LIVEEN

A BLOCKCHAIN BASED DATA PLATFORM THAT PROVIDES FAIR REWARDS FOR USERS' DATA

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VEEN FOUNDATION

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Abstract

With the advent of the Internet era, we have witnessed the flood of information. Amid the data that are expanded and reproduced recklessly, global IT platform conglomerates have emerged, which enhanced the information asymmetry. The major IT businesses accumulated the unprecedented wealth by monopolizing the valuable data that the users produced. Monopolization of data became high market entry barrier that would hinder late-movers from entering the market. On the other hand, as the subjects of data production expand to general service users, some have started producing distorted data. Such data are distributed in a flash through various paths, including, but not limited to Social media, crippling the reliability of information. In this whitepaper, we will explain LIVEEN[1], a big data platform with which to solve such information asymmetry and data distortion, and VEEN, coins used in this platform. LIVEEN is a blockchain-based data transaction platform that provides fair rewards for valuable data that we voluntarily produce. LIVEEN users offer their geolocational information at a specific period to the LIVEEN platform and upload various qualities and quantities of contents based on interest and receive VEEN coins as a reward. Data cumulated on LIVEEN are easily shared among LIVEEN users. LIVEEN data inference system helps convert various profit and non-profit services, such as donation, investment, advertisement, and e-transaction, to secondary copyrights. VEEN coins are rewards given to users by uploading data on the LIVEEN platform. Rewards are provided based on the quantity and quality of data, evaluated by co-LIVEENer, and VEEN coins issued by specific unit are distributed according to the data contribution by the user. VEEN coins can be used for various profit and non-profit services offered on the LIVEEN platform. That is, a VEEN coin ecosystem is created in which people who produce data issue and consume coins for donation, investment and cash transactions. As a saying goes, "you are data of you," our data are being produced at this very moment, and the subject of data production and beneficiary must be ourselves. With LIVEEN, we will establish a fair reward system for data, decentralize the secondary copyrights, guarantee trust and contribute to the realization of truly universal human values.

[1] An acronym for Live with Veen, meaning the platform of consumer life.

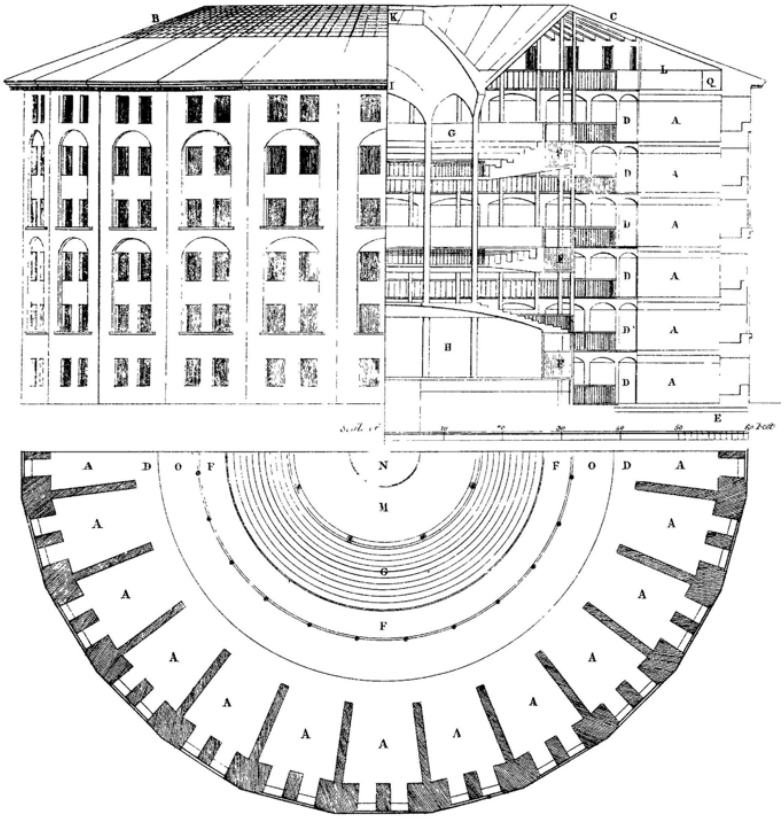

Figure 1 : Panopticon blueprint by Jeremy Bentham, 1791.

1 Introduction

Panopticon is an architectural system for prisons proposed by British philosopher of law Jeremy Bentham. The etymological origin of panopticon is a Greek word “pan,” which means “all” and a Greek word “opticon,” which means to see. It was first designed in 1791 to monitor prisoners.

This six-stories circular architecture breaks into two parts: prison cells placed in the outer rims, which can be monitored from the core, where the wardens reside. Wardens will be able to monitor cells from the watch tower, placed in the center of the building, whereas inmates will not be able to perceive whether they are being watched or not. Therefore, prisoners will be motivated to act as if they are being watched, regulating their own behavior.

The concept of Panopticon is to have an invisible overseer, who can virtually watch every cell, and the prisoners are constantly being watched. Modern social media are often referred as Panopticon as IT businesses and government has an ability to accumulate, process, and integrated into their private wealth, without any means to resist. Hence, we can say “Big Brother” from George Orwell’s 1984 is here, and now.

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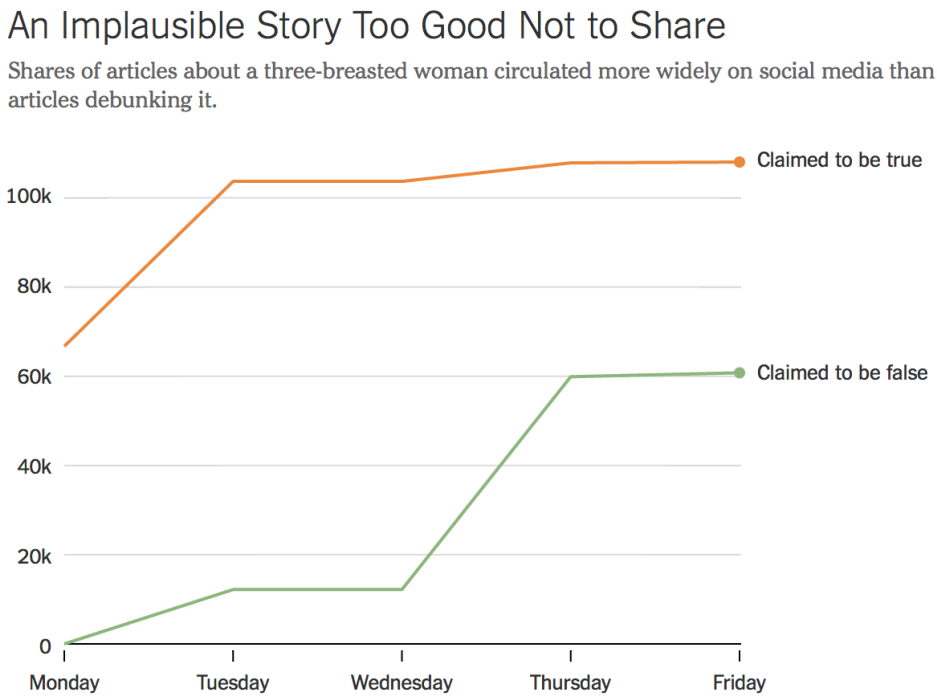

