available data and knowledge. Instacart took advantage of multiple third-party analytics and marketing tools (e.g., Amplitude, SendGrid and Zendesk) in its early growth phases.[43]

4. View Digital Rivals and Digital Partners as a Continuum

In a digital world, much attention can be placed on the relational assets that constitute a company's business network. Executives should view partner and rival relationships as a continuum instead of a dichotomy. As companies work with partners to create new offerings, current partners may be tomorrow's rivals and vice-versa. In the case of Instacart, despite the company's commitment to collaborating with retailers, the latter could end or limit their partnering relationships with Instacart when they are ready to create their own digital experiences for customers or collaborate with Instacart's rising competitors. Walmart, which previously focused on its own version of a subscription-based delivery service and resisted collaboration, has now partnered with Instacart on same-day delivery, with a view toward taking advantage of Instacart's vast customer base.

5. Create Digital Options by Investing in Selected New Ventures

The plethora of digital solutions made possible in recent years challenges executives to spend resources wisely. Companies can fulfill fundamental current commitments while reducing future risks by creating digital options that may be beneficial in the long run. Investing in a digital option offers the chance to generate future performance gains at a specified cost.[44] We recommend that executives consider making investments in selected new ventures as an alternative path to explore innovative but less critical business ideas. Online newspapers such as TechCrunch, crowdfunding platforms such as Kickstarter and business incubators such as Y Combinator are potential sources for identifying relevant and high-potential startups.

Investing in customized collaborations with startups can be a valuable opportunity for established companies to enhance their business profiles, increase their exposure to novel ideas, reduce the cost of joint innovation and explore the market value of intellectual property that has not yet been commercialized. Moreover, acquisitions of startups can be affordable and operationally manageable and a desirable outcome of these collaborations. Instacart, for example, "acqui-hired" the founder team of Wedding Party—a mobile app that allows wedding guests to contribute photos and videos taken to a shared digital album—to boost its customer- and shopper-facing experiences.[45]

Concluding Comments

Whether Instacart can firmly establish its position in the market in the long term is yet to be determined, but companies can learn now from this quickly rising grocery delivery star. The Instacart case has provided four key lessons on how to orchestrate digital resources effectively. These resources are fundamentally changing industry boundaries, as well as intra- and interorganizational relationships. Versatile and powerful digital resources have, over time, been woven into the fabric of social and market structures. Based on the lessons from Instacart, we have recommended five actions that managers can take to adapt their organizations to the evolving strategic landscape and thus increase their ability to create and capture value through digital resources.

Appendix: Research Methodology

The strategic framework of this study shown in Figure 1 was developed through an in-depth review of the digital resource literature in quality information systems journals, especially the Association for Information Systems'

43 op. cit., Segment.io, Inc, June 2020.

44 Trigeorgis, L. and Reuer, J. J. "Real Options Theory in Strategic Management," *Strategic Management Journal* (38:1), January 2017, pp. 42-63.

45 Perez, S. *Instacart Makes Its First Acquisition with "Acqui-Hire" of App Maker Wedding Party*, TechCrunch, August 4, 2015.

Senior Scholars' Basket of Journals[46], and in top strategic management journals ranked among the *Financial Times*' "top 50 journals used in business school research" (the FT 50).[47] In total, we reviewed 98 articles that provided valuable insights—69 from IS journals and 29 from management journals.

We used the framework and the Instacart case to provide guidance for executives on how to orchestrate digital resources effectively to create and sustain competitive advantage. Data for the Instacart case came from multiple sources, including press releases, publicly available interviews with Instacart executives, a case study published in the Harvard Business School Case Collection,[48] and other current information available online. To ensure the accuracy and comprehensiveness of our analysis, we interviewed an academic researcher who currently partners with Instacart on analytics projects. This researcher examined and verified our Instacart description and findings, and provided additional "insider" information to add to the completeness of our material.

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46 https://aisnet.org/general/custom.asp?page=SeniorScholarBasket

47 Ormans, L. "50 Journals Used in FT Research Rank," *Financial Times*, September 12, 2016.

48 Deighton, J. and Kornfeld, L., op. cit., April 2015.