

Before Sunrise: Fresh Grocery Food Delivered by Market Kurly*

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I . Introduction

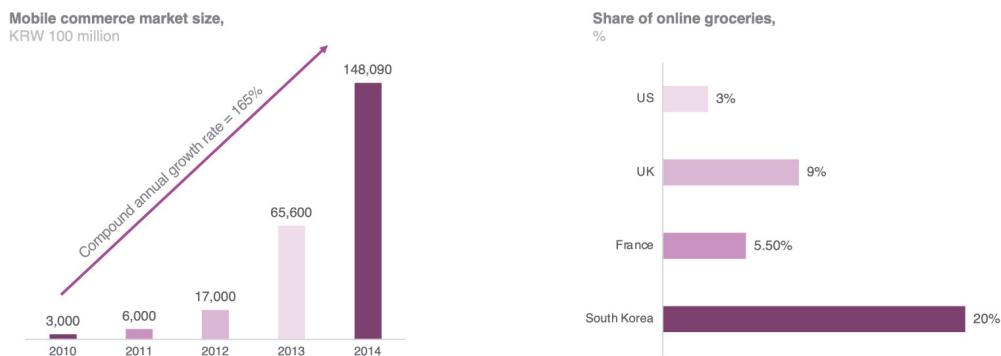
Market Kurly is a premium online grocery retailer founded in 2015 by Sophie Kim, who was frustrated by how difficult it was to find fresh organic food in Korea. Market Kurly emphasizes a farm-to-table approach, working closely with suppliers to ensure quality and freshness. One of its most popular items is an organic milk produced at a farm in Jeju Island, and the average time it takes for a bottle of this milk to be delivered to a customer in Seoul is only one and a half days. Market Kurly manages this turnaround through its overnight delivery service, Saetbyeol delivery (샛별배송). This service enables customers who order by 11PM to receive their items by 7AM the following morning. Although several other e-commerce platforms now have comparable delivery options, Market Kurly was the first of its kind in Korea to provide such a premium service.

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Mobile commerce market in Korea grew at a compound annual growth rate of 165% from 2010 to 2014, as shown in Figure 1. This is by far the fastest rate compared to other parts of the world. Market Kurly is one of the largest startups in such rapidly growing market. Currently, about 20% of all groceries in Korea are purchased online; in comparison, the online grocery purchase in the U.S. is about 3%.

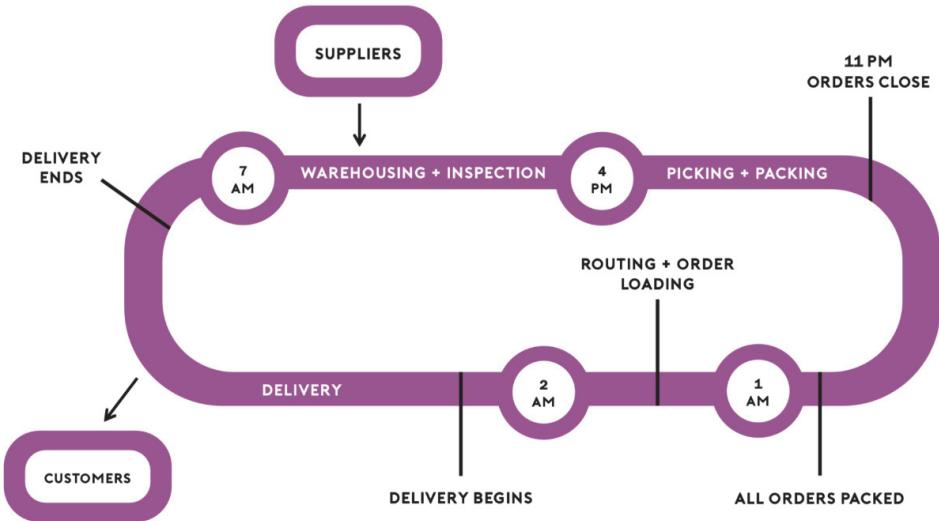


〈Figure 1〉 The total value of the mobile commerce market is growing rapidly in South Korea, and the online grocery market is comparatively more developed

The objective of this study is to understand the latest trend of the rapidly growing online grocery market. In particular, we focus on the domestic leading firm Market Kurly to understand the process of online grocery retail industry, and identify challenges and future initiatives.

