A Study on the Forecast of Sales of Rechargeable Card-Type Onnuri Gift Certificates for the Recovery of Business District*

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Abstract

Purpose: As the sales performance of rechargeable card-type Onnuri gift certificates, which was first implemented in 2023, fails to meet the government's target value, it aims to use it as primary data necessary to achieve the sales target of Onnuri gift certificates conducted by the government based on scientific predictions in 2024**. Research design, data, and methodology**: To measure the sales forecast of Onnuri gift certificates in the first quarter of 2024 based on time series data, we tried to predict through scientific methods and present the result of making decisions through simple expansion, one of the operations research methods. **Results:** The sales forecast for January 2024 is expected to increase by 1.7% from the previous month, with a sales forecast of 235 billion won. From February, it was expected to show a decline and sell 211.5 billion won. It was predicted that 190.4 billion won would be sold in March and 171.3 billion won in April. **Conclusion**: Through short-term predictions, we presented meaningful prediction results for preparing strategies for the first quarter 2024. The budget for selling Onnuri gift certificates in the first quarter of 2024 was forecast to be KRW 808.2 billion, and the average sales performance was predicted to be 202.1 billion.

 Keywords: Business District, Rechargeable Card Type Onnuri Gift Certificate, Predictive Model, Simple Exponential Smoothing, Distribution

 JEL Classification Code : C15, H5, H7, R11,R38.

1.Introduction

1.1. Background

 Traditional markets and shopping districts, significant spaces for local economic activities and communication, play a vital role and function in the city's growth. As these roles and functions led to the size of the city, many cities managed the city with an emphasis on quantitative expansion. However, spatial changes within the town also began to proceed due to changes in the domestic and international situation (Ryu & Choi, 2012). In particular, the relocation of public institutions in the original city center and the development of new cities have changed the environment and functional form of the downtown area, changing the local economic trend.

 In addition, changes in the distribution environment have brought about many changes as offline activities have moved online. These results have significantly impacted

local small business owners and commercial districts, and the central government has supported them through various policies and systems. At the beginning of the support, simple physical facilities were mainly supported by education projects to reform merchants' consciousness, and later, physical facilities were supported intensively to improve aging facilities.

With this support, local traditional markets that maintained existing commercial areas were greatly threatened as extensive domestic and foreign distribution facilities entered urban areas sequentially, and efforts to overcome them began to expand gradually.

One of them is a gift certificate issued by the government to revitalize traditional markets and local shopping districts. Onnuri gift certificates, exclusive to traditional markets and shopping districts, have been sold and distributed nationwide since their introduction in July 2009. Onnuri gift certificates are steadily purchased by companies and individuals every year. These policy results serve as a priming water for vital consumption in the local alley and traditional commercial areas.

The government tried to maximize sales through various support methods so that the distribution of Onnuri gift certificates could lead to a little more vital consumption in traditional local commercial areas. As the budget for Onnuri gift certificates has increased every year, it has recently introduced a card type, and has continued to support and sell Onnuri gift certificates according to various consumption types by raising the sales support along with the use of them in a diversified way.

However, the establishment of the new system requires a lot of time and attention, but a consumption ecosystem was not easily established due to the lack of understanding and inconvenience of Onnuri gift certificates.

Despite this support, the sales and distribution of Onnuri gift certificates are not smooth. Other ministries and local governments issue gift certificates, and benefits are concentrated on small business owners in the region.

Policy similarities and overlapping system operations continued internally despite the passage of time. Even though the economic situation at home and abroad and COVID-19 continue to be very difficult, the number of Onnuri gift certificates issued yearly is increasing significantly.

Onnuri gift certificates are divided into gift certificates according to the type of issuance, and paper-type gift certificates are the most commonly used. Paper-type gift certificates are excellent in terms of accessibility, but it continues to be pointed out that the national treasury is wasted because there are many cases of issuance and distribution costs and illegal distribution.

This increase in intellectual content is one of the processes that make it difficult for sellers to set and implement policy goals that are difficult every year. In addition, there is a doubt as to whether the seller (Government) achieves the target amount set while raising inconvenience due to the lack of understanding of the new system in policy implementation.

Meanwhile, the MZ generation is a generation that has recently attracted attention in recent years and is leading the business and marketing strategy based on unique behaviors and patterns. These MZ generation mainly use mobile payment and card payment. They are familiar with the payment method of charging the amount on the spot when necessary, or receiving the product first and paying later. The government continued to work to reduce the barriers to entry for young consumers to Nuri gift certificates, which have expanded and expanded stores frequently visited by MZ generation to franchisees and diversified payment methods.

In this process, with the launch of the Zero Pay app-based mobile Onnuri gift certificate in 2020, mobile Onnuri gift certificates can be used in stores and stores in traditional markets among small business owners.

