

Application for young farmer

Team E

Kim Mineun¹, Sim Sangwon², Eaum Taekyung², Jang Byungwoo³

¹Department of Math Education, SKKU

²Department of Mathematics, SKKU

³Department of Electronic and Electrical Engineering, SKKU

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Abstract

This document is a proposal for a direct trading platform for agricultural products. The Frontend side builds the Front library with react and typescripts and the Backend library with Firebase. Through the use of Kakao Login API, accessibility is improved, real-time video streaming and chat functions are established to help smooth communication, and ultimately, a web app that allows actual transactions is established to eliminate intermediate margins of distributors to seek win-win results for both consumers and producers.

Keywords : react, firebase, application, farmer

1 Introduction

Prices are increasingly high. As of September 2022, the consumer price index rose 0.3% from the previous month and 5.6% from the same month last year. As such, consumer inflation has been renewing its highest level since the 2000s, and table prices are showing no signs of falling. In the meantime, there is an incident that became a hot topic. It's chicken sales at a supermarket. The price of about 7,000 won per chicken was enough to make headlines in our society, which was suffering from high prices, even considering the size and quality of chicken. Despite the high margin rate of more than 30% in operating profit, it can also be said that the opposition to the reckless price increase of existing franchise chicken was revealed. Why can they sell chicken at this price? This is possible by reducing unnecessary expenditure costs by reducing mass purchases and distribution processes. Is it possible only for large companies to reduce this distribution process? It is our view that it is not.

2 Motivation

It is often seen trading fruits directly when passing through rural farms. They doubt the quality because it is much cheaper than the price seen at the mart, but if you check it yourself, it is not much different from what they sell at the mart. So why were we buying the same quality fruit at a high price? The answer lies in the distribution structure. In the process of going through distributors and wholesale corporations, the final sales price gradually rises, and even if the producer hands over the fruit at a low price, consumers end up buying it at a high price. If direct transactions are activated, this unnecessary distribution process can be reduced. Producers can sell at higher prices than originally and consumers can buy at lower prices than originally.

The direct transaction structure through the Internet is not new. There is a platform that helps direct transactions such as 'Coupang' and 'Idus' that exist. These platforms reduce the aforementioned intermediate distributors to provide fresh agricultural products to consumers at a low price by minimizing distribution fees. However, the number of results when searching for the keyword 'Apple' is 1,776. This is an advantage that there are various options, but it is also a disadvantage of falling into a flood of information even though I simply wanted to eat delicious and fresh apples cheaply. In order to solve the problem of being buried in too much information, we recognize the need for curation functions and want to develop a WebApp direct trading platform that introduces them.

3 Objective

There are three functions added to differentiate from existing direct transaction platforms. The first is the curation function. Curation refers to the act of collecting, selecting, combining, and classifying only high-quality things to give special meaning and recreate value. The second is the implementation of the customization function. It provides various units according to individual needs, and allows consumers to select them and customize them as needed. Finally, it provides producers with opportunities to promote by implementing live commerce functions.

4 Background

The Frontend library is built using React and Typescript, and the backend library is built using Firebase. In terms of design, UI/UX design is implemented using Figma and Zeplin. User management uses Kakao login API and Iamport

and Firebase cloud function to establish a payment system to implement WebApp.

5 Related work

5.1 React

React is a web framework and is used to create a user interface as one of the JavaScript libraries. One of the advantages of React is that it has a component-based structure. This makes the code easier to understand and is highly reusable because it is managed on a UI basis. Therefore, even if the size of the application increases, it is easy to maintain and manage it. Based on these advantages, React will be used for front development.

