The Yedioth Group

Retsef Levi

Assaf Avrahami woke up at 4:30am and started to get ready for his daily three mile jog. He looked out of the window of his house in Gilon, West of the Galil, Israel, and thought to himself about the extreme contrast between the pastoral view of mountains and hills surrounding Gilon, and the day he was about to spend in the office. For the last five years Assaf had served as the CEO of a technology company that was part of the Yedioth Group, the largest and most successful media group in Israel. He had recently been promoted to senior vice president overseeing the Group's operations, which included printing, distribution, and technology.

Assaf realized that like all big players in the print industry Yedioth had to make some difficult decisions and change some of its long-standing business practices to significantly cut costs and become more efficient, while creating new revenue streams. Upon his promotion, he embarked on multiple initiatives to identify areas and opportunities for cost cutting, efficiency, and growth. This was not an easy process as Yedioth was an old family-owned group that excelled over the years by maintaining a strategy of loyalty to employees and careful decision making. Indeed, some of the changes Assaf believed were necessary would at some level go against the organization's instincts and DNA.

Assaf believed that there were significant cost cutting and efficiency opportunities within the Group's print product lines, which comprised the largest revenue and cost centers. He had already had a series of meetings with Yedioth's various stakeholders, where the focus was on how to reduce the printing levels of the Group's print products, while still meeting customer demand. Meeting customer demand was essential to sustain advertising revenue. Assaf realized he was undertaking a sensitive effort because the company's instinct was to over-produce to make sure no potential sales were lost due to a lack of newspaper or magazine availability. That said, Assaf was quite sure that the Yedioth had to reduce its printing costs, and also had to free up more internal printing capacity that could then be used to provide printing services to external customers.

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Before implementing any changes about how printing levels were set and how newspapers and magazines were distributed, Assaf would need to get buy-in from at least two groups within Yedioth. The first group was the Research Department that decides on the printing and shipment quantities and works closely with the distribution organization. The second group comprised the sales agents, who were responsible for, and compensated based on, sales levels. Both of these groups would need to be convinced that any proposed change would not negatively affect sales. Assaf expected his meetings with the two groups would be challenging.

The Yedioth Group

The Yedioth Group' roots dated back to the late 1930s when Nachum Kumarov started *Yedioth Ahronoth* in the British Mandate of Palestine. *Yedioth Ahronoth* was the first evening paper in the Mandate and sought to emulate the format of the *London Evening Standard*. The paper was sold to Yehuda Mozes and his son Noah became the first managing editor.[1]

In 2015, The Yedioth Group was the largest media group in Israel. It owned and operated the country's major daily newspaper, the most popular news website (YNET), many print magazines, several TV channels, and other online content services. Yedioth was also a visible player in the global print and media industry and provided IT and technological solutions to content providers around the world.

In recent years the print industry had been facing increasing competition from the double onslaught of the Internet and the proliferation of television channels. Nevertheless, it maintained its leading role in the advertising market and retained "eyeballs" worldwide. This competition had forced printing companies to become more operationally efficient, driving them to relentlessly improve their systems so as to preserve company profits.

Current Magazine Distribution Process

Print products were usually distributed by publishers through networks of retailers. Retailers were typically supplied once at the beginning of the sale's cycle (period); returns were collected at the end of the period. The length of the period (e.g., day, week, or month) was product dependent. A key challenge industry-wide was the mismatch between supply and demand. Supply-demand matching was particularly challenging in the print industry since each retailer often faced low level, but highly variable demand. Publishers were unwilling to lose potential readers and also "eyeballs" for advertising (the lost sales penalty cost in the industry was perceived as very high). Therefore, they tended to oversupply retailers to help prevent lost sales. The resulting high levels of unused supply had to be returned and scrapped, forcing publishers to incur additional reverse supply chain costs.

Yedioth's production run of a magazine or newspaper had high fixed costs making it infeasible to

[1] Yedioth Ahronoth - Wikipedia. N.p., n.d. Web. 24 Oct. 2014. <http://en.wikipedia.org/wiki/Yedioth_Ahronoth>.