Rechargeable card-type gift certificates first went on sale in August 2022, which allows users to register and use existing cards, and secures consumers' convenience through the gift-giving function. One of the characteristics of this gift certificate is that it does not require a separate issuance. It can be used by registering the existing card in the app, and it is possible to easily gift certificates between consumers through the gift function. In addition, it is receiving a lot of attention from companies by providing a 10% discount on corporate purchases.

Despite the fact that the issuance of Onnuri gift certificates in 2023 was issued with more budget than any other year, the sales volume of Onnuri gift certificates did not meet the target value even at the time of the second half of the year, raising doubts about the government's policy implementation. For systematic policy implementation, we want to draw a simulation on how much Onnuri gift certificates will lead to sales monthly and quarterly in 2024.

This study aims to realize the following objectives by presenting these results. First, this study seeks to show the direction of government policy and a direction that can significantly guide budget execution. The second purpose is to predict the basic sales amount for a stable policy settlement of rechargeable card-type Onnuri gift certificates and use them as primary data to present policy measures to maximize effectiveness. The final purpose is to suggest the direction the government should take when the sales scale of Onnuri gift certificates is insufficient or over-sold.

1.2. The Differentiation of Research

Fifteen years after the first Onnuri gift certificate was issued in 2009, various policy changes and new attempts were made to increase the sales of Onnuri gift certificates. In the process, a new type of Onnuri gift certificate was added to directly understand the consumption patterns of consumers as rechargeable card-type Onnuri gift certificates began to be issued for the first time in 2023. In the past, studies that surveyed the effects after sales of Onnuri gift certificates and measured the effects spread through sales amounts were mainstream. In addition, some studies measured the ripple effect in the traditional market and suggested policy proposals for expansion and spread. This study presents the size of the issuance of the new rechargeable card-type Onnuri gift certificate every month through a predictive model. It is considered a study that can present various policies through preemptive policy development. In addition, in the past, predicting the results before budget execution from grasping the results after budget execution has a differentiation that will provide an opportunity to have a lot of influence on policy progress. Finally, another differentiated study presents a method of making decisions through scientific methods through predictive models (single exponential smoothing method), one of OR (operations research) methods.

2. Theoretical Consideration

2.1. Onnuri Gift Certificate Concept and Current Status

Local currency refers to an alternative currency issued. The government issued the Onnuri gift certificate in July 2009 under a special law for fostering traditional markets and shopping districts to promote traditional market marketing strategies to increase demand and revitalize the local economy. Its use is limited to markets and local shops. Since its inception, it has been popular enough to sell more than planned. Nevertheless, it has attracted a lot of controversy due to its de facto compulsory purchase or coercive sales behavior, its limited use to traditional markets and neighborhood shopping streets, fraudulent purchasing behavior after a 10% discount for individuals was briefly allowed in 2014, and problems in the operation process. In 2011, Onnuri gift certificates, which were initially distributed mainly as paper Type gift certificates (5,000won, 10,000 won , and 30,000 won), began to be issued in electronic form (50,000 and 100,000won flat-rate physical cards), and 2019, mobile Onnuri gift certificates (QR payment to merchants after purchasing gift certificates through a mobile app) were introduced. In

2022, rechargeable card-type Onnuri gift certificates (recharge and payment after linking the consumer's physical card through the app) were issued, and the issuance of electronic Onnuri gift certificates was stopped (Kim et al, 2023).

Table 1: Concept and Main Contents of Onnuri Gift Certificate

Division	Content
Concept	Gift certificates exclusively for traditional markets and shopping districts issued by the Ministry of SMEs and Startups and the Small Business Market Promotion Corporation to promote sales of traditional markets and shopping districts and revitalize the local economy
Basis for Issuance	Article 26-2 (Issuance of Onnuri Gift Certificates) to 8 (Investigation on the Distribution Status of Onnuri Gift Certificates) of the Special Act for the Promotion of Traditional Markets and Shopping Districts
Publication Time	2009
Issuing Entity	Ministry of SMEs and Startups/ Small Enterprise and Market Service
Usage	Traditional markets and shopping districts nationwide (1400 franchises)
Type	Paper Type, Rechargeable Card Type, Mobile Type (3 Type)