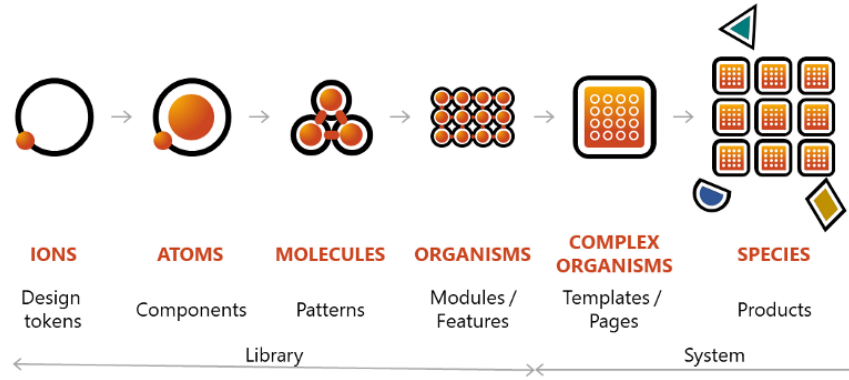


Figure 1: atomic design

Atomic design pattern Atomic design pattern refers to a design pattern that is easy to develop continuously and gradually based on reusable and rigid design by constructing small components. As frameworks used in recent web front development, such as React, proceed with development on a component-by-component basis, these component-centered design patterns have attracted more attention.

The design design phase forms the atomic - molecular - organism - template - page phase. The atomic phase is the component of the smallest unit. Therefore, it must have various states and be designed to be abstract but as inclusive as possible. The molecular phase develops into a more complex unit by weaving atoms. Molecules can have their own properties, and they can use them to create functions in atoms. The organism stage is created by weaving

molecules, and when the organism is completed, it has the final appearance of the component. The template step serves to determine the positions and places of the created organism and components, and the template is used to draw and display components on each grid in the page step.

Redux Redux is a JavaScript health management library. This library makes the state predictable and easy to test by making it available only pure functions with Reducer. That is, it is easy to see what action has been taken and how the data has been changed. In addition, an abstract concept called Store is placed so that all states are managed only in the Store. This makes state management easier.

5.2 Figma

It is a web-based UI/UX design and prototyping collaboration tool. Since it is a web-based tool, it does not require installation separately, so it is not limited to the operating system. Taking advantage of the characteristics of the web-based program, it is optimized for collaboration as several people can check the art board at the same time and work in real-time online. UI/UX design is performed using Figma.

5.3 Firebase

Firebase is a mobile application development platform owned by Google. It can also be said to be a collection of tools that can develop, improve, and develop apps. In the original development process, developers must develop and set up various UIs such as analysis, authentication, database, configuration settings, file storage, and push messages. Firebase helps developers reduce the burden on these UIs and focus on the app's user experience (UX). Developers do not need to build middleware between apps and services, and the client SDK provided by firebase directly interacts with the backend components. Query was also originally required to be written on both frontend backends, but with Firebase, the client app only needs to write code to send queries to the database. Originally, the front-end code only calls the API of the back-end, and it is the code of the back-end that actually performs the operation. However, if you use firebase, you can cross these back-end tasks and immediately turn them over to the client (terminal). This administrator function can be performed through the console window of firebase.

We will use firebase with these features for backend side development. With the help of FirebaseUI SDK, we will build an overall backend and implement a payment module using Firebase cloud function.

6 Problem Statement

Why do we buy fruits at a high price? The structure in which fruits grown by farmers are sold to us in markets or marts is very complicated. The basic flow of the agricultural market distribution route is the structure of "producer -> distributor -> wholesale market -> intermediate wholesale market -> retailer -> final consumer". After this complicated process, there may be problems with freshness, and the unit price may continue to rise. In addition, it is difficult to ask consumers for a price that is too high, so producers sell it at a very low price in the intermediate distribution stage. After all, both producers and consumers are at a disadvantage. Then, is there a platform that omits all these complex processes and directly connects producers and final consumers?

'Coupang' and 'Idus' are the representative direct trading platforms that currently exist. They are an open markets. Open markets are a form in which producers freely post sales articles on the platform, and consumers find and purchase sales posts posted by producers themselves. Therefore, in this type of open market, consumers' options are too wide. In addition, due to the characteristics of the current system that anyone can sell, tags, search word settings, and exposure are not uniform, respectively. Moreover, because fruit quality is difficult to manage, there may be too many differences in quality depending on which market you buy from. Because consumers do not want this type of consumption, it becomes difficult for producers to sell. Therefore, producers have no choice but to follow the existing distribution process by bite the bullet. We will produce an app that can solve this situation.

