CUSTOMER JOURNEY MINING

Summary

Korean Internet companies are holding voluminous log data that records users' service usage behavior. If they can effectively utilize it, they can gain a competitive edge for maximizing their earnings. Yet, most of them are still at an early stage in which they identify users' rough characteristics by performing simple statistical analyses.

LOEN Entertainment runs Melon, which is the largest online music streaming service in South Korea. They adopted process mining with Disco to analyze their mobile app's log data. LOEN analyzed new users' journeys during the day when they signed up with a KakaoTalk account. KakaoTalk is a free mobile instant messaging application for smartphones with free text and free call features. KakaoTalk is used by 93% of smartphone owners in South Korea.

They categorized new users into five segments based on their behavioral pattern and clearly identified the reason why each segment signed up. Furthermore, building on the analysis results, it is planning to conduct a targeted marketing campaign for increasing each segment's CVR (Conversion Rate). The company is judging that their process mining analysis using Disco plays a key role in understanding new customers and is likely to contribute to maximizing earnings.

Company & Service

With the spread of smartphones, the Korean digital music market has sharply grown, now reaching about $900 million. Melon's market share is more than 60% and it has secured more than 34 million users and 4.5 million paying customers. It started as SK Telecom's music service in 2004, when the digital music market was still in its early stages. Later, SK Telecom transferred the service to its subsidiary, LOEN Entertainment.

- Process mining case study at an Internet company

- Customer journeys for new users were analyzed

- Key success factor was the segmentation of users based on behavior patterns

Kakao took the subsidiary over in January 2016. In collaboration with Kakao, LOEN is now focusing on securing new users. A user with a KakaoTalk account can use Melon's service without a separate registration process (See Figure 1).
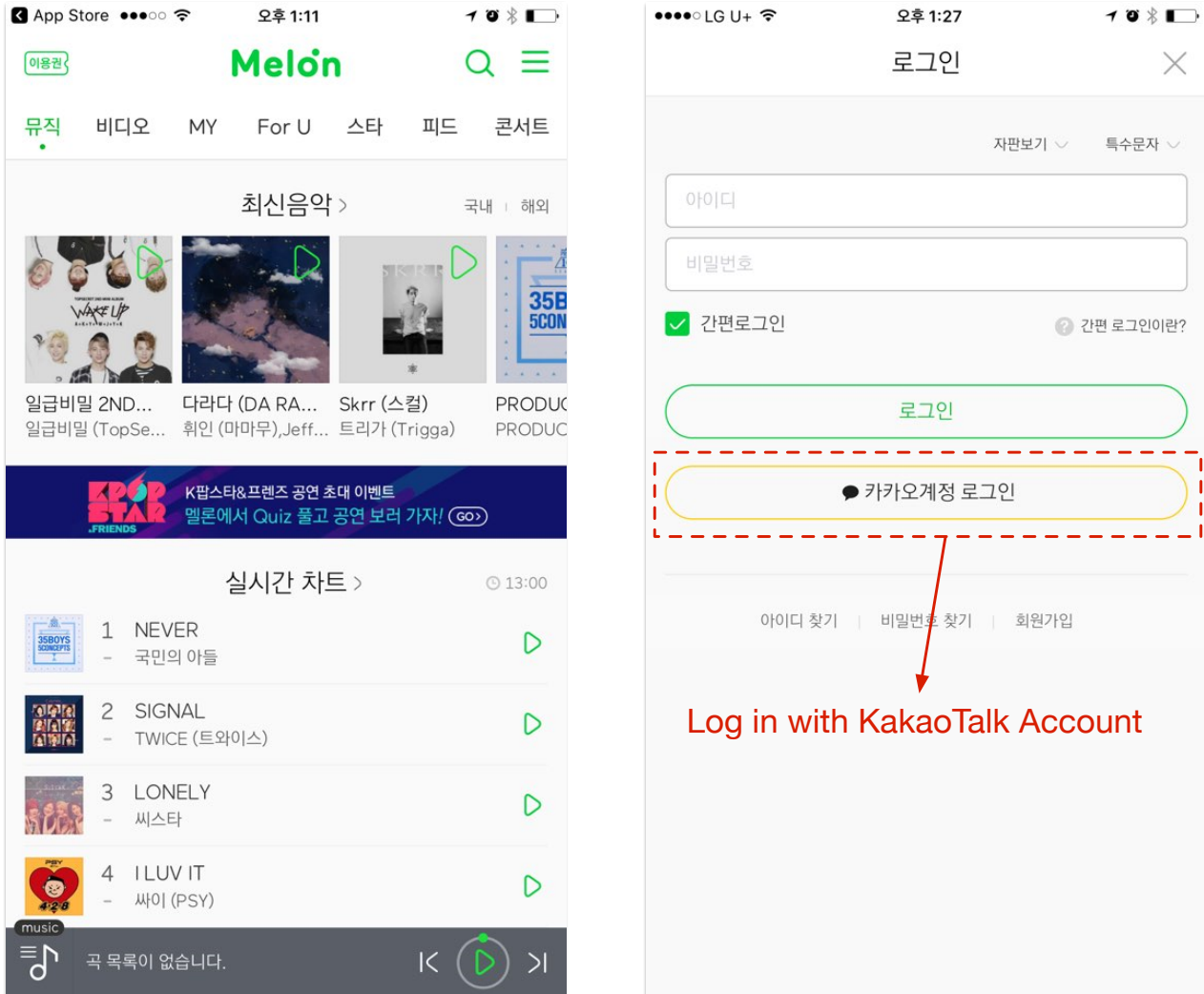