Source: Internal data from the Small Business Promotion Corporation

The characteristics of each Onnuri gift certificate type are as follows. First of all, in the case of paper-type Onnuri gift certificates, the discount rate is 5%, and there is a limit that can be purchased up to 1 million won per month.
The payment method must be a face-to-face visit to the bank and is jointly sold by 16 commercial banks. Refunds are only available on the day of purchase, and if you use more than 60% of the face value, you can get it back in cash. Secondly, in the case of mobile Onnuri gift certificates, it is 5% the same as the paper type, and there is a limit that can be purchased up to 1.5 million won per month. The purchase method is only available through the Onnuri Pay app and is sold only through the app. In the case of a refund, the full environment is possible if the entire amount is not used within 7 days from the date of purchase, and the balance can be refunded to the account if 60% or more of the face value is used. Finally, card-type Onnuri gift certificates are the same as mobile-type Onnuri gift certificates, and the big difference is that they can only

be purchased on the Onnuri gift certificate app
Looking at the data on the issuance amount, sales amount, collection amount, and recovery rate of Onnuri gift certificates by province, as of 2021, the issuance and sales amount of Onnuri gift certificates was approximately KRW 3.2 trillion, and the recovery amount was KRW 3.4 trillion, with about 95.8% being recovered. It was issued in the amount of 2 trillion won in 2023, and the recovery amount was 3.056 trillion won, showing a cumulative recovery rate of about 97.1%.

Table 2: Onnuri Gift Certificate Type

Division	Paper Type	Card Type	Card Type
Discount Rate and Purchase Limit	Discount Rate: 5% Purchase Limit : One million won per month	Discount Rate: 5% Purchase Limit : 1.5 million won per month	
Payment Method	Bank visit (face-to-face)	Purchase through app (non-face-to-face)	
Selling Place	16 banks	Onnuri Pay app	Onnuri Gift Certificate App
Refund	Refund: Only on the day of purchase - If you use more than 60% of the face value, it will be returned to cash	Refund: Full refund is possible if full amount is not used within 7 days from the date of purchase - If you use more than 60% of the face value, you can refund the balance to your account * Refundable refund is available for the amount excluding discounted amount	

Sources: Small Enterprise and Market Service(2024)

From August 2022, 27.2 billion won was sold by December through the goal of issuing rechargeable gift certificates worth 56.1 billion won. It was 1.08% of the total Onnuri gift certificate sales, and in the first year, sales were not as high as expected.

Table 3: Concept and Main Contents of Onnuri Gift Certificate   (unit: KRW 100 million, %)

year	Issued amount	Sales amount (Target amount of rechargeable gift certificates)	Recovery amount (Sales of rechargeable gift certificates)	Cumulative recovery rate (%)
2009	200.0	104.6	63.1	60.3
2010	900.0	753.3	638.3	81.8
2011	2,400	2,224.3	1,809.8	81.05
2012	4,060	4,257.7	3,862.1	86.8
2013	5,000	3,257.8	2,918.3	87.7
2014	6,360	4,801	4,676.4	90.7
2015	7,381	8,607.2	7,818.7	90.8
2016	10,030	10,945.8	10,858.4	93.4
2017	12,850	10,742.6	11,169.8	95.9
2018	15,016.3	14,916.0	14,703.5	96.5
2019	20,074.1	16,852.8	16,622.4	97.0
2020	40,486.7	40,138.5	34,084.8	92.9
2021	31,573.1	31,721.4	33,808.6	95.8
2022	35,391.0	27,034(561.0).	25,259(272.5)	96.6(48.6)
2023	20,241.8	28,536.6(3,963.3)	30,563.3(3,719.1)	97.1(88.2)
total	191,722.2	176,357	168,293.2	1,247.25

Sources: Small Enterprise and Market Service(2024)

In 2023, it set a sales target of 396.33 billion won and sold 371.91 billion won by the end of the year, which sold 93.8% of its target value.

Looking at the monthly sales performance in 2023, 278.6 billion won was sold in January 2023, 169.9 billion won in February, a 64% decrease compared to the previous year, and 2,963 won in March, an increase of 42.7%.

Source: Own
Figure 1: Monthly sales status of Onnuri gift certificates

As the Lunar New Year 2023 falls in January, sales decreased compared to the previous month (December) but increased compared to February. Sales volume increased in March 2023. From April to September, an average of 187.26 billion won was sold, but in September,

2.2. Problems with Onnuri Gift Certificate Issuance

The problem is that illegal distribution continues in the issuance of Onnuri gift certificates. The number of cases that the government detected illegal distribution was 19 cases in the three years from 2017 to 2019 and 17 cases in 2020, but the number increased significantly to 121 cases in 2022. When calculated as the amount of negative conversion, it surged 18 times from 2.07 billion won in 2020 to 37.61 billion won in 2022. Compared to 2020 (17 cases, 2.07 billion won), the number of cases increased by 611.8% and 1716.9%, respectively. Of the 157 cases detected between 2018 and 2022, only 24 cases, or 15% of the cases, were canceled. The main reason this problem cannot be solved is that secondary problems such as fraudulent distribution appear to arise as an ecosystem to strengthen the digital capabilities of gift certificates is focused on issuing only in a situation where there is no ecosystem to strengthen them.