7 Proposed Solution

As of 2021, the number of returnees was 19,776, an increase of 15.0% from the previous year. In the statistics sorted by age, 3,842 people in their 30s and younger and 2,295 people in their 40s, accounting for 31.0% of the total. The number of young farmers in this young age group continues to increase. Unlike conventional farmers who were conservative, they are actively using smart devices. Our app can be delivered directly from the producer to the final consumer on behalf of the intermediate distributor's role in the process of market distribution channels. Compared to the size of the total agricultural market, the proportion of the direct agricultural market was around 20%, so it was judged as a blue ocean. The final goal is to target young farmers, who have been increasing rapidly over the past five years, and to establish a direct agricultural product webApp platform that can be used usefully by both consumers and producers. We will largely expand three differentiation functions.

The first is the curation function. In the case of the open market currently in service, anyone can write a sales article. This leads to poor product quality and confusion among consumers. For example, 1,776 search results can be obtained by searching Coupang and Ideas with the keyword 'Apple'. Consumers have no way of knowing which of these 1,776 are delicious, fresh and cheap. The

rating function is unreliable because rating manipulation is prevalent, and once a product exposed to the top is always exposed to the top, it is impossible to prevent reviews from flocking to several products. Therefore, we guarantee product quality by entering only a small number of excellent farmers by variety.

The second is the customization function. For example, there are many farmers who run strawberry and grape farms together in the Yeongcheon area. In this case, I want to order a small amount of strawberries and grapes at the same time, but it is difficult to customize on other platforms. Or I want to purchase only a small amount for reasons such as ancestral rites, but in this case, it is difficult to order a small amount. To solve this problem, we activate the one-on-one chat function of producers and consumers. Through this, it is expected that fruit orders that meet conditions such as quantity and items will be possible.

Finally, it's a live commerce function. The live commerce function is a function that allows producers to directly promote to consumers through live broadcasting. At this time, consumers can hear vivid and realistic stories delivered directly by producers, and can directly check the quality of fruits. However, not all producers are given the authority to conduct live commerce. Priority is given to places with high sales volume or good reviews and given one after another. It will be a good opportunity for producers and consumers to meet in person on the camera to check the quality and build trust.

8 Limitation

In our project phase, we will create arbitrary farms that will not target many farms to ensure that sales writing, real-time chat functionality, live commerce broadcasting, and custom orders are available. However, after it is actually serviced, many farms may want to enter. In this case, it is necessary to supplement personnel who can act as MDs, but it is not expected to be a big problem at the project stage.

9 Planning Detail

Our project is largely divided into three categories. Web UI/UX, Front End, and Back End. And Front End is once again divided into internal state management and server communication.

In the Web UI/UX part, we plan to produce by referring to the design of 'Coupang' and 'Idus', which are the existing E-commerce. Figma (the most commonly used design program by designers such as UI design, UI prototype production, and design handoff as of 2021) is an open-source design tool that allows real-time cooperation.

After Web UI/UX, we will proceed with publishing using React's Stylized-components and CSS functions. Stylizing a traditional dome, css, scss file outside, as if it were a component name in the same component, is called styled-

components, which has the advantage of preventing the CSS from overlapping globally and the comfort of not having to create a file.

After publishing, communication with Firebase will be implemented. At this time, simple Dummy Data will be stored directly in the Firestore and Firebase storage to communicate. At this time, in order to add a payment module (Iamport), we plan to use the Lambda function through Cloud Function by signing up for the Firebase blaze plan.

When server communication is implemented to some extent, it plans to implement global state management using Redux and Redux-Saga Middle Ware. Only parts where data travels across pages, including shopping carts, notifications, 1:1 chats, and steamed products, will use Redux, and for data that changes inside a page, it will be implemented as Hooks, the basic function of React.

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