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produce a second run of a magazine if the first run sold out. Yedioth had to make all production decisions ahead of time without any knowledge of how that week's issue was selling. Furthermore, the publisher would collect all unsold copies from the retailer at full refund. The unsold magazines would then be scraped at an additional cost. Not only did Yedioth take all the risk with respect to unsold magazines, it actually incurred additional costs of collecting surplus magazines from the retailer, transporting them away, and scrapping them. Like many other players in the print industry Yedioth's magazine return rate was between 25% and 35%.

Yedioth distributed its magazines through a network of 8,000 retailers, including some large grocery chains as well as many "mom and pop," small kiosks. Production and distribution decisions were made in two stages. First, a decision was made regarding total production quantity (how much to print). Second, Yedioth needed to determine quantity per retailer. Retailers were supplied once at the beginning of each week. Little to no information was shared between Yedioth and its retailers as most of the retail shops were small operators without IT systems that allowed for data collection. Determining the quantity to be delivered to each retailer involved the trade-off between over- and under-ordering.

Quantities distributed to the various retailers were based on forecast demand, which was determined by historical weekly sales reports. The actual delivery to each retailer was handled by a team of Yedioth sales agents, each covering a number of retailers in a geographic region. These sales agents also performed basic accounting functions for each of their retailers. On rare occasions, the sales agent would add some additional inventory. One challenge to building a reliable forecast was the issue of censored demand. Occasionally, retailers would end up having no inventory at the end of the sales cycle, which left one wondering whether they sold their entire inventory or in fact there was lost demand. This created significant challenges for the Research Department which was responsible seting the shipping level to the retailers.

Potential Solutions

The Yedioth Group faced an age old problem: how do you actually stock a retailer with the right number of magazines for the week? Stock too many and you have wasted money on production and shipping costs. Stock too few and you have lost out on potential sales. (The problem was so well known that it had an operations model named after it.) With a network of nearly 8,000 retailers, this problem had huge costs implications for Yedioth.

Assaf knew there had to be a better way to distribute magazines and having taking operations classes while working for his PhD in Operations Research at the Technion, he knew he could potentially use a pooling technique to address his problem. There was a catch though, pooling would be difficult with this many independent retailers and would be costly to set up. Was there a way to get the benefits of pooling, without fully switching over to a pooled inventory system?

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Assaf considered two potential ideas that might help to solve the problem at hand.

1. Establish an additional replenishment visit: Yedioth only supplied its retailers once on Sundays, but the sales agent visited the retailers on Wednesdays, mostly to check in with the retailer and see how each magazine was selling. Could this visit be leveraged to replenish the retailers? Was there a way to communicate inventory levels to the sales agent so the agent knew how much inventory was needed?

2. Use sales information from the first half of the week to predict second half sales: The sales agent would check inventory levels on Wednesday during their second weekly visit, but what if Yedioth could get information on supply levels sooner? If they had the information sooner, they would be able to make informed decisions about what sales would look like for the second half of the week. Ideally, this solution would help reducing number of magazines produced as well as the number returned to Yedioth. On the other hand, it could also lead to lost sales if there weren't enough magazines to get through the first half of the week.

   The implementation of these ideas posed several challenges:

   A. Analytical: How could a model be created to support the shipment decision? Implementing this strategy meant that retailers would not be treated independently.

   B. IT: The IT infrastructure to get first half of the week sales data did not exist.

   C. Organization: The newspaper industry was very conservative by nature and this would be a big organizational change. Sales agents were compensated based on sales and so sending lower quantities to retailers would be hard to pitch to the sales agents.