Figure 1: Melon's Mobile App (Left) and its Login Screen (Right).

Furthermore, they conducted a campaign through which KakaoTalk's paid emoticons are given to paying Melon subscribers at no cost.

To understand the behavior of new users who signed up with a KakaoTalk account and to increase their CVR, LOEN Entertainment, without getting external consulting, performed a process mining project after adopting Disco. An in-house data analyst prepared the data for process mining and a marketer set the direction of analysis and conducted the process mining analysis using her domain knowledge.

Process

The process that was analyzed is a new user's journey within the mobile app during the day when they signed up. The reasons for choosing this process are as follows:

1. First, the process is closely related with the company's strategic direction, focusing on enlarging its customer base in concert with its parent company (i.e., Kakao).

2. Second, increasing new users' CVR contributes to its profit enlargement.

3. Finally, segmenting new subscribers based on their behavioral patterns and identifying their registration intent helps to maintain long-term relationships with them.

Data

The project team extracted log data from a Hadoop system that records mobile app users' service usage behavior. Then, the team pre-processed the data and imported it into Disco. 'User Sequence Number' and 'Menu Name' were configured as case id and activity, respectively.

Due to Disco's full Unicode support, the team could easily understand the discovered process map with the activity names in Korean. Furthermore, with the help of Disco's powerful filters a lot of the pre-processing could be done in the process mining tool itself, which reduces the time and effort for the overall process mining analysis.

Results

When the data analysis team uses a general web log analyzer, then it can identify a certain page that a user visited, and its previous and subsequent pages. In contrast, process mining provides an end-to-end process map, repetition patterns, and the duration between pages (menus). Therefore, the team could exactly identify how users use the mobile app service.

By employing the process mining capabilities of Disco, the team analyzed the customer journeys of new users and categorized them, based on their usage pattern, into five customer segments.

Segment 1 is the group of customers who paid a fee for the music service. The process map of this segment is shown in Figure 2 (see next page). The rectangles represent the activities (here, menu names) and the arrows between them show the order in which the pages were visited by the customers. The darker the activities and the thicker the arrows, the more frequently these parts of the process are followed.