II. Market Kurly's Process

Market Kurly operates on a daily schedule. Distribution centers receive deliveries from various suppliers in the morning, and products are immediately inspected and warehoused. Customers can place orders throughout the day until 11PM, and employees prepare all the orders, from picking to packaging, from 4PM to 1AM. After packaging, optimal delivery routes are determined and parcels are loaded onto delivery trucks. Delivery then runs overnight, from 2AM to 7AM, and then the process begins again. Figure 2 summarizes the daily process of Market Kurly.



〈Figure 2〉 Market Kurly's processLowering prices

2.1 Lowering prices

Most organic grocery sections at major supermarkets in Korea are rented out and operated by the vendors. That is, suppliers are mostly responsible for procurement and inventory management of the products, while retailers merely provide the space and necessary marketing support. This arrangement partly explains why organic products are expensive in Korea. As the burden of inventory management is shifted to the suppliers, they must carefully weigh the risk of understocking against the risk of overstocking. Since organic harvest yields depend critically on weather conditions, which is largely uncontrollable, suppliers set premium prices in order to balance these risks.

Market Kurly, however, aims to sell premium organic products at a much more affordable price than others. With that goal, Market Kurly maintains a unique working relationship with its suppliers. First, unlike other premium grocery stores, Market Kurly *purchases* its products from suppliers, relieving them of inventory risk which leads to lower prices. Market Kurly then transfers those savings to consumers through a high-volume, low-margin approach. As CEO Sophie Kim said, “the margin ought to reflect the value you’re creating, value that even your customers would

acknowledge.” Second, Market Kurly only works with *one supplier per product*. This implies that the company can buy large volumes from each vendor, even up to the amount on par with bigger players. Limiting the number of brands also allows Market Kurly to aggregate demand for each product and to spend more time developing relationships with current suppliers to ensure high product quality.