Figure 2 : social media distribution speed based on the truth/falseness of information

Monopoly and distortion of information must have been an inevitable direction in the development of the Internet. Naturally, various solutions have emerged to cope with it, among which the most effective method was blockchain, which was first proposed as a backend engine for bitcoin in 2009. Blockchain is a technology in which participants co-record and co-control a register on which transactions are recorded not on a central server by a specific institution, but distributed on a P2P network. In other words, data are not owned by a specific institution/business/individual, but co-shared by all those who participate in the network so as to acquire reliability. In this process, data are decentralized and at the same time, given credibility, and distorted information is naturally filtered out.

Then would there be any concern by users on data sharing? Mark Zuckerberg, the founder of Facebook, said "In 2004, when I got started in my dorm room at Harvard, the question a lot of people asked was, 'why would I want to put any information on the internet at all? Why would I want to have a website? ' Then in the last 5 or 6 years, blogging has taken off in a huge way, and just all these different services that have people sharing all this information. Privacy was no longer a social norm"(Johnson, 2010). Furthermore, the Millennium generation is less sensitive to data sharing than the previous generation.

Social media are used as a platform of communication among people as well as information sharing, the basic objectives of the Internet. Since after countless rise and fall of social media, as of 2018, Facebook, YouTube, and WhatsApp have the largest number of users (Statista, 2018). The companies behind these services generate profits by analyzing users' lifestyle, interest, individual information and offering advertisements to service users. Such a profit model has made these social media companies into global conglomerates. For example, ads sales of Facebook in 2016 was about 26.8 billion dollar, which is about 97.3% of the total sales of Facebook (Facebook, 2017). Facebook's business profits, led by ads sales, are also growing rapidly each year.

Such social media have generated profits by attracting users who produce contents by taking their time and effort, but no profits are returned to contents producers who have made the most contribution to the growth of the services. Furthermore, service users are often exposed to ads that they do not want

to see. Since the distribution of smartphones, the online ads market has soared each year, and in 2018, the total sales recorded about 2.75 trillion dollars worldwide (Ali Liaquat, 2018). However, most of these ads profits are monopolized by Facebook and Google and other ads agencies and are rarely given to users who are exposed to ads. Particularly, unnecessary ads such as native ads recently have increased users' negative approaches to such ads. Fig. 3 shows that excessive commercial ads are the biggest complaint of social media users (Korea Consumer Protection Board, 2016). Ads on the Internet space allow various Internet services to be used inexpensively. Therefore, considering the amounts of ads in social media, such negative recognition toward ads may work against the service ecosystem.

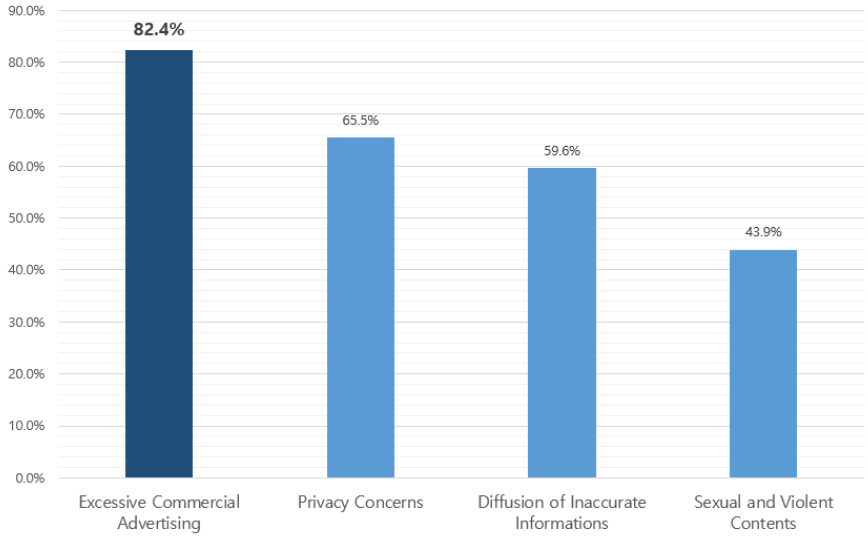

Figure 3 : Consumer complaints related to Korean social media services

As a trust-based network, blockchain is a technology that removes or reduces brokerage expenses charged by agencies. Bitcoin proved that a currency could be safely maintained without an agency that controls the currency, and Ethereum also proved that brokerage agency is not needed to conclude. And execute a transaction through smart-transaction. Such a blockchain technology has prepared the ground on which brokerage costs can be minimized or removed from ads and donation. For ads, if advertisers can select targets for ads for themselves and offer ads fees to viewers, they will be able to promote ads more effectively as there won't be brokerage fees charged by agencies. Also, for donations, the issue that donors cannot select benefactors directly can be solved so that the foundation operation costs can be minimized.

Donations are certainly one of the most beautiful activities human beings do. Many people donate moneys, and in fact, many others benefit from these donations. Generally, donors rarely meet benefactors directly so that many of them use donation agencies like Red Cross or UNICEF. But donation brokerage fees have become social issues. CNN reported that during the Haiti Earthquake in 2010, Red Cross collected over 500 million dollars for donations, but only six houses were built from them (Gander, 2015).

LIVEEN and VEEN aim to create a platform that solves the imbalance of donations due to the centralization of donations as well as the irrationality of the commercial transaction market on the Internet due to data monopolization. LIVEEN offers VEEN as fair rewards after receiving and evaluating contents from users. The VEEN produced here can be used as currencies in donation, investment, ads, and e-commerce transactions. Donors and advertisers can select benefactors and ads targets based on the contents produced at LIVEEN. And they can directly send donations and ads fees to benefactors and ads viewers through VEEN.

LIVEEN offers e-commerce transaction service through which to purchase donated goods and advertised goods using VEEN. Users can directly purchase goods with mined VEEN and VEEN acquired with the purchasing of goods can be used for ads. Donations can be used via the e-commerce transactions to purchase donated goods. Donated goods such as food, medical supplies or educational supplies can be purchased with VEEN acquired via donations, and these goods are planned to be supplied as non-profit goods as opposed to general goods.

