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# "Zeropay": The Simple Payment Service for Small Businesses – The Strategic FinTech Policy in Seoul Metropolitan Government

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## ABSTRACT

ZeroPay is a "zero-fee payment service," which is designed to help small businesses. It is a QR code-based mobile secure payment service that the government, Seoul Metropolitan Government (SMG), bank, and private settlement providers cooperate to reduce small business owners' commission burden. When a consumer recognizes a QR code as a smartphone app, the fees charged by the merchant's franchisee will either be lost or significantly lowered as money transfers from the consumer account to the merchant account. SMG started to ease commissions' burden on small businesses suffering from recession, rising rents, and card fees. However, because of this service started with government policy, ZeroPay started with many controversies, and these issues need to be addressed for the service to settle down stably. The main discussion of this paper is that this service will be applied successfully to the market. The author discusses how the SMG efforts settle successfully with strategically initiated services.

### KEYWORDS

Engagement, FinTech, Government, Mobile Payment, QR Code, ZeroPay

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## INTRODUCTION

Government support is necessary for the healthy development of the FinTech sector, which can potentially revolutionize financial services products, services, and delivery mechanisms worldwide and deliver social and economic outcomes more effectively and efficiently.

Looking at developments worldwide, it is not clear that there is consensus on how or where government support should play into the FinTech sector's evolution and, in turn, its role more broadly within the financial services industry and national economy. By supporting and promoting FinTech, governments are broadly looking to increase financial inclusion and access. Also, FinTech provides opportunities to expand the reach of financial services with potentially substantially positive impacts for the public. For the practical expansion or new opportunities of financial services such as FinTech, the government's leadership and engagement and collaboration of citizens and financial institutions are essential.

SMG(Seoul Metropolitan Government) is started "ZeroPay," a QR code-based mobile secure payment service to reduce small business owners' commission burden. "ZeroPay" is a mobile payment system in which a user takes a QR code in a store using a banking app for a smartphone or a simple payment app, and then receives a cash payment by inputting the purchase amount. When the user makes a credit card payment, the card company will pay the fee, but ZeroPay is a cash direct transaction fee.

In traditional card payments, merchants had to pay a fee when they approved for payment. In the process, credit card companies, VAN(Value added Network) companies, and electronic payment agencies took fees, and small businesses suffered. ZeroPay, on the other hand, is a form of bank transfer where the bank transfers cash from the consumer's account to the seller's account. Suppose the user run a smartphone-only payment application and take a QR code in the store with a camera. The amount is displayed, and payment is made by authenticating with a password or fingerprint. On the contrary, users can pay by running the app, launching a unique QR code, and recognizing it as a store-only reader.

In the face of the private payment method's difficulty, the Small and Medium Venture Business Department and some local governments are jointly promoting the introduction of the tentative name ZeroPay for small businesses. Since ZeroPay is built on an open platform, all banks and simple payment apps can use standard QR codes.

Compared with other developed countries, there is a unique characteristic of the retail payment market in Korea. The fact is that credit cards, which are the most expensive payment methods, are fixed as the most common payment method, among the law forcing stores to pay by credit card. ZeroPay is a policy project created by the government's proposal.

In the ZeroPay service, private banks and non-financial simple payment companies that agree to the conditions presented by the government have signed an agreement with the government to provide payment services using their platform. The success or failure of the ZeroPay project depends on the active participation and will of private

companies because the government does not directly provide payment services. Still, the government's policy projects are carried out by private companies.

The agreement between the government and participating companies actively cooperates in minimizing payment fees for small businesses. In particular, it does not charge settlement fees or wire transfer fees for policy-selected merchants selected by local governments. As a general rule, a fee is charged to merchants because a certain amount of money incurred in payment through a simple payment system.

Before starting the ZeroPay service, there were many negative opinions and evaluations in the market. For this reason, SMG needed a lot of effort to settle the service above all else. In particular, financial institutions' active participation such as citizens, small business owners, banks, and credit card companies, and the government's role was most important.

This paper discusses what is required for FinTech services to settle in the market and discuss government-led FinTech services such as ZeroPay service. We also discuss how ZeroPay can overcome various issues and conflicts, secure market competitiveness, provide various benefits to stakeholders, and settle services while resolving conflicts between existing financial companies. This paper also discusses the efforts of stakeholders in SMG for service engagement and collaboration.

In the paper, we discuss the "ZeroPay" service, why SMG started this service, its strategic approach, and its problems, solutions, government roles, and directions to follow.

## BACKGROUND

### Financial Technology (FinTech) Service in Government

FinTech(Financial Technology), meaning the convergence between finance and technology, is a buzzword for 2015. Mobile technology makes it easier for startups to run a business than in history, driving a shift towards the FinTech era where IT uses finance. FinTech increases its presence in every corner of financial markets, even in those regarded as traditional businesses such as wealth management, brokerage, investment advising, the secondary market, clearing, and settlement. Korea is keeping pace in seeking for opportunities to push FinTech innovation forward.

The continuous growth of the investment has been powering the development of FinTech to advance on technological breakthroughs in multiple areas, such as mobile networks, big data, trust management, mobile embedded systems, cloud computing, image processing, and data analytic techniques (Castiglione et al., 2015; Gai et al., 2018; Lee & Kim, 2015; Zhang et al., 2016).

As a new trend, FinTech is a business line based on using software to provide financial services. FinTech companies are generally startups founded to disrupt incumbent financial systems and corporations that rely less on software (Lee et al., 2016). FinTech companies offer easing payment processes, reducing fraud, saving user's money, promoting financial planning, and ultimately moving a giant industry forward (Telegraph, 2017).

People can obtain any credits through special services on the Internet from other users without banks' participation, pay by credit card using mobile devices, and get information about expenses and incomes according to the card anywhere in the world. Users do not need to go to banks anymore and spend their time on credit arrangements, currency exchange, and ATMs to remove cash. Purchases on the Internet can be paid not only in rubles but also in new digital currency. These tools make life easier, but they pose a serious threat to banks. Now, bank institutions should create more convenient and utility services for the clients to keep clients. Therefore, bank and credit systems start to change actively (PWC, 2017).

