An Empirical Study on the Factors Affecting the Intention to Use M2E Services

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A B S T R A C T

Recently, Web 3.0 services such as virtual currency, block chain, and NFT are attracting public attention. Users who depended on platforms are moving away from being dependent on service providers and moving to Web 3.0 services. Representative services of Web 3.0 include P2E (Play to Earn) and M2E (Move to Earn). In the case of P2E, various studies have been conducted as it is widely covered in the press and media, but research on M2E is relatively lacking. This study attempts to identify the intention to use M2E by using the expanded technology acceptance model. External factors were selected based on M2E's own characteristics and personal characteristics, a research model was designed, and the proposed hypotheses were verified through factor analysis and goodness of model fit. As a result of the study, it was confirmed that profitability, innovativeness, and self-expression had a positive effect on perceived characteristics, and that perceived usefulness, perceived enjoyment, and social influence had a positive effect on intention to use. Through the research results, practical implications for efficient service operation that meets the needs of users are presented to M2E platform providers.

Keywords: Web 3.0, M2E (Move to Earn), Intention to Use, Extended Technology Acceptance Model, Structural Relationship

Ⅰ. Introduction

We are facing a new type of web ecosystem called Web 3.0 beyond Web 1.0 and 2.0. Web 3.0 utilizes semantic technology to provide personalized information, and through the blockchain system, it is possible to experience the free web by escaping from the platform dependency of IT companies. The era of the web began in the early 1990s, and Web 1.0 was at the level of users simply reading the content provided. Since then, with the advent of Web 2.0, people have begun to actively utilize online platforms. Through multiple platforms, people upload their own content or data, communicate with other users, and

exchange information. The biggest difference between Web 2.0 and Web 3.0 is the central entity in the profit structure. Web 2.0 has a company-centered profit structure, while Web 3.0 has an individual-centered profit structure. In Web 3.0, people interact with each other based on content, and as individuals can own data and digital assets, an individual-centered profit structure has been formed (Guan et al., 2022).

According to the '2022 MZ Generation Investment Recognition Report' conducted by Hanwha Investment & Securities, investment technology accounted for 58% of the self-development activities of the MZ generation. The representative App technologies they use are Nudge Healthcare's Cashwalk or Toss's Pedometer. Before M2E service appeared, various P2E (Play to Earn) games received a lot of attention from people all over the world. Due to the interest of the press and media, many studies on P2E have been performed, but studies on M2E are still lacking.

Therefore, this study aims to confirm what factors affect users' service use when using M2E. For the purpose of the study, the factors that are expected to have a positive effect on M2E service acceptance are selected, and a research model is established based on these factors. Then, an empirical analysis was conducted to verify the research model. We collect user response data, establish a structural equation model through IBM SPSS and AMOS, and confirm the factors that affect the intention to use M2E services based on the results.

Ⅱ. Theoretical Background

2.1. M2E (Move to Earn)

M2E, which stands for Move to Earn, is receiving a lot of attention along with P2E games, especially among young people. It means that you can get some kind of reward while exercising. M2E is a type of X2E (X to Earn) service, and X in X2E refers to a service that generates revenue through the act of X. The existing form of M2E consists of mobile healthcare, and representative examples include Cashwalk and Toss Pedometer. These are reward-type application services, and rewards are paid accordingly when a certain amount is moved. However, these apps have a limit on the rewards provided per day and require a cumbersome process to receive the rewards achieved. These procedures have inherent problems that can cause people to feel tired and reduce participation.

To improve these problems, NFT (Non-Fungible Token) based M2E service was appeared. M2E is a service that allows a user to receive a corresponding reward according to the distance and speed travelled after purchasing a specific shoe NFT. Currently, the Korea Game Rating and Administration Committee has concluded that P2E games are regulated domestically because of speculative concerns, but M2E services are recognized as a kind of healthcare and are not games. Accordingly, it is expected that blockchain-based compensation service will be expanded in Korea, centering on non-game services. Com2uS, a domestic game service company, is gaining media attention by showing interest in related markets, such as trying to provide services by adding game elements to M2E services.