Information is the most valuable resource in modern era, in which the general public acquire trust by opening up their personal information, which should be led to profits. The values of LIVEEN and VEEN are to have the considerable profits generated in the consumer ecosystem returned to the subjects of production and consumption, not to a handful number of the establishment. Multinational digital conglomerates have accumulated wealth by recklessly using users' privacy, but the compensation for such privacy was not returned to the users. Such centralization of information concentrated wealth to those who control information, but most participants have lost for a long time. However, blockchain is a technology that leads such centralization to decentralization. LIVEEN and VEEN offer fair rewards to those who produce information, practice the decentralization of information, and promote fairness in consumer ecosystem. Therefore, LIVEEN aims to realize decentralized data capitalism.

2 Current State of the Related Market

2.1 Ecology of data market

As shown in Fig. 4, LIVEEN platform establishes an ecosystem based on VEEN, a currency that connects the system organically. Fig. 4a shows the ecosystem flow of the current, data-based market. Data providers mean social media users. In LIVEEN, they also mean all people who produce data, such as benefactors, ads benefactors and consumers. Data consumers perform projects using the data in the ecosystem and include donors and advertisers. As shown in the Fig. 4a, in the existing ecosystem, the data platform and data consumers provide profits. Fig. 4b shows the data ecosystem changed by LIVEEN. The benefactors in the data market based on LIVEEN are data producers and consumers. LIVEEN aims to remove or minimize brokerage fees in the data market and returns the benefits from the market to the actual subjects who participate in the data market. This chapter observes the problems of the data market of donations, advertisements, and commerce transactions and explains how LIVEEN can play a role in such an ecosystem.

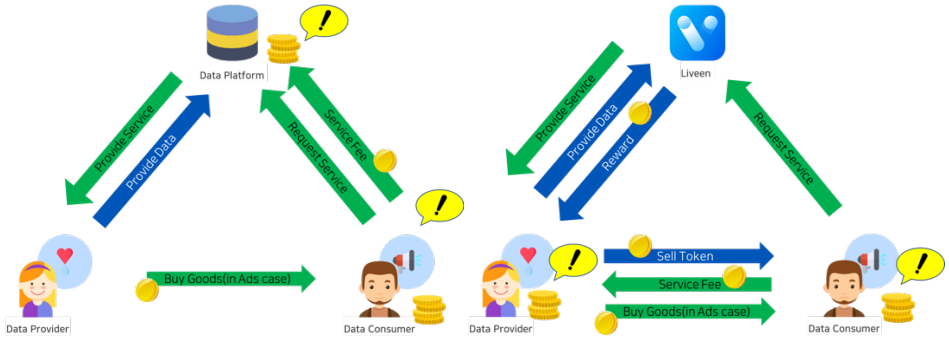

Figure 4a : The current data market ecosystem *Figure 4b : LIVEEN-based data market ecosystem*

Figure 4 : LIVEEN-led change of the data market ecosystem

2.2 Donation market

Developed countries make huge effort in establishing good donation policies. In South Korea, the trend of gradual growth of donations has slowed down since 2013. The decline was mainly due to the issues related to the transparency and trustworthiness of donation agencies (Jae-hwan Chung 2017). In most countries, donation agencies are registered as non-profit organizations to receive tax benefits. However, laws deciding the public benefit of donation agencies are not sufficient. In South Korea, the screening process only requires documents provided by the agency and the official website. It is because such a process lacks clear standards and requires much time and effort in screening. Distrust against donation agencies make donors hesitate donations and give them negative images toward donation, resulting in less donation.

Another problem is to do with the trust with regard to the targets for which donations are used. A forementioned Haiti case is problematic, yet there are even worse case scenarios when it comes to misusing donations. According to a news report in 2014, in South Korea, donations were used by an executive officer at a donation agency for entertainment costs (Saenal National Reporter, 2014). Developed countries like the U.S. also suffers similar problems. As such, transparency issues in terms of the use of donations become more severe in countries where donation agencies are not responsible to publicly open donation details.

While many countries have made various efforts in expanding the donation culture through tax benefits, there have been many problems due to limitations in the system. The most fundamental solution to solve these problems is to have donors give donations to benefactors directly. But considering the international donation environment, that is rarely possible due to the geographic distance. Furthermore, many benefactors have no way of receiving donations as many of them do not have a bank account, and thus, donations are often given as food or medicine, which result in yet another brokerage. Therefore, many countries in Africa offer peer-to-peer donation platforms. According a survey, direct donations are about 33% of the overall donations in the U.S. (Rich Dietz, 2015). Since such a method is only possible when donors and benefactors live relatively closely, and thus, it is not a fundamental solution.

LIVEEN donation platform based on blockchain offers a function to directly search benefactors by entering specific conditions from the data, such as proximity. Also, donations can be offered from a VEEN purse. This coin can be changed at a transaction exchange to a local currency or be used to purchase food, medicine, toys and other goods at a non-profit donation mall, operated by VEEN foundation. The VEEN operation foundation plans to run donation malls, and the operation costs can be acquired from profits generated from LIVEEN ads malls.

2.3 Advertising market

The mobile advertising market has consistently grown along with the distribution of mobile phones. Shown in Fig. 6 is the market size and prospect of the mobile advertising market (Statista, 2016). As shown in the figure, the mobile advertising market has exceeded 100 billion dollars and continues to grow. Mobile ads are generally exposed to unspecified users who use internet services. Companies offering such services are rapidly growing, based on profit from ads. However, such profits are monopolized by brokers with ads platforms and internet service providers(ISP). The same goes for

search service providers like Google or social media companies like Facebook and Instagram. Shown in Fig. 5 is a public advertisement in Singapore that explains that Facebook's "Like" does not offer data producers any benefits. It satirizes that despite the number of likes the producer received, producer will not benefit from the contents produced. In other words, service providers like Facebook acquire considerable amount of profits using the data produced by users while data producers who offered the data do not get any benefit. As a result, social media advertisement is considered negatively by users. But ads are essential part of economic activity that moves not only the Internet and mobile economy, but the market economy. As such, it is necessary to improve the capital flow in the advertising market so as to establish a fair advertisement ecosystem.

Figure 5 : Public advertisement in Singapore that Facebook's 'Like' does not offer any help

Current advertisement system is rather unreasonable for advertisers as they pay for advertisement whilst not knowing its effect. While they spend a fortune for ads, it is difficult for them to assess the impact of the ads such as the amount of increase in sales. As shown in Fig. 6, the size of the mobile ads market grows each year, but the increase rate is decreasing every year. One of the reasons can be found from a marketing report in the USA, according to which, the key issues that mobile ads need to resolve urgently are the transparency in terms of ads' contribution level, and the lack of the ads analysis tools (Esteve, 2017). Shown in Fig. 7 are the details that this report surveyed. It is assumed that the uncertainty in the measurement of ads' effect plays a hindering factor to the expansion of the advertising market. Therefore, while businesses with large capital may conduct proactive advertisement campaigns, small to medium size local companies, venture or start-up companies may feel reluctant to advertisement. Particularly, local companies do not have suitable advertisement tools. Internet or mobile advertisements have lots of users and make it difficult to select ads targets. Thus, local advertisements rely primarily on local newspapers, TV programs, or pamphlets. But such mass media advertisements can be expensive.