In Korea, FinTech is receiving much attention in the finance and IT markets. We know FinTech is a combination of finance and technology. That is, financial services are provided through IT solutions so that customers can receive more convenient financial services. People in Korea have already had a significant amount of experience with FinTech. The most common examples of Fintech in Korea are Internet Banking and Internet shopping.

Lim et al. (2019) explained that other countries worldwide are not actively using Internet banking and Internet shopping as much as Korea. It is not too much to say that this goes for the services offered as well. However, Internet banking and online shopping do not make up the entire scope of FinTech.

The QR code (Quick Response Code) is a two-dimensional matrix type bar code. It is characterized by expressing a one-dimensional bar code arranged in a conventional line as a plaid square for a quick reaction. It is also easy to create and read so that it can use in various devices. Mainly, it can use to share information by using the camera of the smartphone.

It is common in China to pay QR codes to mobile phones rather than cash or credit cards at restaurants and marts. Some shops do not pay cash and only pay by mobile with QR code, and street vendors even use them. In China, where credit-based financial services have not been developed, the mobile payment system has become established as the Fintech business grows.

ZeroPay is similar to "WeChat Pay" and "Ali Pay" that are common in China. ZeroPay and WeChat Pay are the same in that users can pay immediately by scanning the QR code with the user's mobile phone. However, ZeroPay is a mobile payment system created by the SMG instead of a credit card with a commission rate of 3%. It is different from WeChat Pay, provided by Tencent, and Ali Pay, from Alibaba.

Mobile payments are active in China because of the relatively low credit card penetration rate and the difficulty in using credit cards. WeChat Pay and Ali Pay should be regarded as debit cards because money directly withdrew from the linked bank account. However, for Korean consumers who are already accustomed to using credit cards, it may be inconvenient to use QR codes in mobile phone apps.

WeChat Pay and Ali pay spread widely in China because of various additional benefits with their businesses. The most popular and convenient payment service in China is Ali Pay in Alibaba and WeChat Pay in Tencent. Ali pay, which started from an online shopping mall, expanded to offline services and expanded its services

connected with its related businesses, starting with the mobile messenger, WeChat. WeChat Pay is based on "WeChat," the world's most gigantic messenger. Therefore, it is safe to assume that all Chinese people with mobile phones use WeChat Pay. Also, WeChat Pay's commission rate per merchant is 0.6%, which is much lower than that of Korea's credit card fee. In other words, the payment fee is less than 0~1% because it is a direct debit payment method of cash debit. China's QR secure payment service is expanding to Japan, Hong Kong, and Europe.

This paper introduces a QR code-based mobile simple payment service called "ZeroPay," provided by the Seoul Metropolitan Government (SMG).

Governments play an essential role in the global financial markets. Rajan and Zingales (2004) and Glaeser et al. (2001) suggest that governments centralize authority and are needed to create financial markets. Acharya et al. (2016) find that governments in developed countries provide an implicit guarantee to large financial institutions.

By supporting and promoting FinTech, governments are broadly looking to achieve the following goals: First, FinTech provides new opportunities to expand the reach of financial services to the under-banked and the under-insured, with potentially substantially positive impacts public good.

Second, governments must ensure that the country's financial system is efficient and sufficiently robust, enabling technologies and solutions. Also, efficiency gains will increasingly require higher levels of public and private sector collaboration.

Third, healthy competition is always a motivating factor, and it is clear that new FinTech players in the market are already a driving force for competitive change. One area where governments' impacts can be seen is through the authorization and bank licensing processes for new entities.

Finally, governments wish to ensure the financial services system by managing any emerging bubbles and potential operations risk areas. The government will allow better management of that risk or more efficient means to comply with regulatory obligations.

The rapid growth of the Korea FinTech industry is closely linked to its FinTech ecosystem's high quality. Diemers et al. (2015) suggested that entrepreneurs, government, and financial institutions are the FinTech ecosystem participants and have identified five FinTech ecosystem elements, including FinTech startups technology developers, government, financial customers, and traditional financial institutions. These elements contribute to the innovation, stimulate the economy, facilitate collaboration and competition in the financial industry, and ultimately benefit consumers in the financial industry.

## Citizen Engagement

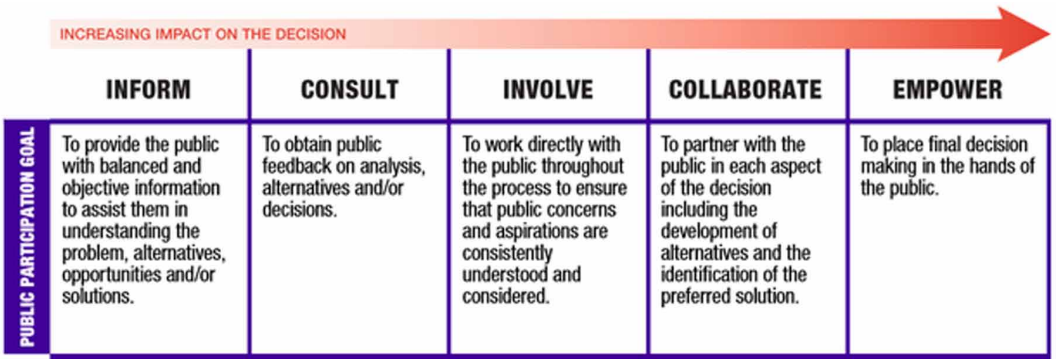
Citizen engagement, as part of the democratic foundation, plays a crucial role in improving trust and enhancing the legitimacy of government action. Lukensmeyer and Torres (2006) call for a more robust framework and infrastructure of public agencies and high public administrators' trust in public participation benefits.

