WHARTON FINANCIAL ANALYTICS

Data
Lab

Indigo Acquisition

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The **Wharton Financial Analytics** (**WFA**) initiative was created in 2020 for the purpose of empowering people to make better financial decisions through cutting edge research, innovative education programs, and industry engagement. In doing so, WFA serves the Wharton School, the University of Pennsylvania, and the broader global community.

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A After two weeks of informal conversations and a long dinner in San Francisco, Cobalt Corporation, one of the largest brick-and-mortar retailers in the Midwest and Southwest United States, agreed to a non-disclosure agreement that would allow them to perform due diligence on a potential acquisition target – Indigo LLC. The meeting of old and new, Indigo was not only an opportunity to expand Cobalt's footprint to the U.S. coastal regions but also an opportunity to instantly grow its online presence.

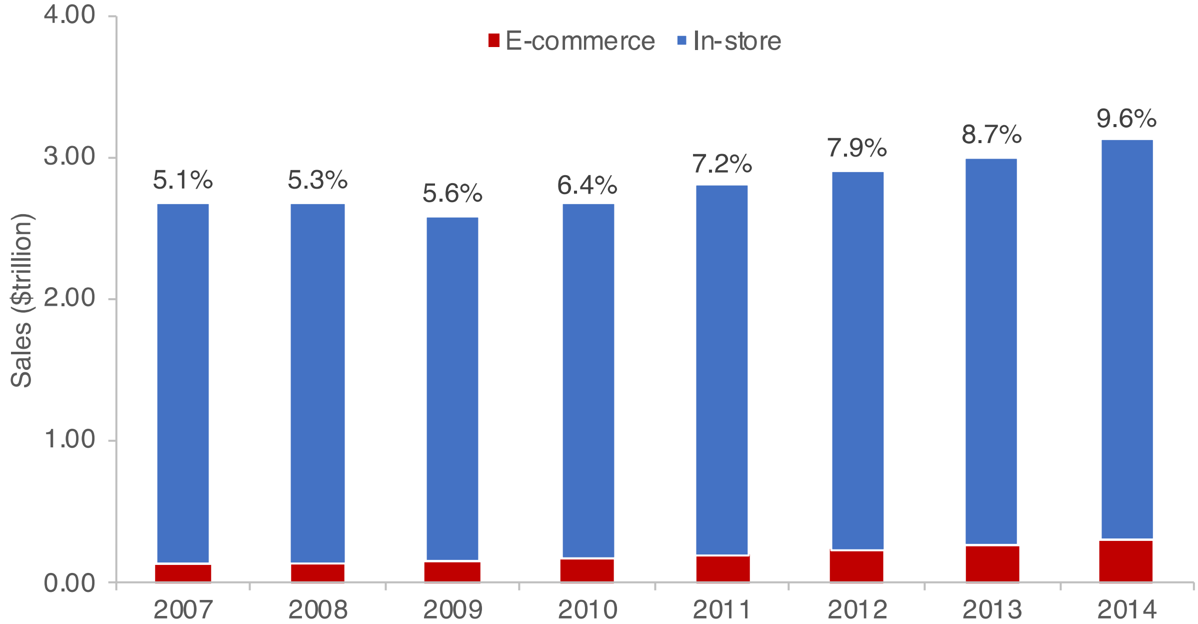
After signing the non-disclosure agreement (NDA) in March of 2015, Richard Rose Jr., the CEO of Cobalt, turned to Ayina Redlich, the head of Cuesta Consulting's transaction advisory services. The NDA provided for a data dump of Indigo's historical point of sale (POS) database, providing a rich trove of information on their customers and products. Ayina and her team were tasked with analyzing this data to provide strategic insights into Indigo's business and to help forecast future revenues.

Consumer Retail

The retail space is vast, encompassing consumer durables (e.g., appliances, cars, and furniture) and non-durables (e.g., food, clothing, and paper). Distribution of these products occurs through several channels including department stores that offer a variety of products under one roof, big box stores specializing in one type of product, discount stores and warehouses, smaller local stores, and e-tailers with no or few physical stores.