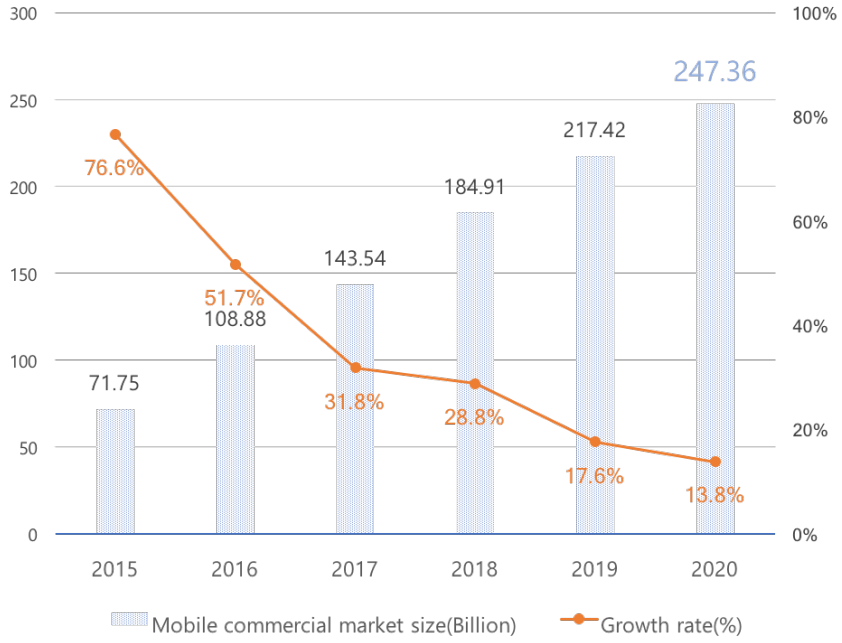

Figure 6 : Mobile advertising market size and prospect (Unit: 1 billion dollars)

The emergence of reward-based advertisement services2 aimed to improve such an ads capital flow. Cashslide in South Korea offers virtual cybermoney to users who watch ads on the locked screen of their mobile phone.3 This cybermoney can be exchanged for gift cards for coffee or food. The amount of rewarded money differs by the types of goods in this service. For ads installed on a mobile app, about 35% of the ads fees are returned to the viewers. Despite the low rewards level, this service has continuously attracted subscribers and has raised high profits (Yong-Sik Choi, 2016). But such a case is rare in the mobile advertising market, and the rewards level is not high enough to say that it has realized the peer-to-peer advertisement.

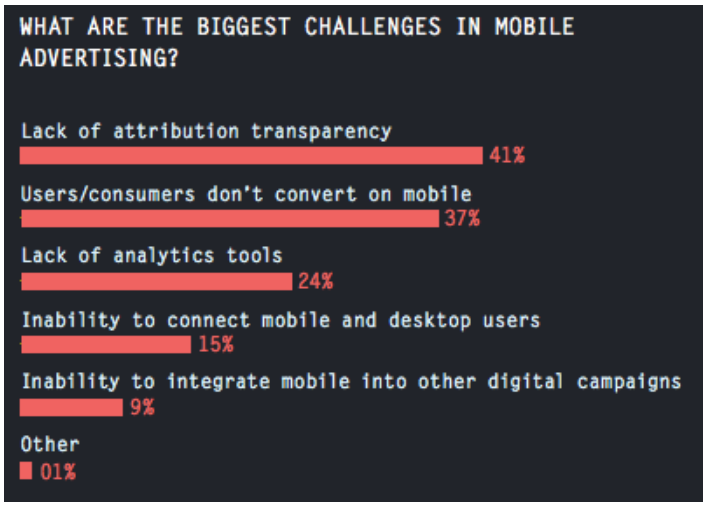

Figure 7 : Challenges in the mobile advertising market

The LIVEEN advertising platform offers about 90% of the ads fees to users. Based on the data, it can help advertisers customize target audiences and determine ads fees. With such a method, LIVEEN

[2] A service that rewards viewers of advertisements with a certain amount of ads fees.
[3] http://site.cashslide.co.kr/

allows a reward-based advertisement without brokerage. Not only can they customize ads according to their budget and target audiences, the stress that ads viewers have to suffer by watching unwanted ads can be reduced. The data from LIVEEN users can accurately determine the users' interest, which are used as the core data for customized advertisements. Reward-based customized ads are expected to make a huge contribution in improving the image of ads. Furthermore, the LIVEEN advertising platform can offer additional benefit of a method for analyzing the effectiveness of ads to advertisers. Through the ads mall service, LIVEEN allows viewers to purchase goods from the advertisements directly with VEEN. This grants advertisers ability to check multiple ads related datas including how frequently the viewers make purchase and the time it takes viewers to decide on the purchase. The LIVEEN platform plans to research plans for analyzing the effectiveness of advertisements and offer them to advertisers as marketing tools.

2.4 Personal data transaction market

Many global companies consider data the resource that will build wealth in future. The recent advancement in artificial intelligence (AI) accelerates this view, for data become the source for AI's induction. As such, many various types of data markets are emerging where such data are sold and bought (Joon Heo, 2016). Particularly, personal data transactions sometimes become social issues. Recently, BBC announced that personal data of 2.7 million British citizens from UBER have been leaked (Lee, 2017). And UBER retrieved the data by purchasing them for $100, 000 to prevent the damage from personal data transactions on illegal markets. It is expected that such illegal data transaction markets would reach about 150 million dollars by 2020 (Experian, 2017). Legal data transactions also can become social issues. Some argue that the use of personal data and transactions by Google and Facebook would cause legal issues, and just that users agreed to offer their data to a third party, their data are often sold by data brokers (Yong-Chan Chung, 2015). Homeplus, one of the largest grocery store in South Korea, have earned about 9 million dollars by selling personal data acquired through giveaway lots to an insurance company for 4 dollars per person (Min-ho, 2014). Global company Apple earned 73 million dollars by selling personal data of Chinese customers. Such data transactions are frequent globally.

Incidents of personal data leaking often occur when a third-party broker aims to acquire profits wrongfully. In other words, they originate from the system where the third-party brokers sell collected personal data to companies or institutions in need of such data for the sales of goods or services, without sharing its profit with individuals. To tackle such a problem, some have attempted to exclude brokers and try direct transactions of one's own data. SINTEFF research institute in Europe reported a study called Dipseity where personal data are offered as a currency (Roman, 2017). The study proposed a direct data transaction market where data produced by individuals are offered to those who need them and receive rewards. Therefore, LIVEEN aims to establish a fair data transaction ecosystem by offering a platform through which they can sell and purchase data they themselves designated.