The government (Ministry of SMEs and Startups) released mobile gift certificates in 2019 with the aim of eradicating the illegal distribution of paper-type gift certificates and strengthening the digital capabilities of traditional markets and stores. As of July 2022, there were 90,000 mobile gift certificate merchants out of 249,000 Onnuri gift certificate merchants in traditional markets and stores nationwide, with a 36.1% membership rate. As the membership rate is far behind the tributary gift certificates, which reach 79.5%, it is believed that this problem will not be easily solved for the time being.

The problem can be pointed out that the main age group that uses the traditional market is the elderly who are vulnerable to mobile, and the work to reorganize the payment method of future customers has recently begun with certain age groups being used intensively, and the promotion and marketing are also being conducted in a formal way rather than suitable for the MZ generation, which continues to be a problem.

2.3. Research on Onnuri Gift Certificates

To By extracting variables related to Onnuri gift certificates and card payments, the effectiveness of Onnuri gift certificates was examined through multiple regression analysis, and the necessity of introducing gift certificates exclusively for small business owners was discussed. In particular, the performance of small merchants in traditional markets was confirmed by examining the impact on traditional market stores (Lee et al, 2018). Based on the survey, the economic performance of Onnuri gift certificates in terms of consumers and users was analyzed. The linear regression model estimation results

estimated that the average number of customers per day at Onnuri gift certificate merchants was higher than that of non-blind stores. In addition, as a result of estimating the logit model and the probit model, it was found that the probability of becoming a merchant increases when there is a merchant association (Lim & Yoon, 2015). In the study on local currency, the data of all businesses nationwide in the corporate register DB provided by the National Statistical Office Big Data Center were analyzed, and the impact of the introduction of local currency on the local economy was empirically analyzed from various angles. According to the results of the analysis, there is a significant variation in the effect of issuing local currency by industry, so only some of the different local currency merchants enjoy the benefits of local currency (Lim & Yoon, 2015).

We tried to find out whether support for gift certificates exclusively for small business owners and government support for modernized commerce systems could contribute to revitalizing the traditional market. To this end, we examined the effectiveness of Onnuri gift certificates, which are exclusively for conventional markets, before introducing gift certificates exclusively for small business owners. In particular, unlike previous studies, the performance of small merchants within the geographical scope of the traditional market was examined by examining the impact on small merchant stores in the traditional market. In addition, the effect of the e-commerce and electronic financial transaction systems on small business owners was examined (Lee et al, 2018).

With the Zero Pay app-based Mobile Onnuri gift certificates launched in 2020, small business owners, stores in traditional markets, and shopping districts can use Mobile Onnuri gift certificates. Existing Onnuri gift certificate users can purchase Onnuri gift certificates with cash by submitting evidentiary documents such as identification at banks and other Onnuri gift certificates. Still, mobile-based Onnuri gift certificates can be purchased anywhere with mobile devices if Internet services are available, increasing user convenience (Yook et al, 2023).

2.4. A Study on the Revitalization of Traditional Markets and Commercial Areas

Business regulations such as restrictions on business hours and designation of mandatory business days for large discount stores were carried out, but the government's policies and ideas to revitalize the traditional market continued to be competitive due to insufficient consumption power and sales growth effects. According to

the analysis of small and large markets in urban areas, large discount stores. Excluding SSM business hours restrictions, it was analyzed that market revitalization was affected by factors such as inducing the expansion of five-day traditional markets, strengthening mandatory holidays, modernizing facilities, expanding the use of Onnuri gift certificates, and increasing interest in city and district chiefs (Lee & Lee, 2013).

The downturn in the traditional (conventional) market was intended to derive an activation plan based on the stagnation factors of the traditional market by establishing a multi-tier decision-making model (AHP) approaching the decline as the social, physical, economic, cultural, and environmental sectors progressed together, as well as changes in the poor physical environment and consumption patterns of consumers. It was found that it was important to improve the shopping environment by expanding the distribution of Onnuri gift certificates, forming an integrated operating organization of traditional markets, operating joint marketing, improving accessibility through shuttle buses, and creating waterfront spaces and shelters (Hwang & Kim, 2012).

Using data from the 2021 Cheonan City Traditional Market Shopping District Survey, it was revealed that environmental improvements such as the installation of public parking lots were directly affected along with the need to explore the traditional market to revitalize the local commercial district (Lim, 2023).

It aims to improve satisfaction by providing services tailored to the needs of visitors through an overall satisfaction survey for visitors to Daegu Seomun Market, and to revitalize the Seomun Market, revitalize the local economy, and regenerate the original city center. To this end, we analyzed what we focus on when visiting Seomun Market as a selection attribute through a survey, and tried to understand what differences occur in the selection attributes of Seomun Market through importance-satisfaction analysis, and suggested the direction of the representative commercial districts of Seomun Market and the original city center (Cho & Ryu, 2019).