In Figure 1, the Spectrum specifies five government participant engagement levels and expected outcomes: Inform, Consult, Involve, Collaborate, and Empower. At the lowest end of engagement is "Inform," a platform provides information to assist public understanding of a complicated issue. The second level is "Consult," a platform that obtains feedback from participants on proposed government decisions. The third level is "Involve," a platform actively collects stakeholder feedback for the express purpose of ensuring that governments consider stakeholder concerns. The fourth level is "Collaborate," a platform that facilitates direct communication between the government and the public. The Spectrum's highest level is "Empower," whereby decisions offered by participants through a platform are implemented in practice.

Brookes and Grint (2010) underscore the critical aspect of trust in the emergence of public leadership. Citizen engagement acts as an instrument in increasing, rebuilding public trust in government. (Abramson et al., 2006; Ho, 2007; Cooper et al., 2006) A robust public administration is built on democratic values like citizen engagement. Governments and public leaders or administrators need to promote and encourage citizens' greater access and engagement in the decision-making process. Initiatives addressing these challenges need to become a priority on the government agenda. The interaction between public leaders and citizens must go beyond formal information and consultation mechanisms. To provide public services that citizens want and to respond to their needs, it is necessary for a different approach that involves public policies and programs for increasingly engaged citizens. In a context of declining trust, building and rethinking trust requires strong leadership. Citizen engagement acts as an instrument in enhancing both trust and legitimacy in government actions.

When starting the ZeroPay service, the SMG faced many difficulties as citizens' participation and interest were less than anything else. In this paper, we discuss the SMG efforts to engage citizens and other stakeholders to expand the service of ZeroPay.

**Figure 1. International Association for Public Participation Spectrum of Public Participation. Source: International Association for Public Participation, IAP2 Spectrum of Public Participation (2007).**



## WHAT IS "ZEROPAY"?

As the unrest in global economic conditions and our economy's polarization intensify, small businesses' economic health is still low and unstable. The collapse of the global financial system, triggered by the subprime crisis in 2007, has catalyzed the global financial industry's foundations. The interdependence and dependence of all the distribution industry components, such as manufacturing, wholesale, and retail, are increasing, and the anxiety about risk is gradually growing. As the factors of external environmental and physical risks that small business owners cannot survive by their exploitation are increasing, small business owners who cannot cope with them face a big crisis.

The government has made various efforts to overcome this problem, but the effect is not sustainable. The vicious cycle in which the self-employment market, such as employment and startups, cannot be improved due to the increase in short-term work centers and the decrease in the household income, which are inadequate in employment and creation.

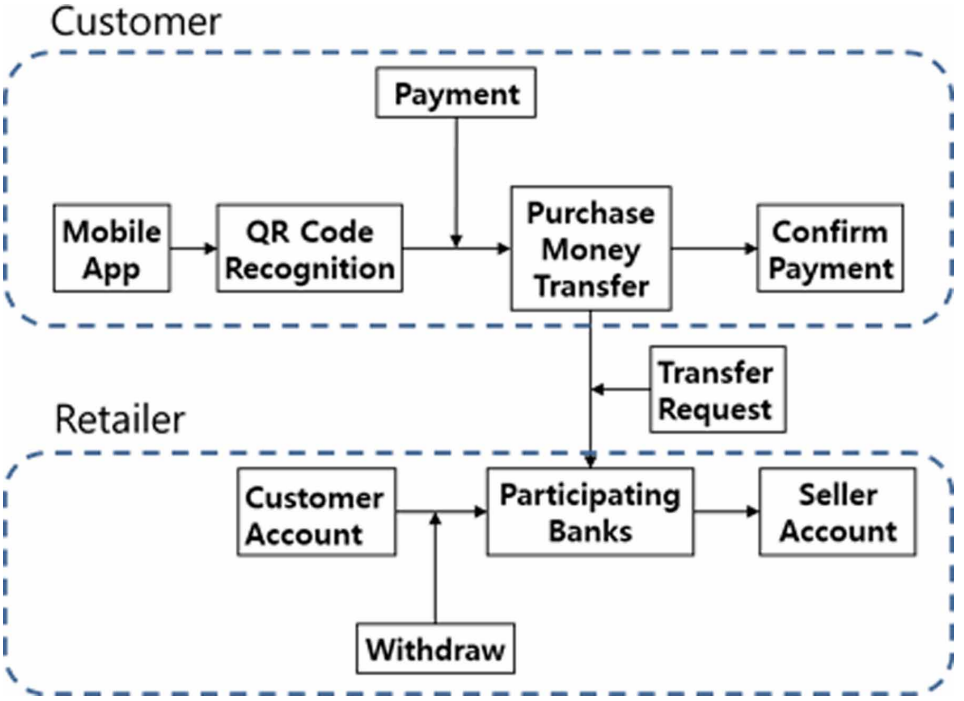
Under these circumstances, implementing a policy to protect small business owners is an urgent task for central and city governments. Some local governments, including SMG, have pledged to introduce simple payments before the local elections in May 2018. In other words, it added to reduce the burden of paying card fees for small business owners.

ZeroPay is trying to reduce this fee burden to zero. It is a small business payment system introduced to lower payment fees and provide income deduction. ZeroPay is an account transfer-based mobile simple payment system created in cooperation with the government, local governments, banks, and private simple payment providers to lower this fee burden to '0', announced by the government on December 20, 2018. It was one of the core policy tasks. The ZeroPay service started in January 2019 as one of the critical policy issues announced by the government on December 20, 2018.

"ZeroPay" is a mobile secure payment system for small business owners. It adopts a transfer method directly from a consumer account to a seller account at the transaction time. The payment fee is exempted or minimized according to the division of annual sales of small business owners. It is a service given to give as a simple mobile payment using QR code when the consumer scans the seller's QR code, the amount transfer from the consumer's account to the seller's account. It calls "ZeroPay" because this FinTech technique brings down the small business card fee to zero. The ZeroPay process is shown in Figure 2.