2.5 E-commerce market

The online e-commerce market has grown every year to reach up to about 3 trillion dollars by 2017 (Statista, 2016). In this market, generally, e-commerce brokers connect sellers to buyers and request fees. Amazon request from 15% up to 45% of the sales as a fee, and Ebay takes about 10% of the sales. Not only these two companies but many other e-commerce platforms take fees from sales, which are

considerable considering the sales. This brokerage fees are even more serious on offline markets. A report mentioned that department stores in South Korea would take about 40% of the sales as fees. Excessive brokerage fees result in the rise of the product price, which would solely be taken up by consumers.

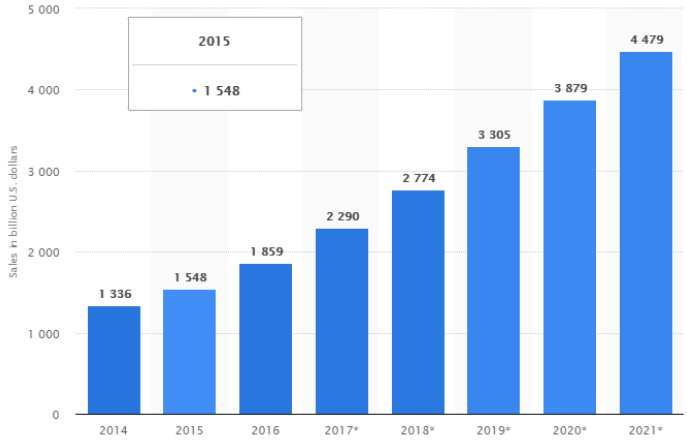

Figure 8 : E-commerce market size (estimated) (Unit: 1 billion dollars)

Furthermore, retailers targeting small regions cannot use e-commerce sites like Amazon or Ebay, for they cannot offer a list of goods that are usually based on a specific region, and it is difficult for them to have their goods known to customers on the main page of these major portal sites. Therefore, the existing e-commerce markets cannot be easily implemented to small-size production market such as 3-D printers or local service markets such as hair salons.

LIVEEN operates its own e-commerce services, using VEEN as its currency: the donation mall; and ads mall. Donation mall can be used by the benefactors, where they can exchange VEEN for daily necessitates, medical supplies and educational goods. It is directly managed by the VEEN Foundation and no sales fees are collected. In the ads mall, advertisers or sellers will be connected as to buyers or consumers. From the consumers' viewpoint, the minimized brokerage fees (ads fees) means more competitive price for purchasing, and as for the producers' viewpoint, the data of LIVEEN users can be used for effective marketing. As geolocational data are used to set potential buyers and corresponding ads are linked to them, it allows effective marketing of goods that are specific to local areas and consumers can be offered goods or services at a more inexpensive price as producers are paying less for ads.

3 LIVEEN Architecture

In this chapter, the overall architecture of the LIVEEN platform for improving the data transactions and donation ecosystem is proposed and explained. Shown in Fig. 9 is the general overview of the LIVEEN architecture. VEEN is realized as a token in the smart contract platform of a private Ethereum network.4 Therefore, VEEN coin and VEEN wallet are realized via smart contracts, and LIVEEN social network service or LIVEEN platform receives data from these services to process VEEN transactions. Also shown in the figure is LIVEEN private blockchain for the contents data management of LIVEEN services. This is a high-performance blockchain that can process big data and is used mainly to safely store contents created by users through LIVEEN social media or to calculate the value of data produced by users. This blockchain uses a method that proves the value of data produced by users by evaluating them and distribute VEEN accordingly. This method will be explained in the following chapter. LIVEEN query is offered as a smart contract of LIVEEN private blockchain, which analyzes and determines the user data to extract user information that the platform needs and other statistical processing and machine learning purposes. Finally, the LIVEEN platform consists of LIVEEN common platform, LIVEEN charity platform, LIVEEN advertising platform, and LIVEEN commerce platform. The smart contract platform like ETHEREUM causes continuous operational costs, and therefore, it will be replaced by the VEEN operational foundation's own open blockchain platform.

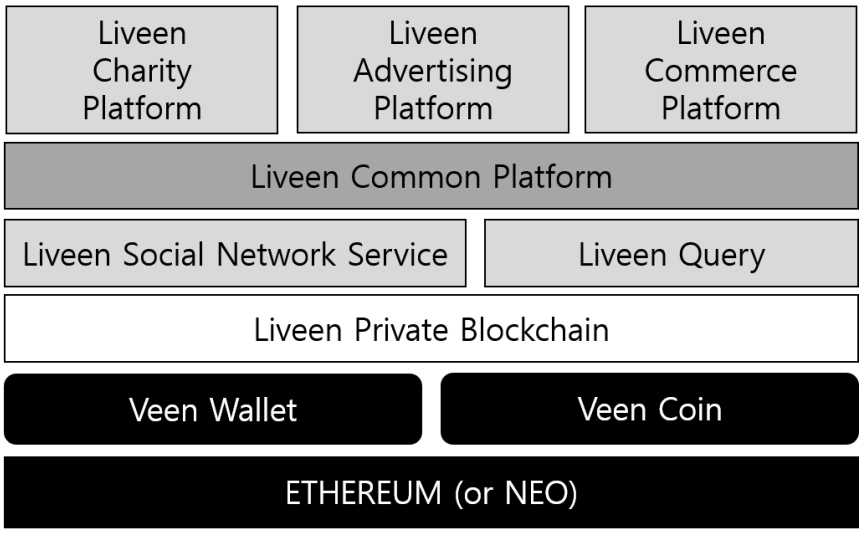

Figure 9 : Architecture of LIVEEN Services

4 Blockchain network hard-forked from ETHEREUM

4 VEEN Coin and Consensus of Value (CoV)

VEEN is a coin issued by LIVEEN and can be used in donation, advertisement and commerce activities. 1/1,000,000 VEEN is called a Fino, that is, 1,000,000 Fino is 1 VEEN.

1 Veen = 1, 000,000 Fino

VEEN is issued by the value of the data produced by LIVEEN. This requires a mining method different from the proof of work or the proof of stake, which are proposed by Bitcoin or ETHEREUM and use electricity. Electricity-based mining methods like the proof of work have caused environmental issues as they use considerable amount of power, which was the reason why the Chinese government banned the electricity-based mining in China. Such an issue is a side effect caused by the fact that in order for distributed ledger to record the coin transactions and to acquire the trust of the transactions, one would need to receive a competitive mining incentive, which is operated by the rule of a game (Mougayar, 2016). This has been pointed out as a shortcoming of the crypto-currency especially by those who are pessimistic about crypto-currencies. Thus, scholars of blockchain make considerable effort in resolving this issue. As part of such effort, LIVEEN and VEEN offer a distribution method not based on the competition rule, but a distribution rule. Provided that the data storage and the blockchain is trustworthy, this method measures the value based on the quality and quantity of the data stored in blockchain and through this value, it distributes rewards. This is possible because the ledger stores not the transaction records, but the contents produced by users. We propose the Consensus of Value (CoV) as a method to determine and discuss the value of transactions. LIVEEN offers the consensus model of the proof of value, which can be transformed and utilized in various types of blockchain that measure values based on the quality and quantity of data recorded on the ledger. In this chapter, a rule based on which to measure the data value in LIVEEN will be explained.