In addition to the two ideas he was mulling, Assaf also thought about a few potentially promising technologies that might be able to help Yedioth solve its under/over stocking challenge. One technology was EDI (short for Electronic Data Interchange). EDI had been around for more than 30 years and was a standard way to exchange digital information exchange between two different sources (companies, countries, etc.).[2] Many of the large retail chains that sold Yedioth's print products had an EDI interface. If utilized correctly, it could help facilitate the exchange of information between Yedioth and these retailers, and either solution could be implemented on a relatively short time scale.

However, most of the smaller retailers did not have EDI connections, not that it was realistic to expect they would. To obtain sales information from these retailers in a timely manner other technologies could be employed. RFID (short for Radio-Frequency Identification), for example, provided intelligent

[2] The National Institute of Standards and Technology defined electronic data interchange as "the computer-to-computer interchange of strictly formatted messages that represent documents other than monetary instruments."

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tracking of inventory, but in order for it to be read, the tag had to be facing the right direction. **Exhibit 1** shows an example of an RFID tag as applied to magazines. A major consideration would be the potential impact on the production process. In addition, designing a "smart stand" would ensure an accurate read of the RFID tags, an example of which can be seen in **Exhibit 2**. That said, the stands were not cheap and Assaf was debating whether there would be a justifiable return on investment.

Data

Assaf decided to run an experiment and asked 10 of his sales agents to gather data from each of their retailers. Each agent was responsible for about 5 retailers and during the experiment they visited the retailers every day throughout the week to collect the exact in-week demand information. The collected uncensored demand included the following information for each data point (see accompanying Excel sheet for data):

Variable	**Description**
Date	First day of the week the data covers
Customer Number	Unique identifier for each retailer
Sales Agent	Unique identifier for the sales agent that covered that retailer
Quantity Distributed	Initial quantity distributed to the retailer
Quantity Added	Number of magazines added during the week to the retailer's inventory
Distributed + Added	The sum of the Quantity Distributed and the Quantity Added
Sales	Number of magazines sold during the week
Returned	Number of magazines returned to Yedioth
Sell Through	1 if entire inventory at that retailer was sold for the week, 0 if not

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Case Questions

1. In the current distribution model, where each retailer is supplied once a week independently of all other retailers, what would be a good method to compute the quantity shipped to each retailer to guarantee that 99% of customers will be served? Apply your approach to compute recommended quantities to the 50 retailers (explain the methodology in the body of the report and provide the results in appendix).

2. If Yedioth could implement full pooling among all of the 50 retailers what would be the estimated benefit in terms of total production levels and returns if the required service level is 99%? (Note: Full pooling means that somehow all of the retailers could be supplied in-real-time from the same pool of inventory.)

3. Suppose that one could implement full pooling only among retailers that are treated by the same sales agent. What would be the potential benefit in terms of production levels and returns, assuming 99% service level. Compare to your #2 answer.

4. Propose more realistic processes/strategies that leverage the fact that the sales agent visits each retailer in the middle of the week. What would the benefit be of these processes/strategies?

5. What do you think are the organizational challenges that Assaf will have to address?

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Exhibit 1: RFID Tags

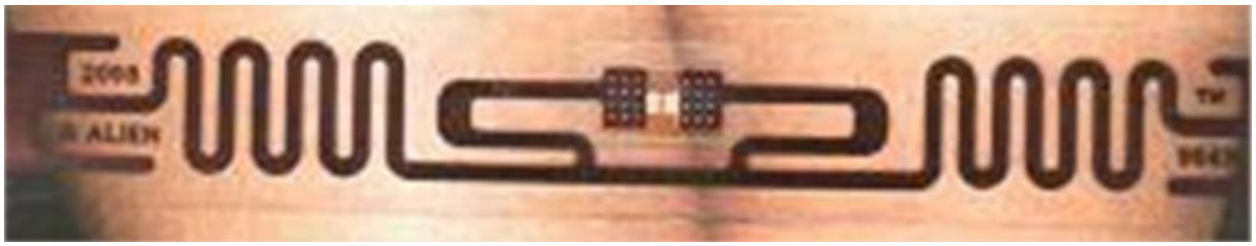

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Exhibit 2: RFID Stand

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