The main characteristics of M2E are passive income and gamification. Passive income is defined as any money earned in a manner that does not require too much effort (Corporate Finance Institute, 2022). Investopedia, a financial media website, define passive income as income that requires minimal effort to obtain (Chen, 2023). M2E service users create value through passive income, which can be exchanged for

<Table 1> Difference in Execution between NFT M2E and non-NFT M2E

	NFT M2E	non-NFT M2E
Step 1	Installing App	Installing App
Step 2	Buying NFT	-
Step 3	Exercising & Token Mining	Exercising
Step 4	Claiming Revenue	Claiming Revenue

other digital assets and fiat currencies. Gamification refers to getting pleasure from game elements. M2E is to provide motivation for active physical activity by adding game elements to improve the lack of exercise of modern people. In addition to P2E and M2E, various X2E services are currently being launched.

There are various types of X2E, such as KRAFTON's C2E (Create to Earn), FANmarket's D2E (Design to Earn), Binance's L2E (Learn to Earn), Presearch's S2E (Search to Earn), and Socialverse's W2E (Watch to Earn) (Delfabbro et al., 2022; King et al., 2019; Yu et al., 2022).

The most widely used NFT-based M2E service is STEPN, which is a fitness application developed by Australia's Find Satoshi Lab, rewarding users according to the shoe NFT they purchase whenever they walk or run. The compensation provided by STEPN is GST coin, and the coin is paid in proportion to the distance run. As a leader in M2E, STEPN once achieved 700,000 monthly active users. In Korea, about 30,000 people have formed a community and communicated. In addition to STEPN, there are similar global services such as Genopets, StepApp, and Dotmoovs. In Korea, M2E service has been launched with STEPN as a motif.

The most widely used service in Korea is SuperWalk, which provides services through a partnership agreement with Naver J's metaverse platform ZEPETO and limited edition shoes exchange KREAM. People can check the limited edition shoes design th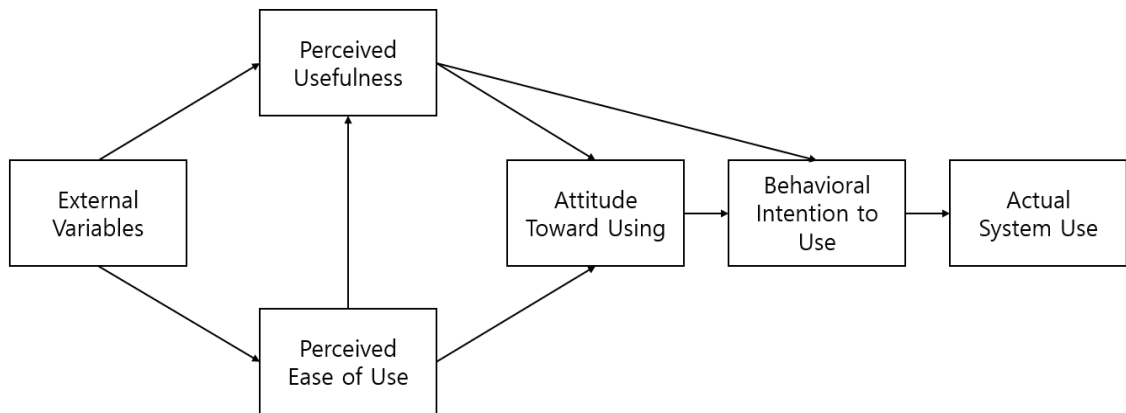rough KREAM, shoes exchange, and purchase the shoes NFT they want from the M2E app. Purchased shoe NFT can be used to decorate characters not only in the M2E service but also in the ZEPETO metaverse.

SuperWork provides services to users by dividing them into two modes: Basic mode and Pro mode. The basic mode can be used without purchasing a shoe NFT, and aims to make users interested in NFT while using the service. In pro mode, users can exercise through a shoe NFT and get rewards as much as they move. In addition, projects such as SNKRZ and TRACER are being serviced in Korea.