With the smart contract offered by ETHEREUM, the total amount of VEEN is issued and distributed based on a specific rule. Certain amount of time is expected for LIVEEN, from its launch, to gather sufficient number of users. Also, until the total number of the issued coins, 15 billion VEEN coins, are mined, the amount of the issue will gradually be reduced to prevent a sudden drop in service users. Toward this end, we have selected a token issuance model that follows the normal distribution curve. The total amount of VEEN coins is 15 billion, and the amount of VEEN issued differs each year. Furthermore, for the continuous supply of VEEN, the foundation can maintain the VEEN price by buying back certain amount of VEEN each month distributed in the market. The scope of the buyback percentage is determined monthly by the board committee. Shown in Fig. 10 is the daily amount of issued VEEN issued at each year. The amount of VEEN can be changed by the decision from the VEEN operation foundation depending on the operation circumstances of the LIVEEN service. In the figure, D is the official launch date of the service, and D+1 year is the one year after the launching.

- Open - 1 year: 1,180,000 Veen
- 1 year - 2 year: 1,420,000 Veen
- 2 year - 3 year: 1,770,000 Veen
- 3 year - 4 year: 2,360,000 Veen
- 4 year - 5 year: 3,540,000 Veen
- 5 year - 6 year: 3,540,000 Veen
- 6 year - 7 year: 2,360,000 Veen

- 7 year - 8 year: 1,770,000 Veen
- 8 year - 9 year: 1,420,000 Veen
- 9 year - 10 year: 1,180,000 Veen

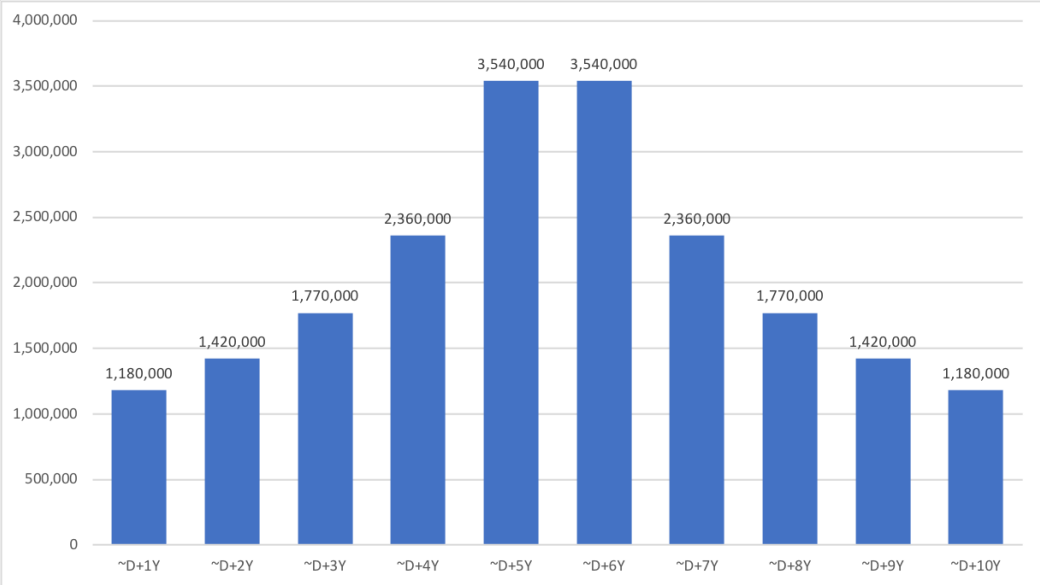

Figure 5 : Daily amount of VEEN issued by year (unit: Veen)

Figure 16 shows the amount of the total VEEN issued by year after the distribution of the LIVEEN social network service. It takes 10 years for VEEN to be completely issued. After 10 years, VEEN coins are used in donations, investments, advertisements and e-commerce activities, and users produce personal data for effective donations and investments, etc., which will naturally establish a data market ecosystem.

As Aforementioned, users of the LIVEEN social network service distribute coins issued by hour by combining the data produced by each hour and the reputation. In other words, all data produced at a specific period of time are scored by user, and the amount of issuance per hour is reflected onto the scoring ratio. And the 1 to 10% of the mined VEEN coins are allotted to the LIVEEN operation costs. Shown in Table 1 are the types of user data, the ratio of the data scoring, and the maximum limitations, all of which are subject to change after the testing. The maximum limitations are the amount of data a user can produce per hour, the unit hour, in order to prevent reckless data production. For recommendations, two “like”s and “dislike”s are offered in order to prevent users from selecting multiple “dislike”s hoping to raise their own reputation. The data must be set public to participate in data scoring.

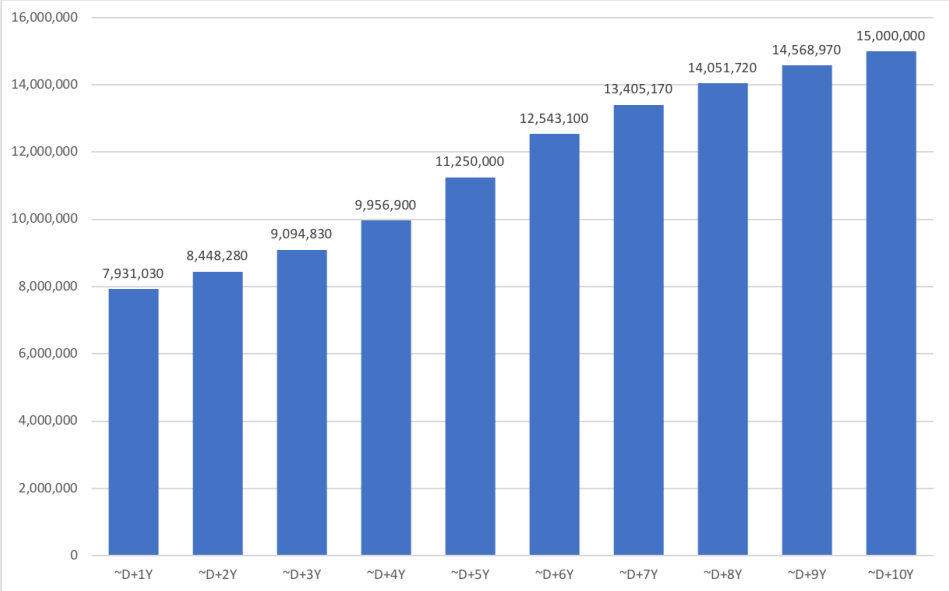

Figure 16 : The amount of accumulated VEEN by year after the launch (Unit: 1,000Veen)