The key to ZeroPay is to eliminate VANs and credit card companies from participants and reduce the burden of fees by transferring payments from consumer accounts to ZeroPay merchant accounts. (Figure 3) To do this, ZeroPay uses a QR code. When the user prints a QR code, the transfer is made. Consumers can use the FinTech app or the bank's app. When the consumer recognizes the QR code, the platform company requests a bank transfer from the commercial bank. The commercial bank transfers the payment amount from the consumer account to the merchant account.

**Figure 2. "ZeroPay" process**




Consumers can receive a 40% income deduction rate, which is much higher than the 15% credit card deduction rate and 30% for cash and check cards. Currently, small business owners account for about 85% of all companies in Korea. Small businesses have demanded a reduction in card fees, indicating that there is no operating profit left.

The number of small businesses in Seoul is 660,000, which is 84% of the total number of businesses, and the number is 1,280,000, which is 25% of the total number of employees. It mainly concentrates on life-like businesses (59%) such as convenience stores, restaurants, and private taxis.

ZeroPay is a "zero-fee payment service," designed to help small businesses suffering from recession, rising rents, and card fees. Despite the cuts, there was a large card fee for small self-employed and small business owners, and ZeroPay was suggested to improve this.

How to use is simple. Suppose the user waits for the customer's mobile phone in the QR code settlement at the store. In that case, cash will be paid directly from the customer's account to the seller's account without a complicated authentication procedure.

Consumers do not have to open their wallets, and they do not have to exchange their money. ZeroPay is an app-to-app payment method that directly connects merchants and consumers, minimizing intermediary intervention and lowering fees. Since the payment amount is transferred to the account, the seller secures the cash's liquidity, which reduces the financial burden during the settlement.

## Citizen Engagement in ZeroPay Service

As mentioned earlier, the participation of citizens, small business owners, retailers, and financial companies is the most critical point in ZeroPay service. According to the Spectrum of Public Participation (International Association for Public Participation, 2007), we describe the ZeroPay service.

The inform level addresses the quality of the description and external references provided. The platform must provide a clear description of the issues with references to external materials for verification to achieve this.

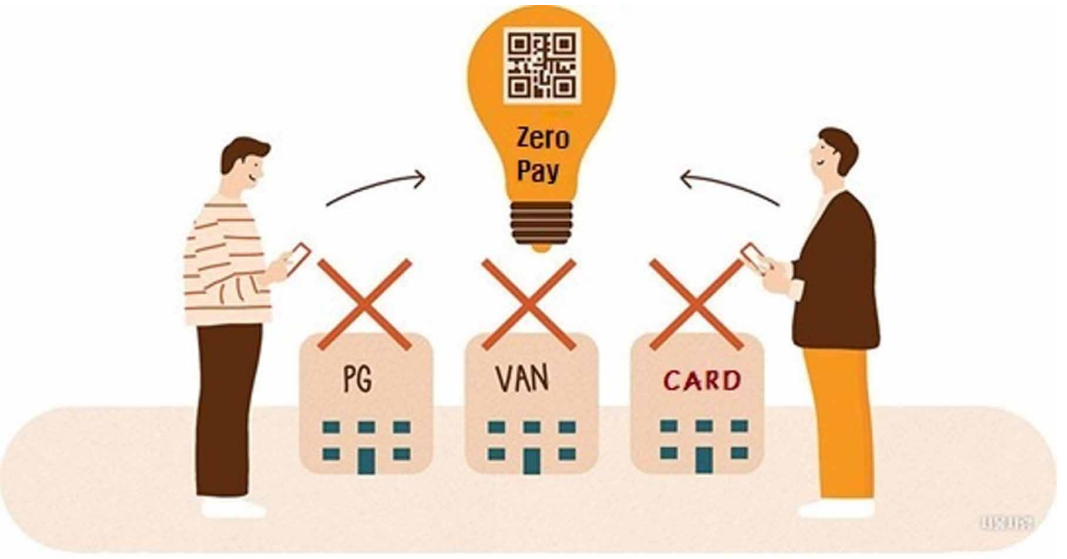
ZeroPay is a payment service for policy purposes to help small businesses. The SMG presented a QR code-based mobile payment service as the most suitable method for the target policy.

The consultation level focuses on feedback. Before and immediately after the start of ZeroPay, the SMG received surveys and opinions from various FinTech and other financial institutions such as citizens, small business owners, and financial experts, and made much effort to resolve fundamental issues and problems based on the feedback from these surveys.

The involve level includes engagement from leaders to ensure that public concerns are understood and considered. We discussed that if the system enables citizens to highlight critical issues and problems, the local government ensures they understand them correctly. Based on the feedback, the SMG made an effort to understand and engage the various stakeholders needed for the service.

The collaboration and empower levels require interaction among participants and between participants and leaders. These levels are the part that SMG is making the most effort. Since there are many different stakeholders and various opinions, we put

**Figure 3. Minimize commission generation during the settlement process, PG: electronic payment agency, VAN: the settlement agency carrier.**



much effort into understanding each stakeholder and encouraging participation. Also, efforts to resolve conflicts of interest between telecommunications companies, platform companies, credit card companies, VAN companies, banks, and other financial-related companies and lead to cooperation are continuing. Above all, the active participation and collaboration of various stakeholders, including citizens, is an essential factor determining the ZeroPay Service's success.

In the case of ZeroPay, the role of the SMG's policy proponent, project leader, and local government is the most important. It must play a role to continue to be applied in the market fairly and transparently in the future.

## Survey and Results about ZeroPay Service

The SMG, which had many concerns about the service, conducted a questionnaire survey at the beginning of the service to obtain opinions on the ZeroPay service from retailers, citizens, and experts. We intend to establish effective policies through survey results. At the early stage, SMG wanted to know how citizens think about a small business owner's business environment. Before the SMG start its service, it gathered opinions from retailers and citizens in Seoul. The survey results are in Table 1. According to the results, citizens had many opinions that ZeroPay would help small businesses.