<Table 1> shows the difference between using M2E with and without NFT. NFT-based M2E can use the service under the condition of purchasing a shoe NFT. Non-NFT M2E allows users to use the service without purchasing a shoe NFT, and previously known pedometer-type reward applications belong to this category. Since NFT M2E is more profitable than non-NFT M2E, NFT-based M2E can be an appropriate choice for users whose main purpose is profit.

2.2. Technology Acceptance Model

The Technology Acceptance Model (TAM) was proposed by Davis (1989) as a concept that users accept new technologies based on perceived usefulness and perceived ease of use. The technology acceptance model is based on the Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) proposed by Ajzen and Fishbein (1980). Early studies using the technology acceptance model were mainly

<Figure 1> Technology Acceptance Model

related to information system acceptance within organizations. However, it was pointed out that antecedent factors affecting perceived usefulness and ease of use were overlooked, and external variables were added to the model in many subsequent studies (Venkatesh and Davis, 2000).

Since the technology acceptance model was presented, it has been applied in various fields and has been studied mainly in the field of Internet and IT services (Kwang et al., 2014). Since then, researchers in fields such as E-Learning, web-based summative listening comprehension test, mobile banking, and machine translation have used technology acceptance models to identify users' acceptance intentions (Abdullah and Ward, 2016; Cigdem et al., 2016; Munoz-Leiva et al., 2017; Yang and Wang, 2019). Based on Davis' technology acceptance model shown in <Figure 1>, technology acceptance research has been actively conducted in many fields since the mid-1990s (Sung and Ko, 2012).
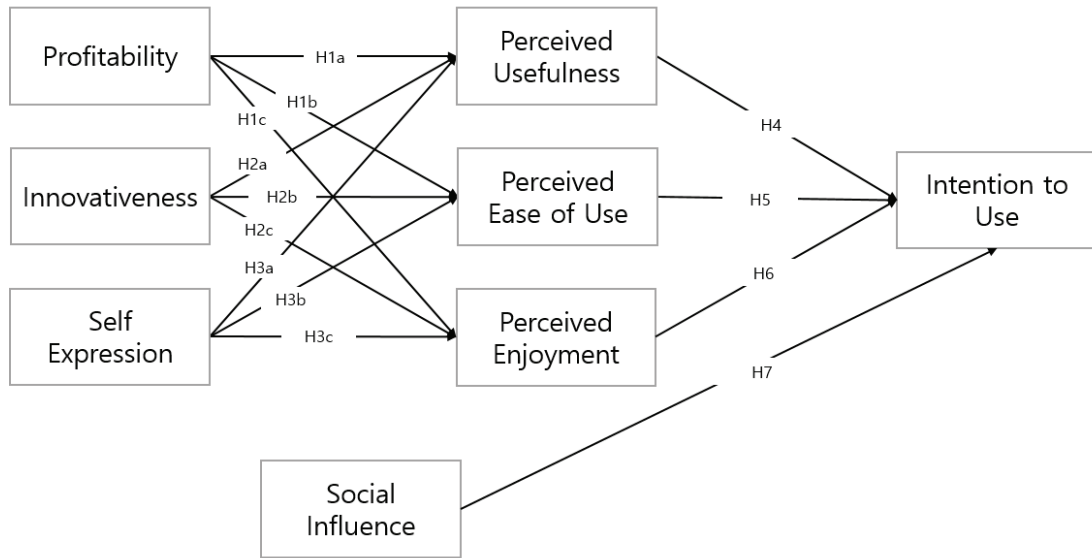
Kim et al. (2008) studied information system quality, perceived characteristics, and user acceptance of a hotel front office system (HFOS) using an extended technology acceptance model. Chang et al. (2012) analyzed antecedent factors that affect user acceptance

by applying an extended technology acceptance model to English mobile learning acceptance. Choi (2021) used an expanded technology acceptance model to study virtual reality immersive content user experience and acceptance intention for smart seniors.

While the technology acceptance model is not dependent on a specific field and is used in various ways, and contributes to analyzing users' usage intentions, research on acceptance of M2E services is still lacking. Therefore, in this study, we set up latent variables that affect M2E services using the expanded technology acceptance model and examine how perceived characteristics affect the intention to use.