Table 1 : Mining ratio by data and hourly limitations

Category	Code	Data scoring ratio	Limitations
Location	LD	30%	6
Check-in	CKI	10%	2
Behavior	AD	20%	6
Picture	PIC	10%	2
Text	TL	10%	100 characters
Hashtag	TAG	10%	10
Recommendation LD	LIK	10%	4(2 likes, 2 dislikes)

Furthermore, to prevent the production of meaningless data, the reputation of users who produced the data is used when evaluating. The reputation (REP) has a total score of 10 and is determined by the amount of recommendations (likes and dislikes) by other users on the produced data. Thus, DataScore is determined as follows:

$$Data\ Score = 1000 \times (\frac{LD}{6}0.3 + \frac{CKI}{2}0.1 + \frac{AD}{6}0.2 + \frac{PIC}{2}0.1 + \frac{TL}{100}0.1 + \frac{TAG}{10}0.1 + \frac{LIK}{4}0.1) \times \frac{REP^2}{10}$$

For example, if REP of the user who produced 6 location records, 1 check-in, 3 behavioral records, 1 picture, 50 characters of text, 10 hashtags and 2 recommendations, is 8, the user receives a score of 448. According to the DataScore of all users determined as such, and according to the ratio, mined VEEN is distributed. The next is the equation based on which reward VEEN for specific users is determined based on the amount of mining per unit hour (QoM). In this case, the operation costs are assumed to be 10%. The VEEN left after the operational costs will be deleted by the foundation. The equation for DataScore and rewards can be changed based on the operational situations of the LIVEEN service by the decisions of the VEEN operation foundation.

$$Reward = \frac{Data\ Score}{\sum Data\ Score\ of\ Whole\ User} \times (QoM - \frac{QoM}{10})$$

Rewards are calculated as follows. For example, if a total of five users acquired DataScore of 1000, 600, 500, 500, and 400, respectively, the one with 1000 acquires 0.33 of the relative score, Thus, if the amount of VEEN mined by the unit hour is 10,000, 1,000 is deducted from it as the service operational costs, and he or she takes 2.970 VEEN out of 9,000 VEEN. The VEEN acquired by the users is distributed to contents providers by specific cycle based on the policy of the VEEN operation foundation.

5 VEEN Coin and Consensus of Value (CoV)

LIVEEN consists of social media and platforms for charity, advertising and e-commerce, and this service allows for rewarding VEEN based on the amount of data and users' reputation through the social media system which is reward-based personal life record. The contents data produced by users can be searched by themselves and other users, and they can also recommend contents with likes and dislikes if the records are not their own. Such recommendations by others are reflected to the reputation of the data producers. Also, contents uploaders who received bad reputations will receive a penalty through fines so that the company's social responsibility has been systematized. Furthermore, this service includes VEEN wallet through which one can send VEEN to or receive it from others. Finally, users can receive donations or watch ads with this service. Advertisements are shown in the order of the highest ads fee, and if the user watches one advertisement, the registered ads fee is paid into the user's wallet. Once watching the advertisement ends, the advertisement with the next highest fee is selected.

LIVEEN users can search the data recorded at specific locations. Users can evaluate specific contents by likes and dislikes, and the number of evaluations is limited to two per hour. And one content can be recommended by only one user. Recommendation is anonymous, and users cannot watch contents set to private. Users can search contents that they recorded on their main screen. Also, the evaluation has the "inappropriate" item, which is to delete advertisements and indecent social materials. As with the expanding power of the Internet platform, many point out the importance of the business's social responsibility. Besides the USA, Germany, UK, and France plan to regulate social media and portal services. Particularly, Germany has enacted a law to impose up to 50 million euros as a fine to media social businesses who neglect to delete 'clearly criminal' contents. But LIVEEN systemized the business's social responsibility, not through the lawand forced monitoring system, but through the 'inappropriate' tag. Users can mark up to one item 'inappropriate' per hour. Once having received a specific number of 'inappropriate' items, the user who uploaded the concerned social data will be fined. The standards and the amount of the fine shall be announced when the service launches.

As mentioned in the previous chapter, the production data allows for the user to acquire VEEN, at which, the reputation is being involved. Reputation is evaluated and calculated by likes and dislikes of the data they produced and acquired from a number of other users. The user first starts with the score of 5, and the more the likes, the higher the score will become; the more the dislikes, the lower the score will become. Reputation is calculated relatively. From the number of likes that a user has received with all contents produced, the number of dislikes is deducted, and the result is called "Like Score". The Like Score is listed in the order of the highest score, the reputation score is distributed based on the normal distribution with the average 5 and the standard deviation 2. Reputation score is a total of 10 and uses a relative evaluation so that users can position their race in the system. The total users are the parent populations, and the average reputation is 5, and the standard deviation is 2. Shown below is an equation for normal distribution where y is reputation score and x is the ranking of Like Score. While the first decimal point is included in the reputation score, the second place and more are

disregarded. Shown in Fig. 12 is the frequency distribution graph of the reputation, and Table 2 shows it as a table. For example, if the score is upper 1.7%, the score is 9.0; if it is upper 15.2%, the score is 8.0. The first decimal point is considered for the reputation score and this number will be turned into percentages. Such a reputation calculation equation can be changed based on the test run of LIVEEN service or the operation condition.

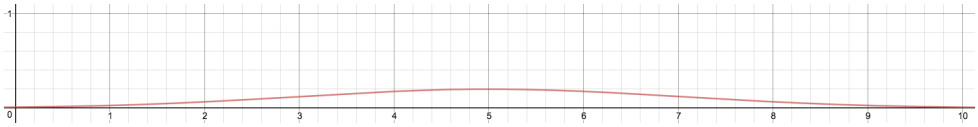

Figure 7 : Relative frequency distribution graph of reputation

Table 2 : Relative frequency distribution of reputation

P (X: Reputation)	Value	Frequency Distribution	Cumulative
9 < X ≤ 10	0.017	1.7%	1.7%
8 < X ≤ 9	0.044	4.4%	6.1%
7 < X ≤ 8	0.092	9.2%	15.2%
6 < X ≤ 7	0.161	16.1%	31.4%
5 < X ≤ 6	0.192	19.2%	50.5%
4 < X ≤ 5	0.192	19.2%	69.7%
3 < X ≤ 4	0.161	16.1%	85.8%
2 < X ≤ 3	0.092	9.2%	94.9%
1 < X ≤ 2	0.044	4.4%	99.4%
0 < X ≤ 1	0.017	1.7%	100%

$$Like\ Score = Number\ of\ Likes - Number\ of\ Hates$$

$$Reputation\ Distribution = N(5, 2^2)$$

$$y = \frac{e^{\frac{-(x-5)^2}{8}}}{\sqrt{8\pi}}$$

6 LIVEEN Advertising/Data Transaction/Donation and Goods Transaction Platform

The LIVEEN platform is one in which donations, advertisements, and e-commerce activities can be performed based on the data accumulated via LIVEEN social media services. This chapter discusses the platform.