After starting the service, FGI (Focus Group Interview) was initially conducted for experts such as card companies and banks. Interviews with payment service officials have essential implications for proposals, such as improvement plans.

According to the answers in Table 2, there were many opinions from experts that it would be difficult to settle in the market because ZeroPay is inconvenient to use, and it is challenging to replace credit or debit cards.

Besides, the SMG conducted a survey of 240 citizens about the ZeroPay service. Some of the survey results are in Table 3. By gender, 99 (43%) males are 141 (57%) females. Among them, 19 (34%) males (34%) and 37 (66%) females answered "Yes" to the question "Have you ever paid for a product through ZeroPay?". On the other hand,

**Table 1. Pre-survey results**

| Question | Result |
|---|---|
| What is the biggest reason why a small store in our neighborhood is under operating? | 32%, because of high rents and difficulty in handling card fees |
| What is the most necessary help for a small shop in my neighborhood? | 39%, please regulate the occurrence of gentrification problems. |
| To succeed in our neighborhood small business? | 39%, attracting consumers' hearts with differentiated services. |
| What do you think of ZeroPay introduced to reduce the payment burden on small business owners? | 68%, need. |
| What would you like to see if you start ZeroPay? | 70%, a small business owner can reduce the payment fee and help to operate the store. |

80 men (41%) answered 'no,' and 104 (59%) women responded, and the proportion of women who have experienced ZeroPay payments is somewhat higher.

In the case of age, there are various distributions: 3 people in their teens (1%), 60 people in their 20s (25%), 69 people in their 30s (29%), 52 people in their 40s (22%), and 43 people in their 50s (18%) and 13 (5%) in their 60s. When comparing the ratio of ZeroPay experience and inexperienced people by age, it can be seen that the ratio of payment experiencers in their 20s and 40s is 32% and 27%, respectively, which is slightly higher than the ratio of inexperienced people at 23% and 20%. However, it can be seen that the ratio of inexperienced people is higher in other age groups. In general, younger people can expect to see many ZeroPay payments in their teens, 20s, and 30s. However, the actual statistics show that the younger people, excluding their twenties, the higher the ZeroPay usage rate.

The results show in Table 3 that more than 77% of citizens have never used ZeroPay, and more than 50% are unfamiliar with using it. Only 32% and 14% of the citizens answered that they needed the ZeroPay service and said it was useful. In other words, it can be said that most citizens are not very interested in using ZeroPay.

Despite the initial sluggishness, the SMG and local governments continued efforts to expand affiliate stores and applied various value-added services, such as payment of multiple vouchers and utility bills. SMG made efforts to make it clear to small business owners that the ZeroPay service aims to reduce costs for small business owners and create various benefits. Also, they have been providing legal and institutional support necessary for this.

With these efforts, in June 2020, the payment amount of ZeroPay, a mobile simple payment system to help small businesses, exceeded 500 billion won. (Figure 4) At the end of July, there were 569,000 ZeroPay merchants, up 75.6% from 324,000 at the end of last year. Of course, the increase after March 2020 tends to increase rapidly under the influence of COVID19, but it is increasing overall.

## Advantage vs. Disadvantage

The advantages of ZeroPay are the first, low merchant fees in Table 4. According to the information disclosed so far, the commission rate applies at 0% for annual sales of less than 800 million won, 0.3% for KRW 8~1.2 billion, and 0.5% for over KRW 1.2 billion. Therefore, a lower fee rate is applied than the existing primary payment methods, such as check cards and credit cards. As a result of the business agreement, the simple payment service provider does not receive payment fees for a small credit, and the bank has waived the transfer fee. Also, the low-cost structure is supported by the App-to-App payment method.

Second, a simple payment system based on the QR code is used. When the consumer or seller prints a QR code, the payment transfer from the consumer account to the seller's account. The company does not include VAN (Payment Agent) or credit card companies in the middle stages of existing credit card payments.

Third, it is a common platform. Rather than creating a separate payment app in the public sector, existing private banks and simple payment providers use their apps

**Table 2.** *Pre-questionnaires results*

| Questions | Positive | Negative |
|---|---|---|
| ZeroPay will settle in the market. | 20% | 80% |
| ZeroPay is convenient to use. | 30% | 70% |
| Used ZeroPay before. | 10% | 0% |
| The affiliated company is paying attention to ZeroPay. | 70% | 30% |
| The use of credit and debit cards will be reduced due to ZeroPay. | 10% | 90% |
| The QR method will be a new trend. | 60% | 40% |
| Affiliated stores welcome ZeroPay. | 20% | 80% |

**Table 3. Survey for citizens**

| Questions | Positive | Negative | No answer |
|---|---|---|---|
| Have you ever used ZeroPay to pay for products? | 23% | 77% | 0% |
| Are you familiar with the ZeroPay payment method? | 29% | 50% | 21% |
| Do you think we need a ZeroPay payment service? | 32% | 26% | 42% |
| Is ZeroPay useful to me? | 14% | 37% | 49% |

**Figure 4. "ZeroPay" cumulative payment trend**


**Table 4. ZeroPay merchant annual revenue**

| Merchant's Annual Sales Breakdown | Fee |
|---|---|
| 800 million KRW or less | 0% |
| 8-12 billion KRW | 0.3% |
| Over 1.2 billion KRW | 0.5% |

to provide payment services. The public sector takes a public-private approach to support infrastructure construction and revitalization.

Fourth, there is a ZeroPay QR payment in the NAVER app most often. NAVER creates a QR payment icon on the top of the NAVER app on the same day in line with the pilot ZeroPay business. Suppose the user press the QR payment icon, the camera scanner that can read the store QR code, and the user's QR code that the store owner can scan is generated. ZeroPay is a payment service made by SMG to reduce the burden of small business payment fees. When consumers recognize a QR code with a smartphone app, they transfer from the registered consumer account to the merchant account. In some cases, 40% of the tax deduction is applied to small business stores' money.