No	품목	100g당 가격	기준	변동	변동액	최저가	업체	변동 시 최저가 여부	등급	비교기준
1	[상화농장] 유기농 우유	727	21,800	21,800	-	19980	온라인 E사	최저가 대비 +1820원	일반	동일제품
2	[순수한] 채소를 담은 자연주의 채滓카레	1,750	2,800	2,800	-	2800	온라인 E사	최저가	일반	동일제품
3	제주 삼다우 2종 (죽풀)	50	6,000	6,000	-	5900	오프라인 S사	최저가	일반	동일제품
4	[상하농원] 순백색 둘레복지 박수란 (2개입)	1,050	2,100	2,100	-	2100	온라인 E사	최저가	일반	동일제품
5	[마크트] 옹대 초마 꿈풀	684	8,480	8,480	-	8480	온라인 E사	최저가	일반	동일제품
6	[사랑과함께] 크림스프 4종	1,350	2,700	2,700	-	2700	온라인 E사	최저가	일반	동일제품
7	[풀무원] 오페라블라 핫도그 5개입	1,995	7,980	7,980	-	6980	온라인 E사	최저가 대비 +1000원	일반	동일제품
8	[리화수제] 물풀 내린 두부	1,095	2,300	2,300	-	2600	오프라인 S사	최저가	일반	동일제품
9	[파워喟] 맑기슬 5종 (냉동)	1,700	17,000	17,000	-	17000	오프라인 S사	최저가	일반	동일제품
10	[파이버티엔코] 양파버터 2종	2,115	9,600	9,600	-	10850	오프라인 S사	최저가	일반	동일제품
11	[총각네] 경운콩 두유	342	13,000	13,000	-	15250	온라인 E사	최저가	일반	유사상품
12	[상하지즈] 유기농 아이치즈 3종 (10매입)	2,500	4,500	4,500	-	5190	온라인 E사	최저가	일반	동일제품
13	[테리오카] 계란에 뿌려먹는 간장	4,467	6,700	6,700	-	5750	온라인 E사	최저가 대비 +950원	일반	동일제품
14	[정오] 맛있는 유기농 죽물완한 (선식)	3,450	6,900	6,900	-	6700	온라인 E사	최저가 대비 +200원	일반	동일제품
15	[돈시온] 과일 주스 3종 (1L)	410	4,100	4,100	-	4100	온라인 E사	최저가	일반	동일제품
16	[브리트원즈] 유기농 아이스크림 9종	2,008	9,500	9,500	-	9480	온라인 E사	최저가 대비 +20원	일반	동일제품
17	[한만두] 갈비만두 2종	1,310	5,500	5,500	-	5500	온라인 E사	최저가	일반	동일제품
18	[산나카시오] 엑스트라버진 감자칩	5,933	8,900	8,900	-	8900	온라인 E사	최저가	일반	동일제품
19	[효화정] 오리버리 오리지널 325ml	8,615	28,000	28,000	-	14950	오프라인 S사	최저가 대비 +13050원	일반	동일제품
20	[밥의미학] 유기농 죽석밥 3종	805	1,690	1,690	-	1890	온라인 E사	최저가	일반	동일제품
21	[SFI] 파슬리 12g	24,167	2,900	2,900	-	2900	온라인 E사	최저가 대비 +300원	일반	동일제품
22	[페리장 브레슬] 포켓버터 3종	3,450	6,900	6,900	-	8300	오프라인 S사	최저가	일반	동일제품
23	[국내산 100%] 라운 험미유	1,160	5,800	5,800	-	5800	온라인 E사	최저가	일반	동일제품
24	[백두산밀갈비] 단양 한우 떡갈비	6,500	13,000	13,000	-	14000	온라인 E사	최저가	일반	동일제품
25	[리쿠치나] 수프 4종	1,938	3,100	3,100	-	3200	온라인 E사	최저가	일반	동일제품
26	[마이오노비] 유기농 스위트콘	1,735	5,900	5,900	-	7650	오프라인 S사	최저가	일반	동일제품
27	[설성목장] 임우 곱탕	2,400	12,000	12,000	-	12000	온라인 E사	최저가	일반	동일제품
28	[장흥우산길] 찰 착한김 5종	110	1,100	1,100	-	1400	오프라인 S사	최저가	일반	동일제품
29	[낫쏘트] 물에 좋은 웨스넛 2종	4,633	13,900	13,900	-	12000	온라인 E사	최저가 대비 +1900원	일반	동일제품
30	[장화정] 날작 화군만두 2종	1,590	7,950	7,950	-	7950	온라인 E사	최저가	일반	동일제품
31	[상화목장] 캐피어12 발효유 3종	573	4,300	4,300	-	4300	온라인 E사	최저가	일반	동일제품
32	[마루나토오이] 마카로니아 스스 6종	9,843	12,500	12,500	-	12750	오프라인 S사	최저가	일반	동일제품
33	[풀스토리] 시리얼 5종	2,433	7,300	7,300	-	7300	오프라인 S사	최저가	일반	동일제품
34	[고베식당] 일본 치킨 커리 4종	1,438	2,300	2,300	-	2180	온라인 E사	최저가 대비 +120원	일반	동일제품
35	[매월] 아몬드 브리즈 2종	303	13,800	13,800	-	13900	온라인 E사	최저가	일반	동일제품
37	[크콤지즈] 마담로미 4종	7,933	11,900	11,900	-	11900	온라인 E사	최저가	일반	동일제품
38	[제이미 풀리비] 파스타 소스 4종	1,625	6,500	6,500	-	6500	오프라인 S사	최저가	일반	동일제품
39	[마이] 드레싱 5종 ('분장')	1,746	3,580	3,580	-	3580	온라인 E사	최저가	일반	동일제품
40	와일드올리브 주니어 워터 250ml	720	1,800	1,800	-	1980	온라인 E사	최저가	일반	동일제품
41	[프네디풀] 디중 머스터드 & 허 그레이 머스터드	1,950	3,900	3,900	-	4400	온라인 E사	최저가	일반	동일제품

〈Figure 3〉 Market Kurly collects data on prices offered by its competitors

As a result, Market Kurly is able to guarantee consumers the lowest prices for so-called “essential foods,” the sixty products that people most commonly purchase on a daily basis such as milk, water, and eggs. Market Kurly collects weekly data on how its competitors price comparable items, tracking websites for price fluctuations on these products every Monday, and then matches its prices (or sets even lower

prices) accordingly by the next day. Figure 3 illustrates Market Kurly's price monitoring system.