Figure 1 shows the scale of retail sales in the United States since 2007, and the composition of those sales across physical stores and e-commerce. The retail sector has seen more than $2.5 trillion dollars of sales since 2007, and more than $3 trillion as of 2014. While the bulk of these sales occur in physical stores, e-commerce is making up a consistently larger component of these sales each year. In seven years, e-commerce has nearly doubled its market share from 5.1% to 9.6%. This increase has come primarily from e-tailers, though traditional retailers have been increasing their online presence.

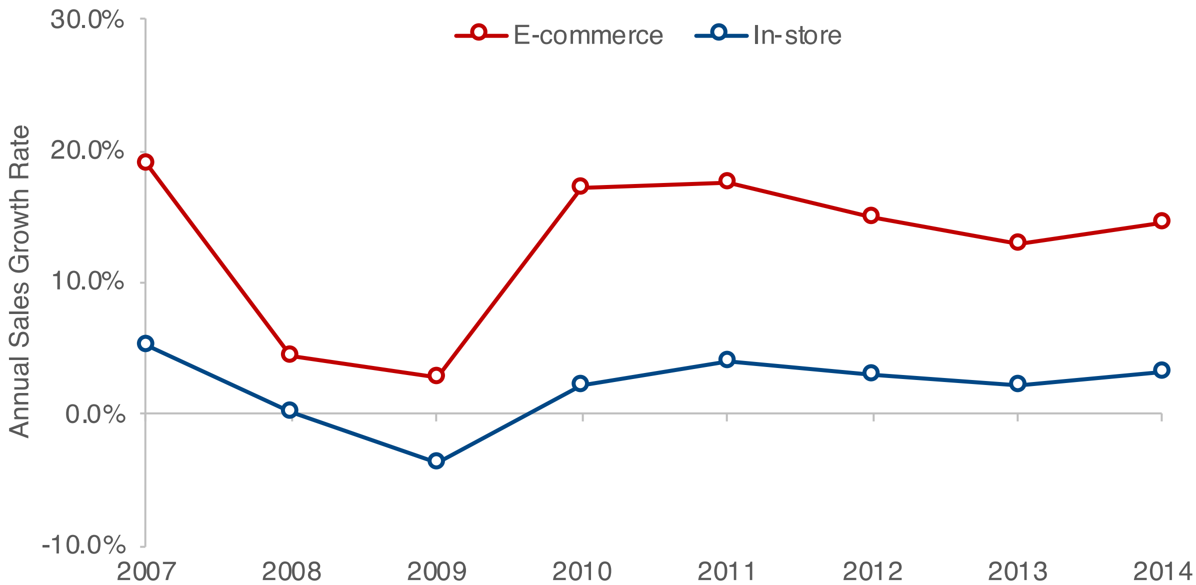
Figure 1. In-store and E-commerce Retail Sales in the United States



Source: "A Decade in Review: Ecommerce Sales vs. Retail Sales, 2007-2020," Digital Commerce 360

Figure 2 reinforces the growing importance of e-commerce by presenting annual growth rates for in-store sales and e-commerce. Both channels exhibit similar secular patters. However, e-commerce has maintained an average 11% higher growth rate since 2007. If both channels maintain their current growth trajectories, e-commerce will overtake physical store sales by 2036.

Figure 2. In-store and E-commerce Retail Sales Growth Rates in the United States



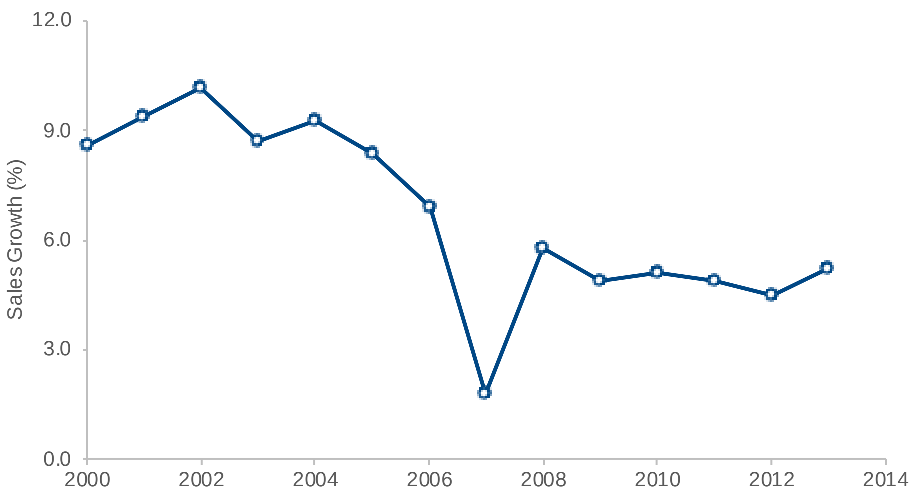
Source: "A Decade in Review: Ecommerce Sales vs. Retail Sales, 2007-2020," [Digital Commerce 360]