However, there are many controversies and disadvantages. First, it pointed out a lack of incentive systems to induce users to use ZeroPay in terms of convenience or benefits. Also, there is no reason to use it instead of cards because of the high credit card payment infrastructure and consumer preference. The credit card has almost the same status as cash as a means of payment. Accordingly, the greater the number of affiliates, the higher the absolute advantage in the network effect of increasing user benefits. Credit cards occupy a significant amount in the current payment and settlement market due to a mandatory payment system and income deduction system and provide a great marketing benefit to consumers. At present, 40% of income deductions and discounts on local facilities are offered as incentives for ZeroPay. Still, it is questionable whether it will be effective incentives than various marketing benefits in travel, performance, and dining out provided by card companies. Meanwhile, according to Article 19 (1) of the Current Credit Finance Business Act, merchants cannot recommend payment methods or earn points or benefits differently, making it more difficult for ZeroPay competitiveness.

Second, there is concern about sustainability. It estimates that the integrated platform for ZeroPay, which is being built around the Financial Services Agency, cost KRW 3.9 billion as an initial installation cost and KRW 3.5 billion every year after that. Also, there are costs incurred in the transaction process, and costs of securing and managing franchisees, which can be a different factor. Suppose there is no innovation in the payment service or the business's profit model in the situation where the government-set price cap promotes the business. In that case, there may be a problem such as public service damage or service failure in the future.

Third, there is a problem that the private sector is infringed, and inefficiency is caused by government-led project promotion. The Small and Medium Venture Business Department and SMG began recruiting merchants by accepting applications through the Internet from October 28 in 2018. In the past, VAN was responsible for recruiting and managing franchisees in establishing credit card infrastructure. Still, ZeroPay was in charge of the government and local governments to cut down on standard fees. In the pilot project centered on the Seoul area, small business owners can visit 25 ward office complaint offices, community centers, facility complexes, etc., or apply online via the SMG. There are limits to the central government's direct role and

local governments in the private sector, excessive funding, administrative waste, and the private sector's infringement. Various technologies such as short-range wireless communication (NFC), magnetic security transmission (MST), and QR code methods are being developed as simple payment technologies. QR code technology led by the government in each situation has advantages and disadvantages. It is possible to hinder technological innovation and competition rather than supporting it (Ki, 2018).

Fourth, ZeroPay is a bank transfer payment system between consumers and sellers, simplifying the account transfer process. The problem is that if the bank charges bank transfer fees to consumers, fewer consumers use ZeroPay. Another drawback of it is that the benefits to consumers are far less than the benefits to merchants. For ZeroPay to spread, consumers have to take out it instead of cards in their wallets. Credit cards offer customers various benefits, including points and discounts. Even if customers do not have a balance in the customer's account, customer credit will provide within limits, which is a benefit of credit cards that ZeroPay cannot keep up. Experts point out that for ZeroPay to be successful, higher profits must be paid to consumers. Simple payment platform operators and banks are already making many sacrifices in offering fee exemptions to merchants. The government is also burdened with VAT refunds and income deductions, and at the expense of considerable spending in the future merchant management process (Jung, 2018).

## ISSUES AND DISCUSSION

### Issues and Conflicts

The significant issues of "ZeroPay" are small businesses' participation, worse card companies' earnings, and reduced benefits for card users in Seoul.

ZeroPay provides insufficient incentives for existing credit and checks card customers. As a result of the reduction of payment fees for small businesses, ZeroPay has been the main background, so there is a limitation that existing card payment consumers cannot provide incentives to use it. Of course, as ZeroPay incentives are introduced at the government level or as the consumer benefits associated with it increase, the ZeroPay usage rate may gradually increase. Still, the cost-efficiency structure until that point is stable. It is questionable whether it can be fitted.

ZeroPay has problems with securing competitiveness. It has a structure similar to that of KakaoPay and NaverPay, which already have an absolute advantage in the simple payment market. KakaoPay offers more discounts than ZeroPay, and payment methods are also more accessible.

ZeroPay offers unfavorable infrastructure. Some argue that ZeroPay is a demonstration policy, and the weak performance in the first month of ZeroPay is supporting this. It also criticizes that the payment procedure is not so easy as it takes a long time and does not have the conveniences of converting existing card users. The government is also promoting business with the SMG, the Small Venture Business Department, and the Financial Services Commission connected with ZeroPay. Still, many companies are reluctant to do so.

Again, it is unclear whether the proposed ZeroPay plan can overcome the credit card market power and replace the payment method with a meaningful level. The superior status that credit card enjoys as a payment method is maintained because, above all, the benefits of using a credit card cannot be ignored from the consumer's point of view.

SMG promoted ZeroPay, a high-income deduction rate of 40% per year, paying back taxes at year-end settlement. It is higher than the credit card income deduction rate of 15% and the check card income deduction rate of 30%. However, many people say that check cards are easier to use than ZeroPay. Credit cards are not attractive incentives because they benefit from credit, installment, discounts, and points.

Using a credit card allows the customer to spend more than a month without additional costs. However, it also allows for flexible payment through installment or revolving services. There may even be interest-free installments at no additional charge. Credit card companies also provide users with other benefits, including various discounts and points, based on profits generated from fees, annual fees, various interests, and a wide range of affiliates. ZeroPay's most significant advantage is that it has no or deficient payment fees, which is advantageous from the merchant's point of view. It is not an incentive to use ZeroPay from the consumer's point of view.

SMG hopes to launch a new product with a credit card function at ZeroPay. However, unlike a simple payment service, sales credit is a financial service with obvious costs, so there is no fee and no annual fee. In the face of a deadlock in the credit card industry or a cut in fees, the rise of secure payments as a third-party alternative offers a new solution to the problems faced.

SMG's aspirations to take payment fees to zero seem to require a more cautious approach. Since VANs or PGs are excluded from the payment network, there are no fees associated with them, so that the cost can be significantly lower than that of the existing payment methods. However, even transactions using ZeroPay require a transfer. Someone must verify the integrity of the transaction and keep and manage transaction records. Still, the actual cost is nonzero. Therefore, some of the relevant finance companies, consumers, or governments, such as secure payment providers, banks, must bear the costs. At the public level, the costs are not passed on to merchants through voluntary agreements from participating companies, but social costs exist.