2.2 Ensuring quality

But even as Market Kurly works to lower costs to be competitive on price, it remains most deeply committed to product quality. A product committee comprised of 15 merchandisers evaluates every product against 70 different standards across a broad range of categories. For example, in considering whether to stock a new product, Market Kurly begins by tracing the origin of every listed ingredient, assessing any genetic modifications, and evaluating the conditions of production facilities. If the product fails on even a single measure, Market Kurly will not introduce it to its consumers. The whole evaluation process usually takes about seven weeks, and only around eight in 100 products pass.

In addition to its rigorous selection process, the company also invests in technology to support suppliers in maintaining and further developing the quality of its products. This enables Market Kurly to control its quality not only during the distribution phase, but also much earlier in the supply chain, such as during procurement and production. For example, Market Kurly has worked with farmers to stamp individual chicken eggs with their precise production date, serial code, and the type of farming environment, in order to allow more information to its customers. Market Kurly has also invested in implanting free-range chickens with microchips that track their movements---chickens only stop moving when they are sleeping or laying eggs---so farmers can use the technology to collect eggs immediately after they are laid, ensuring maximum freshness.

2.3 Forecasting demand

As mentioned, Market Kurly buys its inventory in advance from suppliers, which implies that the company needs to forecast customer demand. The company initially relied on Microsoft Excel and AWS (Amazon Web Services) to run demand analyses. Such a brute-force method turned out to be increasingly insufficient over time, which

often led to a scenario in which its “staff had to literally eat the [leftover] inventory.” Market Kurly eventually developed its own big data analysis system called *Data collecting Doggy* (데이터를 물어다주는 명명이). The system is based on specialized algorithms and machine learning techniques that analyze large amounts of integrated data while collecting more than three million data points every twelve weeks.

Based on the forecast from this system, Market Kurly is now able to preorder products from suppliers. For example, when Market Kurly sells fresh abalone, it places orders to the suppliers two days before they receive the actual orders from customers. Market Kurly’s demand forecasts are known to be quite accurate; it only ends up throwing away about 1% of the total inventory. “Our core competency is predicting consumer demand and managing our inventory, based on our analysis of big data,” Kim once said. “You could say that our company identity is half distribution and half IT.”

Data collecting Doggy also shares updated sales, inventory levels, and demand forecasts, to employees every thirty minutes. These data inform not only the order fulfillment processes, but also marketing and customer service activities, encouraging employees to adopt a data-driven mindset.

2.4 Fulfilling orders

When Market Kurly was launched in 2015, most other online grocery retailers were operated by companies with physical stores. These stores fulfilled online orders by utilizing their existing infrastructure, and having in-store employees pack and deliver orders to customers. This was a slow and inefficient process. Market Kurly pioneered overnight delivery, which is possible only if all orders are packed and loaded onto delivery trucks within two hours. In order to manage such quick turnaround, the company implemented two systems called DAS and TMS.

DAS (Digital Assorting System) is the process through which Market Kurly packs its orders. Employees are assigned to certain product categories, and as orders come in, orders of same categories are grouped together. This allows workers to stay in their own areas, collecting batches of items for many orders at a time. The selected

products are placed in baskets, which are then placed on a conveyer belt to be sent to another part of the warehouse, where employees separate items into individual orders according to light signals. Baskets of completed orders are then packed into delivery boxes. However, orders that only contain one item do not go through this system, and are instead handled in a separate part of the warehouse called the “Singles Zone,” as they do not require sorting.