Ⅲ. Research Model and Hypotheses

In this study, in order to derive variables that affect the intention to use M2E, a pre-interview was conducted targeting people who are interested in M2E or have experience in using M2E. Based on the interview results, profitability, which is a M2E characteristic, and innovativeness and self-expression, which are personal characteristics, were derived as external variables. The research model is shown in <Figure 2>.

<Figure 2> Research Model

In the pre-interview and M2E community, there are many opinions that users expect and use economic incentives in M2E, so profitability was selected as an external factor. De Jesus et al. (2022) found that the reason many people play P2E games is because of economic incentives. In the study of Lee and Kim (2022), as a result of analyzing the factors that affect NFT purchase intention, it was found that profitability had a positive effect on perceived usefulness and perceived enjoyment. There are many studies in which profitability has a positive effect on intention to use in the field of Web 3.0, including cloud-based digital payment, cryptocurrency mining, cryptocurrency trading, and NFT (Abbas Borhani et al., 2021; Ahmad et al., 2021; Chong et al., 2021; Davidson and Diamond, 2020; De Angelis et al., 2021; Islam et al., 2022; Lee et al., 2019).

In this study, the M2E service is considered to be used by many people because it achieves the purpose of healthcare like P2E games and at the same time gives rewards such as economic incentives, so the fol-

lowing hypotheses about profitability were established.

H1: Profitability has a positive effect on perceived characteristics.
H1a: Profitability has a positive effect on perceived usefulness.
H1b: Profitability has a positive effect on perceived ease of use.
H1c: Profitability has a positive effect on perceived enjoyment.

According to Agarwal and Prasad (1997), innovativeness is defined as an individual's voluntary willingness to experiment with new information technologies. It also means the extent to which new technologies and services are accepted earlier than other members of the group to which one belongs (Rogers and Shoemaker, 1971). The degree of innovation propensity differs from person to person, and it has been shown that people with high levels of innovativeness accept new products and services

more easily than those with low levels of innovativeness (Kim et al., 2018). Hur et al. (2017), as a result of analyzing the intention to use mobile app services, argued that consumers with a high degree of technological innovativeness tend to adopt the app service when the app is easy to use, useful, and enjoyable to use. Shanmugavel and Micheal (2022) confirmed that individual innovativeness plays an important role in purchasing an electric vehicle in a study on electric vehicle purchase intention. Youm (2014) confirmed that the innovative propensity of smartphone reward application users affects the satisfaction of use. In addition, there are many studies that prove that innovativeness affects user acceptance in the fields of e-learning, information system, mobile phone, ERP, drone delivery service, AR, and mobile banking (Agudo-Peregrina et al., 2014; Ding, 2019; Hong et al., 2021; Hwang, 2014; Hwang et al., 2019; Jung et al., 2015; Mohammadi, 2015). There are research results in various fields in which innovativeness as an antecedent variable significantly affects perceived characteristics (Almaiah et al 2022; Campbell and Singh, 2017; Gökçearslan et al., 2022; Koivisto et al., 2016; Ngafeeson and Sun, 2015; Rouibah and Abbas, 2010).

As examined above, we have confirmed in previous studies that innovativeness has a significant impact on perceived characteristics and new technology adoption. For M2E, which is the latest technology, we thought that user's innovativeness would have a positive correlation with perceived characteristics, so we established the following hypotheses.

> H2: Innovativeness is positively related to perceived characteristics.
> H2a: Innovativeness is positively related to perceived usefulness.
> H2b: Innovativeness is positively related to perceived ease of use.

> H2c: Innovativeness is positively related to perceived enjoyment.