The government and private sector's disagreement over ZeroPay, which makes credit card fees for small businesses close to zero, was significant. The government is confident that consumers can increase their participation by increasing the benefits of income deductions at the end of the year when they make payments using ZeroPay. At the same time, private companies argue that the ZeroPay initiative itself is excessive government intervention.

Specific details such as the area of ZeroPay application, the level of commission rate by sales division, the services provided to customers, and the inclusion of credit provision functions are not established. Therefore, it is still too early to determine the impact of ZeroPay on the credit card business base. However, customers' service level will be a critical factor in determining the payment market's influence. The

successful spread of ZeroPay depends not on the preference of the merchant but the customer's use. Apart from the fee savings that merchants can earn, customers have a high incentive to choose payment methods with many services. Suppose the benefits offered by credit cards are higher than the benefits of using ZeroPay. In that case, customers are more likely to stick with them, unlike merchants and local governments.

Banks also have complaints about ZeroPay. Participation in ZeroPay is likely to reduce commission income, an essential item of banks' operating profit. On the contrary, if customers do not participate, they may be aware that customers have not made social contributions.

Excessive incentives, such as tax deductions to consumers to induce zero-payment, will reduce credit card usage. As a result, the decline in the credit card industry's profitability may reduce credit card companies' reduced benefits. It could reduce the number of card industry workers.

## Discussions

### *Efforts to Solve the Problems*

As mentioned earlier, it has started with a useful purpose, but efforts are being made to solve many issues. The biggest problem with ZeroPay is the conflict with the existing credit card companies. Existing card companies have raised objections about the cost of using cards or whether fair competition in the market with existing card companies is possible. SMG and local governments trying to overcome this problem have been attempting to overcome this by suggesting laws and regulatory benefits and various incentives for credit card companies.,

First of all, there is the problem of fee reform. As long as credit card companies are making profits, demands for merchant fee cuts will continue, and the government will continue to cut fees. However, due to the credit card industry's structural nature, which includes credit card companies and various third parties such as VANs and PGs, purchases using credit cards are incurred in installments and simple payments that process lump sum payments.

Therefore, it is inevitable that a certain level of merchant fees will be predetermined because the government does not assume the credit card companies' support to cope with the loss or compensate for the loss. It is hard to say that the cost reduction of merchant fees will eliminate the complaints. In the end, the reality is that we have to admit that there are obvious limitations in solving the merchant fee problem through policy measures or political pressure while maintaining the structure of the credit card industry.

Of course, it is possible to further reduce the merchant fee by reorganizing the credit card industry structure at the point of origin, thereby saving a significant portion of the cost. However, the resistance of the vested interests that will arise in this process also seems severe. For example, it is possible, at least technically, to have room for additional cuts in merchant fees by establishing a credit card payment system that excludes VANs or PGs. Some credit card companies are reducing the commissioning of bans, including purchases, minimizing van fees. However, attempts

to build a structure that excludes VANs and PGs, which are already forming industry and vested in the market, are expected to face stiff resistance. Indeed, the structure's reorganization to exclude VANs and PGs, which creates a certain employment level, would be an administrative burden.

Based on consumers' intrinsic benefits, it seems that it is not easy to secure a status as a payment method in which a simple payment method represented by ZeroPay can replace a credit card or at least compete equally. In particular, competition in the network industry, such as payment, should consider that it is challenging to maintain market share without securing a certain subscriber network level. Therefore, to establish ZeroPay as a standard payment method in the payment settlement market for small merchants, it is necessary to actively support policy until the valid user network reaches a certain level.

Indeed, credit cards' competitiveness is mainly attributable to policy measures introduced at the level of taxation, such as income deductions for credit card usage and credit card mandatory payment systems. Therefore, it is necessary to give asymmetrical benefits to small and simple payments for small and small-sized merchants newly introduced by reforming the policy support system. Through this, new payment methods can be formed at least a certain level of the user network. It can initially expect to lower the merchant commissions by increasing competition in the payment market.

For example, a radical change in the income deduction system is required. Already announced measures include a 40% income deduction for ZeroPay. However, as is well known, income deductions for payment methods apply only to the portion where the payment method usage exceeds 25% of income. It is also unclear that the tax-exempt taxpayers will enjoy more than a certain level of benefit from ZeroPay, with taxpayers reaching around 40% of their taxable value. The higher the income, the more reverse the deductible can be. It is necessary to attempt a full reorganization of the income deduction system granted to non-cash payment instruments.

One way is to eliminate the minimum amount of 25% of income from the ZeroPay of small merchants and to deduct a certain amount of tax on the entire amount used. Also, for households with low incomes that do not benefit from tax credits, the deduction can be considered a traditional market gift certificate. Suppose the tax deduction rate is appropriately adjusted. The upper limit applies to the amount of tax deduction or gift voucher payment. In that case, the system design will be possible without any additional burden on the finance because it does not differ significantly from the amount of tax assistance provided previously.

### *For the Success of ZeroPay Service*

For ZeroPay to succeed, here are some things to consider: First, various payment methods, such as direct debit payments with low payment costs, should be prepared to give consumers a competitive edge over credit cards. To become a payment method such as a credit card that enjoys a network effect based on previously secured affiliate stores, institutional support measures such as active personnel support and reduced income deductions for credit card consumption are required.

Second, there is a need for a significant change in consumer settlement habits and perceptions, mainly from credit settlement to direct debit. Some people argue that the credit function should be included in the ZeroPay because they use credit a lot. Still, there is a limit in lowering the credit settlement structure's commission rate because of the cost of managing the credit and the transaction cost compared to cash or direct debit. Because of this, sustainability may be even lower. Also, considering the possibility of overdue or overconsumption, it is necessary to induce debit or cash payments with lower social costs than credit cards. Therefore, there is a need to raise awareness of the necessity or advantage of direct debit, which may be an opportunity to grow ZeroPay.