2.5. A Study Related to the Predictive Model

The sales of restaurants were predicted using the exponential smoothing and ARIMA models, which are evaluated as appropriate predictive models in domestic and international studies. The DB used for analysis utilized the daily sales of the casual dining restaurant K, which mainly sells steak with an average customer unit price of 15,000 won in Seoul. This is consistent with the results of several foreign studies (Yim, 2007).

Among the time series analysis methods, the demand and supply of the trade workforce were predicted by applying the commonly used exponential smoothing and ARIMA models. As a result of the analysis, a shortage of trade workforce was expected. Considering the continuous decline in the supply of trade personnel, the difference in supply and demand of trade personnel will increase further, providing direction for research (Bang & Park, 2022).

The predictive performance of various time series models was compared and analyzed to predict the demand for users at Incheon International Airport. Time series data were analyzed by collecting data from Incheon Airport users every month from January 2002 to December 2019. This study compared short-, medium-, and long-term prediction time series models using the Naive technique, decomposition method, exponential smoothing method, SARIMA, and PROPHET, considering trend and seasonality. A result of the analysis's exponential smoothing method weighted the recent data and was excellent in short-term prediction (Lee et al, 2020).

3. Analysis Analytical Methods

Time series measurement aims to identify predictable factors and make predictions as accurate as possible. This prediction process goes through the following three steps. First, draw time series data on a scatterplot to determine whether there are trends, seasonal factors, and economic cycle factors in time series data, then select an appropriate prediction model, and secondly, determine the parameters of the model so that the prediction error of the selected prediction model is mixed. Third, predictions are calculated using relevant time series data.

When analyzing a time series, time series data generated over a certain period are decomposed into four variables: trend variation, seasonal variation, cyclical variation, and random variation. So, how do you combine these four variables in your forecast? We present a widely used multiplicative model. At one point, the time series data value y is considered to occur by multiplying the four variable factors as follows.(Cleveland et al, 1990)

$$y = T_i \cdot S_i \cdot C_i \cdot R_i$$

Here, stands for Trend Variation effect, stands for Seasonal Variation effect, stands for Cyclical Variation effect, and stands for Random Variation effect.

Trend Variation is a long-term fluctuation that appears in time series data. The average demand of customers for a product may grow or retreat in the long run. This trend change is caused by an increase in the population, a shift in consumption propensity, and a change in income level.

Seasonal fluctuations are fluctuations in which the

predicted value varies from the trend value due to seasonal factors, and fluctuations appear in a particular form every year. These seasonal fluctuations are caused by the climate holiday season holidays. Circular fluctuations are fluctuations affected by the business cycle and are not easy to predict because they are caused by economic, political, social, and technical factors.

Random variations refer to unpredictable variations other than trends, seasonal effects, and cyclical variations.

For example, even if trends or seasonal cyclical fluctuations were accurately predicted for the sales volume of bakes sold at local bakeries, they would differ from actual sales performance.

This is because there is always a random variation of a small number of customers who buy spontaneously depending on the day.

3.1. Simple Exponent Smoothing

Among the Onnuri gift certificates currently on the market to revitalize and recover the commercial district, rechargeable card-type Onnuri gift certificates began to be issued for the first time in 2023, and over a year, they are trying to gain stability. However, due to the peculiarity of the first issuance, it has a limitation: it needs a clear direction by simply increasing sales volume.
A long-term policy will be needed to settle rechargeable card-type Onnuri gift certificates. Still, we want to predict monthly sales in 2024 (January to April) because policies based on short-term and clear measurement values are required. The prediction method is to conduct a systematic and scientific analysis for problem solving and prediction through Operations Research (OR). There are many models of OR methods, but this study attempts to simulate future observations through a smoothing value, which is a weighted average of time series observations through monthly sales over two years, to secure the reliability of the study.

In the moving average method, the average value was calculated by applying the same weight to all data during the calculation period. Jaros within the postpartum period are either old or recent data, or all have the same weight (Park, 2018). However, since these recent data have more accurate information than past data, giving more weight to recent data may be desirable.

On the other hand, it is not appropriate to completely ignore all data and perform predictive calculations for transfers not included in the calculation period.

Simple exponential smoothing has the advantage of simple calculations using exponential smoothing while reflecting all data in the prediction. In other words, only two data are required for prediction calculation: (1) Current Observations and (2) Forecasts for Current

Observations in the entire period.

Therefore, Exponent Smoothing is one of the predictive models widely used in companies because the calculation is simple and the number of data to be remembered is small.

Simple Exponential Smoothing provides good predictions when observations fluctuate probabilistically around a certain level.

The simple exponential smoothing method may be extended and applied as follows. (1) Holt's exponential smoothing method is applied if there is a trend in the observed data. In addition to the trend, Winter's exponential smoothing method, which will have seasonal factors, is applied. (Kim & Choi, 2019).