So why does Market Kurly rely on employees to assemble orders instead of an automated system? Although an automated process might seem much faster than humans, it was important for Market Kurly to accelerate the process during busier hours, such as the two-hour period just before 11PM. Humans can easily adapt to different speeds, whereas automated systems are difficult to speed up and slow down, and thus Market Kurly found DAS to be much more efficient.

As soon as orders are closed at 11PM, Market Kurly then uses a system called TMS (transportation management system) to calculate the most efficient route for each truck based on delivery locations and real-time traffic data, in what Market Kurly calls the Real Time Last Fulfillment process. Each delivery truck is scheduled to complete around 120 deliveries within five hours, averaging to one delivery every two and a half minutes.

2.5 Full cold-chain distribution

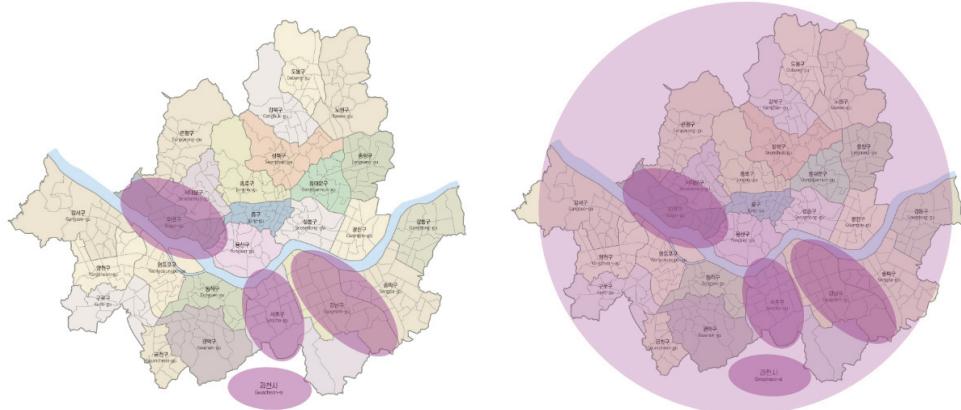
Another key differentiating factor of Market Kurly compared to its competitors is the full cold-chain distribution system. Using the trucks with refrigeration, the products are kept in temperature-controlled environments from the point of production to the point of delivery. Market Kurly is currently the only premium online grocery store in Korea with temperature-controlled last-mile delivery service. Market Kurly started building its cold-chain system in 2015 when it acquired a small cold-chain delivery company called Daily Cool with 80 temperature-controlled trucks. Market Kurly now owns about 600 refrigerated trucks, and operates several temperature-controlled distribution centers in Korea. Table 1 summarizes the cold-chain supply chain systems for online grocery stores in Korea.

〈Table 1〉 Online food distribution companies cold-chain system status as of 2017

CATEGORY	COMPANY	COLD CHAIN		
		WAREHOUSING	DISTRIBUTION CENTER	LAST MILE
PREMIUM	MARKET KURLY	○	○	○
	HELLO NATURE	○	○	✗
PRICE	EMART	○	○	○
	HOMEPLUS	○	○	○
	LOTTE MART	○	○	○
	COUPANG	○	○	✗
	위메프	○	○	✗
	TMON	○	○	○

2.6 Service Area Expansion

Because of the high costs associated with full cold-chain distribution and overnight deliveries, Market Kurly initially had relatively low market coverage. In particular, it chose to focus on limited areas in Seoul with high purchasing power, shorter travel distances between orders, and high density of influencer customers: Gangnam-gu, Seocho-gu, Mapo-gu, and Gwacheon-si, with a centralized distribution center located in Songpa-gu. As the market grew, Market Kurly now provides overnight delivery to wider regions including Seoul, Incheon, and Gyeonggi. Figure 4 illustrates Market Kurly's initial and current service areas.



〈Figure 4〉 Market Kurly's service area expansion

III. Customers

Market Kurly runs several customer programs and initiatives to further improve its customer experience.