Cobalt had its' beginning as Rose Stores, a family-owned department store in St. Louis Missouri. Founded in 1964 by Richard Rose Sr., the store catered to a mostly local clientele but quickly found its reach growing well beyond the St. Louis metropolitan area. Customers from adjacent states including Southern Illinois and Eastern Indiana found that the larger selection and lower prices offered by Rose Stores more than compensated for the additional travel time.

This loyal customer base inspired Rose Sr. to expand the business to Columbia, Bloomington, and and Springfield between 1971 and 1976. He used these satellite stores as a springboard to enter the larger Kansas City, Chicago, and Indianapolis markets during the 1980s. Rose's strategy of catering to lower- and middle-income families, coupled with the economies of scale he enjoyed with 12 stores, put significant pressure on many of his smaller competitors who either closed or were acquired by Rose for storage and distribution purposes.

A reorganization in early 2000, led by Rose Jr., then Chief Operating Officer, created Cobalt Corporation consisting of 148 Rose department stores, and 64 storage and distribution facilities spread across the Midwest. However, shortly after the reorganization, the disruption of the retail space by e-commerce was becoming clear. Growth of brick and mortar was slowing and Cobalt's push into e-commerce was "slow and small," per Rose Jr. Cobalt had largely saturated their current territories, and by 2014 it had become clear that growth had stalled (Figure 3).

Figure 3. Cobalt Annual Sales and Growth, 2000 - 2014



Year	Sales ($mil)
2000	348.5
2001	378.5
2002	414.0
2003	456.3
2004	496.0
2005	542.1
2006	587.6
2007	628.2
2008	639.5
2009	676.6
2010	709.7
2011	745.9
2012	782.2
2013	817.4
2014	859.9

Source: Cobalt Corp.

In contrast, Indigo was a relatively new company founded in the Spring of 2004 by Julie Magid, who had decided to leave her job as an as an investment banker after a successful but grueling seven-year tenure. With a modest savings, Julie set up Indigo as an online staging area for small and mostly unknown fashion designers that she had met through social connections. The site featured clothing, accessories and some furniture that was otherwise difficult to find and, as such, carried an aura of exclusivity with it.

Operating out of Julie's apartment, overhead was low. Additionally, her suppliers were eager to promote their products through Julie's site. Her modest workforce worked remotely on a contract basis and was located in Manhattan and Brooklyn. Consequently, profitability came quickly – after 18 months. Indigo developed a loyal local customer base in the New York tri-state area largely through word of mouth, which allowed for minimal marketing and advertising.

Bi-coastal connections in the fashion industry led to a burgeoning clientele on the West coast, mostly in California. With this new opportunity and growth came new challenges. Two years after launching Indigo, Julie realized that her apartment, as nice as it was, was insufficient as a base of operations.

Further, her small but entirely remote workforce was an inefficient arrangement as she and her sales teams spent countless hours commuting to designers' studios or her apartment for product viewings.

In Fall 2006, Indigo moved into a commercial loft in Williamsburg, just across East river from Manhattan. The office space provided Julie with a staging area for designers to bring their products to her and her team, as well as a fitting, design, and studio space. All aspects of the website development were made more efficient with the new space. The office was also more closely located to the warehouses in which Julie maintained most of her inventory.