Segment 2-5 are customer groups who did not pay for the music service. The team discovered their process maps and was able to clearly identify the customers' registration intent through the maps. Based on these insights from the process mining analysis, strategies to increase the CVR have been developed.
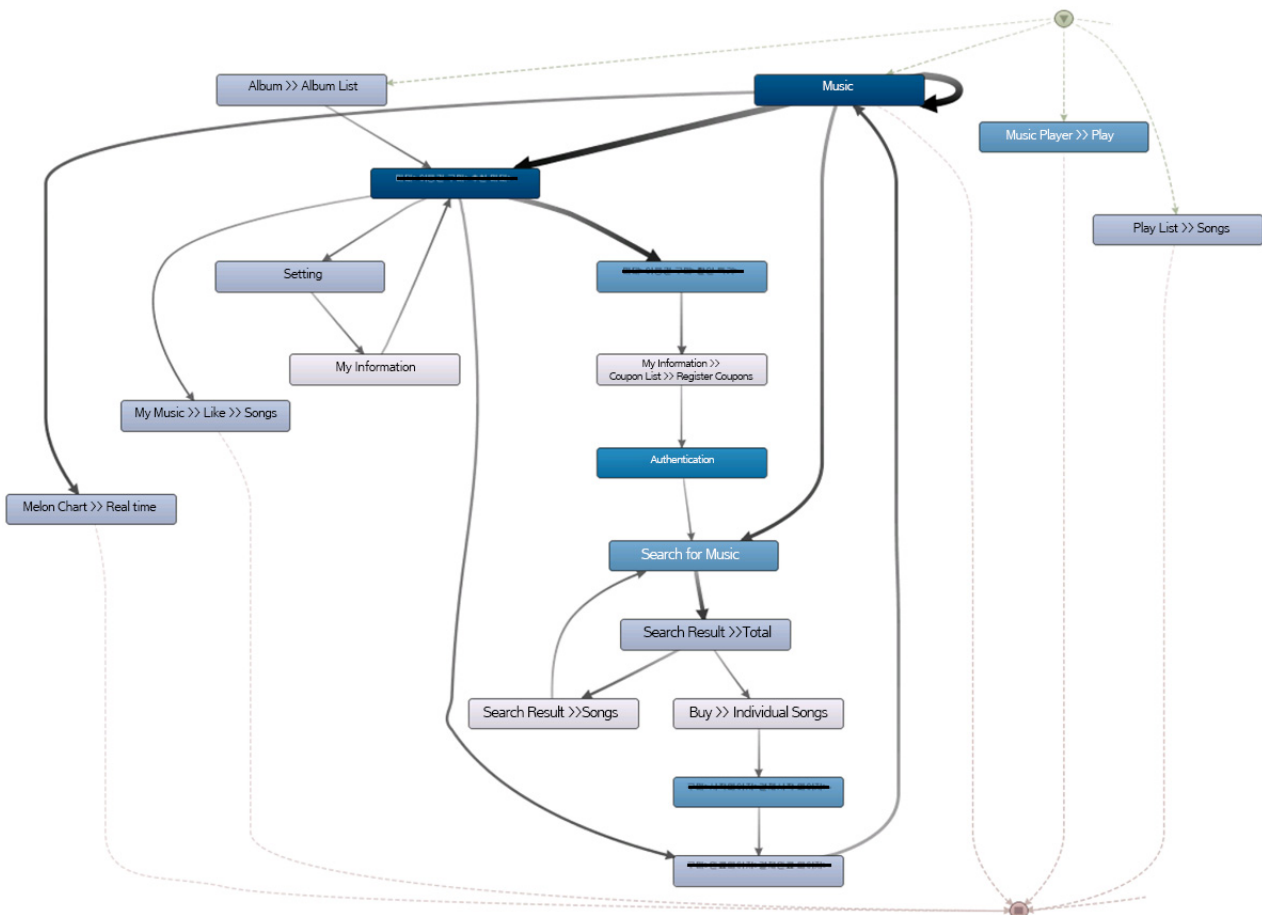
Figure 2: Simplified process map of the page flow for the first customer segment (note that the English page names were overlaid for clarity; furthermore some activity names as well as the frequency and performance metrics have been redacted for confidentiality reasons).

Impact

The team is judging that it achieved full success in the process mining project. It divided new users into (previously unidentified) five customer segments. For each segment, they could clearly identify the registration intent and the key pages that were visited. Now, the team is planning to conduct a targeted marketing campaign, customized for each segment, on these key pages where each segment visited frequently. After conducting the campaign, the team will identify how much each segment's CVR has improved. For the CVR targets that are not achieved, the team will perform a process mining analysis to analyze the customer behavior and find out the root causes of why the target CVR was not achieved. After this initial project, Melon's process mining analyses using Disco have now become a daily improvement activity.

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