Simple exponential smoothing performs prediction calculations using equations (A) and (B).

$$L_t = a y_t + (1-a) L_{t-1} \text{----------(A)}$$

$$f_{1+k} = L_t, k \geq 1 \text{---------- (B)}$$

Here, the weight is called a level smoothing constant. (α is $0<\alpha<1$.) Equation (A) means the level of time series data generated in t (Ahn, 2019).

L_t is a weighted average calculated by applying weights a and $1-a$ to observation value y_t in period t and level L_{t-1} in the previous period.

Equation (B) f_{1+k} means the predicted value for future observations y_{t+k} in period t. $(k \geq 1)$ The prediction error ϵ_t generated during prediction is given as follows (Ahn, 2019).

$$\epsilon_t = y_t - f_t \text{---------- (C)}$$
.

On the other hand, measures such as ME (Arithmetic mean of prediction error), MSE (average square error), RMSE (square root mean square error), MAE (average absolute error = MAD), MPE (average percentage error), MAPE (average absolute percentage error), and TS (tracking index) are used and utilized to measure the accuracy of the prediction method (Hyndman. &. Koehler, 2006)

4. Analysis Results

Every year, the government raises the amount of sales support for Onnuri gift certificates and tries to expand

consumers' purchases of Onnuri gift certificates through various events. This is to maintain stable sales of vulnerable commercial districts through indirect consumption support, and purchase performance is weak except for two holidays a year. In addition, sales are secured and expanded through a significant discount rate to exhaust the unsold Onnuri gift certificates at the end of the year. This is because there is a limitation in that monthly sales are not constant, but this can be seen as the biggest reason why the sector has not achieved short-term goals by presenting target and reference values through the government's active planning or response. Suppose a clear target or prediction value in a small unit is presented as a quantitative value. In that case, it is believed that direction and activeness will be given in proceeding with the policy.

Accordingly, the Simple Exponential Smoothing Method predicted sales volume from January to April 2024. Long-term sales methods and sales marketing should be planned on an annual or mid-term basis. Still, it is necessary to manage the flexible sales of Onnuri gift certificates efficiently by predicting the quarterly sales situation.

Table 4: Predicted Result Value (January to April 2024)

Year	Sales Price (KRW 100 million)	Predicted values (KRW 100 million)	Predictive error
Jul-22	1390	-	-
Aug-22	2181	1,390.0	791.00
Sep-22	2,931.0	1,469.1	1,461.90
Oct-22	1,766.0	1,615.3	150.71
Nov-22	1,897.0	1,630.4	266.64
Dec-22	6,112.0	1,657.0	4,454.98
Jan-23	2,786.0	2,102.5	683.48
Feb-23	1,699.0	2,170.9	- 471.87
Mar-23	2,963.0	2,123.7	839.32
Apr-23	1,804.0	2,207.6	- 403.61
May-23	1,977.0	2,167.3	- 190.25
Jun-23	1,958.0	2,148.2	- 190.23
Jul-23	1,793.0	2,129.2	- 336.21
Aug-23	1,831.0	2,095.6	- 264.58
Sep-23	3,883.0	2,069.1	1,813.87
Oct-23	2,486.0	2,250.5	235.49
Nov-23	2,657.0	2,274.1	382.94
Dec-23	2,690.0	2,312.4	377.64
Jan-24	-	2,350.12	- 2,350.12
Feb-24	-	2,115.11	- 2,115.11
Mar-24	-	1,903.60	- 1,903.60
Apr-24	-	1,713.24	- 1,713.24

Source: Internal data from the Small Business Promotion Corporation
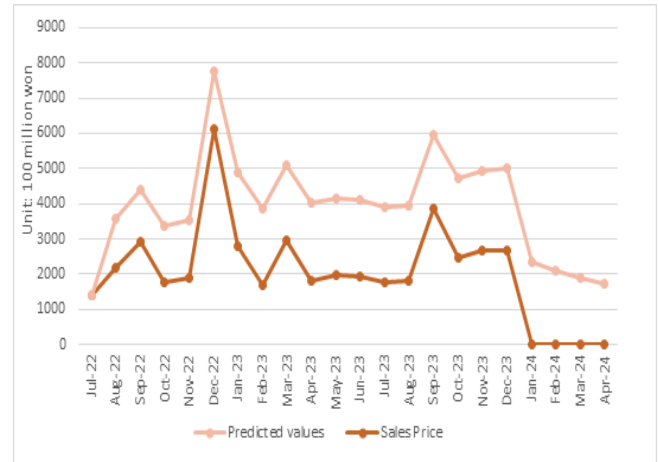
Source: Own
Figure 2: Comparison of Sales and Forecast Results

Using the Simple Exponential Smoothing Method, the sales forecast for January 2024 is predicted to be KRW 235 billion in sales, an increase of 1.7% compared to the previous month. From February, it was expected to show a decline, with KRW 211.5 billion being sold and a decrease of 11% compared to January. It was predicted that KRW 190.4 billion would be sold in March 2024, and KRW 171.3 billion would be sold in April. Compared to the previous year, it is expected to be sold by -43.6 billion won from January 23 and +41.6 billion won from February 23. Still, it is anticipated to be sold by -106 billion won in March and -9.1 billion in April.