Over the next several years, Indigo's growth and success came with two increasing challenges. First, Indigo's suppliers, mostly small independent designers, were struggling to keep pace with demand. All of Julie's suppliers were reluctant to outsource designs and production for a variety of reasons including maintaining quality control, risking the loss of intellectual property to counterfeiting, and labor conditions.

Second, Indigo faced high warehousing and distribution costs because all product was stored in local warehouse facilities in Brooklyn. This arrangement proved economical in the early years of Indigo when the scale of operations was small and warehousers were happy to sell excess capacity at a discount. Additionally, virtually all of Indigo's customers had been located within a 25-mile radius of the warehouses, which kept delivery costs down. The company's growth and expansion to the West Coast, as well as into the Southeast (Florida mostly), changed those economics dramatically.

Cuesta Consulting

Cuesta consulting's mission is to: "Further value creation through data analytics." Founded by a group of former private equity (PE) analysts and investment bankers in 2002, Cuesta filled a growing hole in the custom business analytics space. More and more commonly in transactions such as buyouts, mergers and acquisitions, large amounts of proprietary data were being analyzed for valuation purposes, as well as for insights into potential strategic and operational changes. This data created several challenges for banks and PE shops, relatively few of whom were set up to handle, process, and analyze the data. Further, deal flow was often insufficient for companies to invest heavily in solutions aimed streamlining the process.

Cuesta set out to supplement or replace in-house data processing and business analytics roles at private equity and boutique investment banking firms. Combining nearly 50 years of analytics experience in the buyout and mergers and acquisitions (M&A) space, Cuesta had developed several innovative solutions to common data problems arising in these transactions. Their focus on this single aspect of the transaction process – and exposure to greater deal flow – gave them a comparative advantage to most in-house analytics teams.

After over a decade of dealing only with financial intermediaries, Cuesta's business grew to incorporate consulting engagements directly with the parties involved in former transactions. It was an unintended but orgranic growth of the business given Cuesta's intimate knowledge of the companies' data obtained during the due diligence process. The result was several additional lines of business consulting at Cuesta and explosive growth after the Great Recession.

The original and largest business line at Cuesta was the transaction advisory services co-led by Ayina Redlich, one of Cuesta's founding partners. Like her partners, Ayina had an impressive business acumen comprised of several years in investment banking and private equity in which she engaged both with internal data science teams and clients.

Acquisition Analytics

The contract from the buyer's representative, a bulge bracket bank, requested that Cuesta provide "analytic insight into the customer base of Indigo LLC for the purpose of potential acquisition by Cobalt Corp." Ayina bifurcated this task into two steps. Step one would involve evaluating Indigo's customer and data as a stand-alone entity. Step two would integrate Indigo's point-of-sale data with that of Cobalt Corp's to identify potential revenue and cost synergies between the companies.

Ayina was provided secure access to the Indigo data and accompanying data dictionary (Table 1). Because Indigo was considered "in play," she and her team were on a tight timetable.

Appendix

The data are contained in three separate Apache Parquet files.

1. 20-indigo-acquisition-txn_item.pq: Transaction file
2. 20-indigo-acquisition-customer.pq: Customer file
3. 20-indigo-acquisition-product.pq: Product file

Each file is described in Table 1.

Table 1. Data Dictionary

File	Field	Description
Customer		Customer level static information. Each row is a customer that appears in the **Transaction** file.
	customer_id	Unique row identifier for each customer in the **Transaction** file.
	cohort_date	Date on which the customer made their first purchase.
Product		Product level static information. Each row is a product appearing in the **Transaction** file.
	product_id	Unique row identifier for each product.
	category	Category to which the product belongs.
	subcateory	Subcategory to which the product belongs.
	gender	Gender category for the product.
	color	Product color.
Transaction		Transaction level information. Each row corresponds to a unique item. Transaction id's are *not* the unique row identifier as a transaction can consist of multiple items.
	customer_id	Customer identifier to link with **Customer** file.
	date	Date of transaction. Returns are attributed to the original transaction date.
	transaction_id	Transaction identfier.
	product_id	Product identifier to link with **Product** file.
	amount_spent	Total amount customer spent on the item, after discount but excluding taxes.
	amount_returned	Total amount returned to the customer for the item.
	[redacted]	

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