6.1 LVQ: LIVEEN Query Words

The LIVEEN platform select target users through data-based queries. In other words, the target users can be extracted by the location data, social data, and personal history data that users registered. The extraction can be done with various conditional texts. Shown in Table 3 is an overview of LIVEEN query words. This query will be further refined by marketing specialists and include simple queries to AI-based decision making. Once LIVEEN query words are activated, many AI developers will make decision-making logics using LIVEEN data. The development of an ecosystem platform where the data can be sold will be the research task of the LIVEEN project.

Table 3 : Sample query in the LIVEEN platform

Category	**Explanation**	**Category**	**Example**	**Explanation**
Selection text	Sex	WHO	WHO IS <Woman>	Woman
	Characteristics	HAS	HAS CHILD	A person who has children
	Education	EDUCATED IN	EDUCATED IN <Seoul>	Educated in Seoul
	Location	LOCATED IN	LOCATED IN (<Seoul>)	Located in Seoul, Busan
	Interest	INTERESTEED IN	INTERESTED IN <one-piece>	Someone interested in one-piece
	Language	LANGUAGE IN	LANGUAGES IS <Korea>	A person whose mother tongue is Korean
	Mobile phone	PHONE IS	PHONE IS <IPHONE 6S>	A person who uses iPhone 6S
	Age	AGE BETWEEN	AGE BETWEEN 18, 26	Between 18 and 26 years old

6.2 Donation, advertisement, data transaction

As mentioned before, users can donate or receive donations through the LIVEEN platform. The donor can select specific benefactors through LIVEEN query words. For example, the following query can be possible: “Please search 100 people who live in Sierra Leone, are born between 2010 and 2015, and who stay the longest hours at school.” The donor can directly check the data of the user’s data extracted from the query and donate VEEN through a simple query. Donation is made via the payment through the LIVEEN purse, and if needed, benefactors can go public with the identity of the donor or not. Through the direct donation, LIVEEN will be able to remove or reduce the costs required by charity brokerage so as to contribute to the active donation culture.

The LIVEEN advertisement platform allows for advertisers to show advertisements to target users through LIVEEN query words. Here, the advertisers can directly calculate the number of target users and ads fees. For example, the following advertisement can be possible: “Place an ad at 1 VEEN to 100 people who live in Seoul, South Korea, who are between 20 and 30 years old and who have placed the ‘Pizza’ hashtag most. Here, the advertisers would need at least 110 VEEN because 10% of the total ads

fee will be assigned for donation and advertisement platform maintenance fees. If the target users do not watch the ads, the unused ads fees are returned to the advertiser. Direct advertisement is not only effective for the advertiser, but also offers a positive image to the ads for the viewers of the ads as they receive fees. While the existing ads platforms distribute most of the profits to the advertisement brokers, LIVEEN aims to return 90% of the advertisements fees to viewers so as to minimize the brokerage fees, and at the same time, to realize the peer-to-peer advertisement where advertisers and viewers are directly connected to each other.

The LIVEEN advertisement platform plans to offer various data to advertisers so as to analyse the effectiveness of the ads. LIVEEN advertisements are linked to the purchase records at the advertisement mall to provide goods and advertisement analysis service. This will be solution to the biggest issue in the current mobile adverting market, the lack of the analysis on the effectiveness of advertisements. Also, it is possible to analyse which target users, for example, the effectiveness of the users in the 20s and those in the 30s can be compared so that the results can be used as reference data for the future marketing target selection. Through continuous research, LIVEEN will offer more effective advertising results to advertisers.

In the future, LIVEEN will be developed into a data transaction agency platform. Personal information set by LIVEEN users or data produced from social services can be directly traded at a suitable fee for those who need them. Users of the LIVEEN social services can register designated items (i.e., address, mailing address, etc.) and set values to the registered personal information. Such a function can cause a problem of personal information protection, and therefore, in this Whitepaper, it is considered for its potential. But if the issue of personal information transactions by legal or illegal third-parties continues to be a problem, and if the data transactions produced by an individual are activated, the personal data transaction service will be launched after the discussion between the foundation and the operation institution.

6.3 E-commerce transactions (the donation mall, the advertisement mall)

LIVEEN offers an e-commerce shopping mall where VEEN is used to purchase goods or services. This mall is divided into the donation mall and the advertisement mall. The former allows users to purchase goods through donations while the latter the advertised goods at a cheap price. At the donation mall, the benefactors can purchase goods up to the amount of the donation, and here the goods are limited to those suitable for aids, such as food, medical supplies, medicine, and educational goods. The donation mall is non-profit, and operated at a low price, and minimizes the brokerage fees for donations. The advertisement mall is an e-commerce transaction platform where advertisers can freely register advertised goods, which can be purchased by users right after the concerned advertisement. Sellers of the goods can link the ads fee that they spent immediately to sales, through which they can measure the effectiveness of the ads.

The e-commerce transaction platform at LIVEEN aims to decentralize e-commerce transactions of the personal production market, represented by 3D printers and retailer services. In other words, goods produced by individuals are registered directly to the LIVEEN service, and once consumers pay the fees, they can be shipped or serviced directly. The existing commerce platforms makes it difficult for local retailers to sell goods and services directly to various customers. But at LIVEEN, target customers

can be selected through the LIVEEN query words and connected to advertisements so as to promote effective advertising and sales.

7 Conclusion

LIVEEN and VEEN aim to establish an ecosystem in which brokerage fees are minimized and profits are retuned to participants through the decentralization of certification-related data technologies, which are required for donations, advertisements, e-commerce activities as well as the identification of the user based on user contents. Therefore, they create the consensus of value of the contents of users collected by the LIVEEN platform based on the amount of data and the reputation of the data providers, and the agreed VEEN coins are offered to users as a reward for providing data. Here the produced data are used to benefactors of the donations, advertisement target users, and sales target users via LIVEEN query words. Furthermore, donors, advertisers, and sellers perform direct donations, direct advertisements and direct sales. Social service users watch advertisements and acquire ads fee according to the ads allotted to them. These ads are naturally linked to e-commerce transactions, and users who watched the ads can purchase the concerned goods or services. In this way, LIVEEN and VEEN create an ecosystem where producers and purchasers are co-linked, and users can conduct effective donations, effective advertisements and sales, as well as watch tailored advertisements and purchase goods without charity operation costs, advertisement brokerage fees, and commerce brokerage fees.

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