- a. Market Kurly provides customers with the option of recipe-based ordering. It publishes recipes on the website along with links to all of the required ingredients for each dish. The recipes are sorted into broader categories, such as daily or special foods, helping customers decide their menu. Adding this feature has the dual effect of (1) increasing convenience for customers and (2) allowing Market Kurly to aggregate demand for groups of ingredients when planning inventories.
- b. Market Kurly recently added premium pet products into its selection, focusing on high-quality all-natural foods. This allows Market Kurly to break into a new market segment, while staying in line with its original focus on premium groceries. This also allows Market Kurly to increase revenue per order, since pet products usually have a higher profit margin than grocery items. Pet foods are also sold on a regular basis, increasing the number of repeat orders. For similar reasons, Market Kurly has introduced several kitchen products and home electronics, such as paper towels and vacuums.
- c. Finally, Market Kurly runs the *Kurly Pass* service which offers unlimited free delivery on orders over 15,000KRW with a monthly cost of 4,500KRW. This targets heavy users who order frequently but may not be able to meet the 50,000KRW minimum requirement for free delivery.

IV. Threats

4.1 Competitive landscape

Although Market Kurly has grown significantly in the past few years, it is facing increasingly strong competition. The online grocery market is highly saturated, with larger companies like Coupang and SSG introducing similar overnight delivery services. Although Market Kurly has the first-mover advantage, these newcomers

have comparative advantage in terms of scale and infrastructure. Hence, the online grocery market is about to enter the “chicken game” phase, which presents a huge threat to smaller companies like Market Kurly. Currently, most online grocery retailers are losing billions of won in annual revenues, but are continuing to lower prices in order to win market share. Industry experts and analysts predict that only one or two will survive within the next five years or so.

4.2 Packaging

Market Kurly spends almost five times more on its packaging than competitors. Currently, packaging costs account for about 23% of revenue, which is twice as higher than its competitors. In addition, Market Kruly’s packaging is often criticized for being excessively bulky and involving non-recyclable materials. Competitors like SSG have started using reusable bags for their deliveries, allowing customers the option to place their bag outside their door to be reused for their next order.

4.3 Inventory planning

Nevertheless, the largest problem facing Market Kurly remains its inventory management. Almost all of its products are perishable, and because Market Kurly prioritizes freshness as its main value proposition, it throws away unsold inventory after a maximum of two days. This deters it from placing large orders and keeping those products in a warehouse. Coming up with a precise forecast is a daunting task even with the help of AI and big data analysis; its forecast currently has an accuracy rate of 90%. Market Kurly usually underestimates sales in an attempt to reduce wasted inventory, one of the most common complaints about the store is that products run out of stock too often.

V. Future initiatives and Concluding Remark

5.1 Sustainable packaging

With the increase in overnight deliveries, the amount of packaging waste has also

escalated. In 2018, Market Kurly was responsible for 750 tons of plastic waste and 2,130 tons of styrofoam waste. Consequently, the Korean government has decided to impose tax on non-reusable packaging starting October of 2019. This will likely have a significant impact on Market Kurly's business. In light of this, Market Kurly recently launched a campaign called the "All Paper Challenge," replacing non-reusable packaging with recyclable paper boxes and pouches.

As sales continue to increase and economies of scale start to take effect, the cost of the paper packaging is expected to decrease---eventually to a level cheaper than the old packaging. According to the head of 3sTask, the company that supplies the new packaging, the packaging costs will decrease by at least 30%. In an effort to further publicize the campaign and improve the company's corporate social responsibility, CEO Kim announced that Market Kurly will donate the savings resulting from recycling the paper materials.

5.2 Renting out delivery trucks

Market Kurly currently owns about 600 refrigerated trucks, which are its most expensive assets. However, their utilization rate is rather underwhelming. Market Kurly only uses these trucks for delivery during nights and for pick-ups from suppliers in the morning. For the remainder of the day, most of the trucks are usually idle. Recognizing an opportunity to exploit these resources, Market Kurly decided to launch a service called *Kurly Fresh Solution*. This service rents the temperature-controlled trucks during the afternoon to other companies that are in need, such as for delivering medicine, meat, and fish. That is, Market Kurly plans to better utilize its idling assets. Because the trucks are fully equipped for cold-chain distribution purposes, Market Kurly charges a premium fee compared to other delivery services.

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