To measure the accuracy of the prediction method, in this study, the smoothing constant value was calculated to be 0.1, and the MAE (Mean Absolute Error) was 791.72.

These predictions consider sales performance in the previous month and the last year, and if various sales events or tax benefits are considered, these predictions will be damaged.

4.1. How to Realize Prediction Results

In order to further expand the scope of future customers' exclusive use of Onnuri gift certificates, new services or functions will have to be provided, so I would like to suggest a way to derive simulation results in the previous chapter. The first thing to focus on is social media marketing. Generation MZ actively uses social media to actively share and promote benefits, events, and discounts of gift certificates. It is important to create content suitable for the platform and attract consumers' attention, so it will be necessary to actively review it.

The second is the provision of game and entertainment content. Generation MZ is highly interested in games and

entertainment. By providing various benefits through partnerships with online entertainment platforms or game content using Onnuri gift certificates, it will help promote the amount of money spent in related fields.

Third, customized design and campaigns. Generation MZ values individuality and is sensitive to fashionable designs. It is necessary to provide Onnuri gift certificates that are attractive in design and strengthen the brand image through fashionable campaigns.

The fourth is value-linked marketing. It is necessary to attract social attention from the MZ generation and promote the sale of gift certificates by emphasizing values related to environmental protection, social contribution, and sustainable consumption.

Finally, the introduction of the Rewards program. By introducing the Rewards program based on charging and usage, it encourages more consumption and increases loyalty.

It is necessary to promote the sale of Onnuri gift certificates through such active sales promotion and expansion measures.

5. Conclusion

Among the various policies to revitalize the commercial and traditional markets, Onnuri gift certificates are one of the policies that small business owners and consumers can be satisfied with.

However, as the policy method is concentrated on the aging consumption age group, the sales and distribution amounts of tributary gift certificates continue to be in a stable and stable form, leading to a very weak problem in terms of scalability. One of them is the lack of interest in the payment method that future customers can utilize and use.

By combining the consumption and familiar payment methods of future customers, the seller does not need any additional equipment as long as he has a card payment terminal, and it has become an opportunity to bring convenience to future customers and expandability available to all generations rather than specific age groups by adopting a rechargeable card-type Onnuri gift certificate method that is very convenient for both consumers and sellers. This has provided alternatives to improve institutional problems such as fraudulent distribution along with the budget savings required for the production of paper-type gift certificates.

In addition, the recent presentation of processes and results that can be promoted for ESG practice, a global social and national issue, laid the foundation for improving the environment, social and governance in the

national, social, and individual sectors.

A representative example of this is the gift certificate issuance sector, and unlike plastic or paper gift certificates in order to protect the environment, it is charged in an electronic form to reduce paper use, thus providing an alternative that is environmentally friendly and contributes to resource conservation and waste reduction.

Every year, the issuance of Onnuri gift certificates increased seven times from 10 years ago in a growing situation, and the government budget was organized to increase to 5 trillion won in 2024.

The government reviews the effectiveness of many past policies for budgeting every year, but quantitative and specific simulations have been insufficient. Therefore, in this study, scientific methods should be applied to predict the future of policies to prepare countermeasures for the results.

In the process of such a large budget, it is necessary to maximize policy immersion by identifying factors that may be insufficient or increased through short-term sales predictions in advance.

For example, if the implementation of policy goals is expected to be insufficient, reorganization or supplementation should be carried out so that effective policy effects can occur to traditional markets and small business owners through diversification of sales methods, reorganization of business methods, and diversification of business budgets.

Of course, due to the nature of Korea, a stable sales environment should be prepared through balanced sales in a situation where a large amount of sales are recorded during the two big holidays.

This study presented very meaningful prediction results for preparing strategies for the first quarter of 2024 through short-term predictions. The sales budget of Onnuri gift certificates in the first quarter of 2024 was forecast to be KRW 808.2 billion, and the average sales performance was forecast to be KRW 202.1 billion. Compared to the previous year, the result was predicted to decrease by -14.4 percent (29.2 billion won). Despite much publicity as rechargeable card-type mobile Onnuri gift certificates were distributed for the first time in 2023, the sale of card-type mobile Onnuri gift certificates was incomplete due to the lack of payment systems through cards in traditional markets along with consumers' awareness.

As consumer awareness of rechargeable card-type mobile Onnuri gift certificates, which have entered their second year, is improving a lot compared to the previous year, active publicity and short-term sales marketing are expected to result in exceeding current forecasts.