Third, the government needs to stick to its role in laying the foundation for successful and efficient service through fair competition in the payment market. Given that the payment method's network effect is difficult to settle as a payment method without the government's decisive role, there is a part where the government's role is necessary. Developing an integrated platform requires coordinating participants' interests and actively preparing systems and supports acceptable.

The government needs to stick to its role in laying the foundation for successful innovative and efficient services through fair competition in the payment market. Deregulation is required to intensify competition in the payment market. In other words, measures need to ease non-banking electronic financial companies' requirements to enter the financial market.

For ZeroPay to succeed, it is necessary to create an environment where payments can be made more comfortable and more convenient than now through cooperation with payment terminals of affiliated stores, including collaboration through partnerships with existing payment providers that dominate the ecosystem. The ZeroPay service being promoted by the government and local governments now has limitations, so finding a way to create synergy through nuclear cooperation with the private sector is a prerequisite for ZeroPay to succeed.

ZeroPay will ease the burden of paying fees for small business owners and self-employed workers. Still, it should be able to achieve this purpose by inducing consumers to use it effectively. It is challenging to drive changes in payment habits offline. It must be supported by the innovation of operators' technologies and services and government support. Going forward, the government needs to put more effort into inspiring innovation and free competition between various financial institutions and simple payment providers.

## CONCLUSION AND FUTURE DIRECTIONS

This paper has presented a case study of citizen engagement of the Seoul Metropolitan Government with ZeroPay service. ZeroPay, launched by SMG, is meaningful because it is the first mobile payment service launched for small business owners. ZeroPay is a service implemented to improve the card fee problem for small businesses and help them manage and contribute to a positive economic cycle. However, for ZeroPay

to be active, consumer participation must be based. If the focus of the benefits is on small business owners and neglects the consumer benefits, it is a business that has already collapsed structurally.

It is essential to make sure consumers have real benefits compared to check cards or credit cards and improve the payment process so that consumers are willing to use ZeroPay. It is also essential to loosen the criteria so that income deductions can be realistically received. The store owner also needs to create an environment where they can participate autonomously without feeling the pressure of joining a ZeroPay merchant. The payment process must be improved so that time can be effectively used during busy times.

Due to Korean consumers' characteristics, the card payment ratio is high. In addition to the benefits to attract consumers, various services should be further increased. Also, the benefits of using ZeroPay are essential now. However, the project should be pursued in such a way as to narrow the gap by adjusting interests among economic actors surrounding the use of ZeroPay.

FinTech technologies such as ZeroPay will inevitably be further expanded along with technological developments. However, the decision to expand the structural and institutional foundations and ensure sufficient communication with the actors should be a prerequisite for introducing these technologies. Also, we believe that a system maintained by the one-sided sacrifice of credit card companies and banks or partial funding by government agencies, including SMG, is not sustainable. In Seoul, it is necessary to present a solution that can be profitable rather than unilaterally requiring banks or credit card companies to cut fees.

ZeroPay has a lot of controversy and problems that have begun recently. However, ZeroPay can indeed replace traditional physical currency, drive the development of FinTech technology, and provide financial benefits for both buyers and sellers. Suppose the environment for using ZeroPay is not growing. It will be challenging to reduce the economic burden and activation of the secure payment system. Beyond that, it will need more innovative support and the benefits now offered. In the long term, it is not necessary for companies participating in ZeroPay to take damages in the public interest, so consideration should be given to this. Also, the process that ZeroPay is showing is never efficient and needs to be improved.

Therefore, the government needs to improve legally to achieve the goal of a secure payment system. To ZeroPay appropriately use, it is time for the government's efforts to take on both the purpose of wealth allocation and market growth, unlike the existing policies. The most important thing for ZeroPay to succeed is the efforts and will of SMG.

Currently, ZeroPay is gradually increasing its users and affiliates due to the government's efforts. However, there is still a conflict between legal and institutional issues and collaboration between other FinTech companies and credit card companies. For ZeroPay to successfully settle in society in the future, additional efforts will be required as follows; First, Better Governance. Initially, the lack of interest and lack of stakeholders' participation was the biggest problem, but it is gradually improving

with the Seoul Metropolitan Government's continued efforts. However, for successful settlement, the government's continuous efforts and leadership of required, such as inducing active participation, motivating, and providing appropriate incentives from consumers, affiliates, platform companies, and financial institutions. Secondly, improved service delivery. By improving transparency, building citizen's voices, and offering structured engagement between providers and consumers of public services, social accountability mechanisms can ensure that needs and services match each other. Third, healthy competition. New FinTech players in the market are already a driving force for competitive change. One area where governments' impacts can be seen is through the authorization and bank licensing processes for new entities. Also, fair laws and policies should be presented to existing financial institutions, FinTech companies, and ZeroPay to ensure fair competition in the payment market. For example, regulators and policymakers have been assisting FinTech companies in obtaining banking licenses, supporting the rise of several so-called 'challenger' banks, many of which are mobile-only entities. Finally, the roles of SMG. Although the service is started for SMG, it should be faithful to the applicant's role, not the service's subject, to compete fairly with private companies' payment services in the market rather than the government's service.

There is no room for debate that ZeroPay is a service started based on a good policy. However, there were many problems and conflicts as the government took the lead in preparing and starting services based on government agencies' policies. Of course, there were many favorable views on success. There were also many opinions on why the government would make a difference in the existing financial market. One and a half years after it started, the Seoul Metropolitan government and government agencies' efforts are making ZeroPay gradually settle in the market. Contrary to initial concerns, it is gradually expanding its use in the market by encouraging citizens and small business owners to participate and collaborate with credit card companies, financial institutions, and online platform companies.

In the future, it thinks that the role of local government is more important than anything else, and it is necessary to play a role as a public leader so that a healthy fintech market is formed without disrupting the existing financial market.

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