5.1. Limitations of the Study and Future Studies

This study was conducted to propose a policy shift through the spread of sales and prediction of rechargeable card-type mobile Onnuri gift certificates for the first time in 2023 since only the first quarter of the year was presented. As a result, it can be regarded as a study with limitations in realizing related policies even on the continuous side. In addition, since it is not a prediction method that can increase the forecast value to match the proportion of the budget that increases or decreases every year, the following study should consider ways to supplement it. In addition, research should be conducted to ensure that a more realistic alternative to policy implementation can be achieved by comparing the results by applying various methods to the prediction model. Further studies will supplement these limitations as there is a limitation in not being able to present predictions considering regional aspects so that customized policies can be implemented.

References

Ahn, Y. G. (2019). A Study on the Prediction of the World Seaborne Trade Volume through the Exponential Smoothing Method and Seemingly Unrelated Regression Model, *Korea Trade Review, 44*(22), *55-62.*

Bang, S.C., & Park, K. S. (2022). A Study on the Forecasting Supply and Demand of Trade Experts using Exponential Smoothing Method and ARIMA Model, *The International Commerce & Law Review , 93*, 177-196.

Cho, B. H., & Ryu, T.C. (2019). A Study on Measures to Active the Commercial Sphere in the Old Downtown through IPA Analysis : Targeting Daegu Seomun Market, *Journal of Digital Contents Society, 20*(4), 851-857.

Cleveland, R. B., & Cleveland W. S., & McRae, J. E., & Terpenning. I. (1990). A seasonal-trend decomposition, *Journal of official statistics, 6*(1), 3-73.

Hwang, S. H., & Kim, J. J. (2012). A Study on the Revitalization Model of Traditional Markets in Korea through typifying their decline factors, *Journal of The Residential Environment Institute of Korea, 10*(3), 313-326.

Hyndman, R. J., & Koehler, A. B. (2006). Another look at measures of forecast accuracy, *International journal of forecasting*, 22(4), 679-688.

Kim, H. K., Kim, H. J., & Chun, B. G. (2023). A Study on the Effects of Onnuri Gift Vouchers on Consumption Promotion, *Journal of Korean Economic Studies, 41*(3), 29-54.

Kim, T. H., CHOI, S. D.(2021). Comparison of Forecast Models for Purple Laver Producer Price, Jeollanam-do Exponential Smoothing Technique and ARIMA Model, *The Journal of Fisheries and Marine Sciences Education*, *33*(4), 831~843.

Lim, B. I., & Yoon, J. H. (2015). The Analysis on the Revitalization of Traditional Markets by Onnuri Gift Vouchers, *The Korea Association Small Business Studies*, 37(4), 105-121.

Lee, C. S., Kim, S. H., & Lim, Y. K. (2018). The Effect of Onnuri Gift Certificate and Credit Card Use on the Performances of Small Business in Traditional Market, *Journal of Distribution and Management Research, 21*(2), 77-86.

Lee, D.H., & Lee, Y.S. (2013). A Study on the Effect of Governments traditional Retail and Periodic Market Policies on Revitalization of Market : Focused on Traditional Retail and Periodic Markets in the Urban Areas of Daegu and Daejeon, *Journal of Industrial Economics and Business, 26*(5), 2,337-2,360.

Lee, J. H., Han, H. R., & Yoon, S. H. (2020). Air passenger demand forecasting for the Incheon airport using time series models, *Journal of Digital Convergence, 18*(12), 87-95.

Lim, S. H. (2023). A Study on Ways to Revitalize Traditional Markets in the Era of the 4th Industrial Revolution, *Industry Promotion Research, 8*(2), 61-66.

Park, K. B. (2018). A Study on the Change of Precipitation and Temperature with 24 Season by Moving Average Method, *Journal of Environmental Science International*, 27(12), 1,227-1,239.

Ryu, T. C., & Choi, B. M. (2012). An empirical study on the initial phase of the Marketing Area Revitalization System to revitalize the old downtown- In the Case Survey targeting local experts and public officials, *Journal of the Korean Regional Development Association, 24*(5), 105-124.

Song, G. H., & Lee, H. W. (2021). Economic Effect of Local Currency(Local Consumption Coupon): Focusing on the impact on sales of small businesses, *Panel For Korean Economic Analysis, 27*(3), 1-53.

Yook, H. J., Kim, K. S., & Gim, G. Y. (2023). A Study on the Effects of Attributes, Perceived Ease of Use, and Perceived Usefulness of Mobile Onnuri Gift Certificates in Traditional Markets on Intention to Use, *Journal of Distribution and Management Research, 26*(2), 105-118.

Yim, E. S. (2007). A forecasting restaurant sales: exponential smoothing models and ARIMA model, *Korean Journal of Hospitality and Tourism, 16*(3), 139-154.