Self-expression is the process of conveying the impression an individual wants to express to others (Goffman, 2002; Lee and Lee, 2017). Social media is typically the best place for self-expression. Through SNS, opportunities for self-expression have been extended to virtual space, and people have begun to actively create images they want to express in virtual space (Koo, 2018). A study by Jang (2022) revealed that the user's motivation for self-expression has a significant effect on service immersion in metaverse service perception. Now, people can express themselves by selecting and decorating characters related to themselves not only on SNS but also in online games (Kwon and Kim, 2014; O'Brien and Murnane, 2009). The M2E service has a function for users to express their own characteristics. When users set their own character and wear their a shoe NFT, their current status is displayed on the screen of other users. That is, information including the user's total exercise distance, level, and ranking in a nearby area is exposed to other users. Through this process, users can express themselves, and recently, in connection with the Metaverse platform, users can wear shoes NFTs they have purchased in a virtual environment. In particular, if a user wears an expensive shoe NFT, other users' interest may be obtained. In some M2E services, there is a function that allows users to make shoes with their own design. There are previous research results that self-expression as an antecedent variable affects perceived characteristics, attitude towards use, satisfaction and intention to use (Balamoorthy and Chandra, 2023; Doleck et al., 2017; Sharabati et al., 2022). Based on these results, we included self-expression in the research model as an external variable that affects intention to use

through perceived characteristics.

As discussed above, M2E services allow users to express themselves in various ways, and based on related studies, self-expression is thought to be positively related to perceived characteristics and, ultimately, intention to use, so the following hypotheses were established.

> H3: Self-expression is positively related to perceived characteristics.
>
> H3a: Self-expression is positively related to perceived usefulness.
>
> H3b: Self-expression is positively related to perceived ease of use.
>
> H3c: Self-expression is positively related to perceived enjoyment.

Perceived usefulness (PU) means that a user feels useful while using a new technology and perceived ease of use (PEOU), one of the other perceived characteristics, means the degree to which users can accept new information or technology with little effort (Davis, 1989). In addition, perceived enjoyment (PE) refers to the pleasure a user feels when accepting new information or technology (Venkatesh and Davis, 2000). It can be confirmed that the perceived characteristics affect user acceptance in previous studies using an expanded technology acceptance model in the fields of big data applications, smart healthcare services, mechanism of modular construction, new energy vehicles, and household energy-saving (Chou et al., 2022; Liu and Tao, 2022; Shin et al., 2022; Wang et al., 2021; Xu et al., 2021). Since most users feel more comfortable when a service or product is easier to use, it can be seen that ease of use affects usefulness (Joo, 2018). In a study by Lim et al. (2021), it was found that perceived usefulness had a positive effect on the intention to use the application. Hur

et al. (2017) found that perceived ease of use had a positive effect on the intention to use a fashion image search app through perceived usefulness and perceived enjoyment. Youm (2014) revealed that perceived usefulness and perceived ease of use have a positive effect on the satisfaction of using reward-type applications. In a study conducted by Choi and Kim (2021), it was found that perceived enjoyment had a positive effect on the intention to continue using the short-form video SNS platform.

As reviewed above, it was expected that perceived usefulness, perceived ease of use, and perceived enjoyment would have a positive effect on the intention to use M2E through previous studies, and hypotheses H6, H7, and H8 were established as follows.

> H4: Perceived usefulness has a positive effect on intention to use.
>
> H5: Perceived ease of use has a positive effect on intention to use.
>
> H6: Perceived enjoyment has a positive effect on intention to use.

Social Influence (SI) refers to the degree of influence a person receives from others when using a new technology or product (Al-Gahtami, 2014; Fox et al., 2021; Gonzalez Bravo et al., 2022; Mutambara and Bayaga, 2021; Raffaghelli et al., 2022; Scovell, 2022; Wang et al., 2021; Xu et al., 2021; Yang and Zhou, 2011). In many previous literatures, it has been proven that social influence is a variable that affects the intention to use (Dickinger et al., 2008; Nasri and Charfeddine, 2012; Wang et al., 2021; Yoon, 2018). Chung (2019) argued that social influence has a positive effect on technology acceptance of augmented reality. Kim et al. (2019) revealed that social influence has a positive effect on the continuous use intention of corporate mobile SNS

users.

As discussed above, the social influence is expected to have a significant effect on the acceptance of new technology, and hypothesis H9 is presented as follows.

H7: Social influence has a positive effect on intention to use.

Ⅳ. Empirical Analysis

4.1. Data Collection

An empirical analysis was conducted to verify the research model and hypotheses. A survey was conducted targeting people who have used M2E service or are aware of the service. The questionnaire was collected from October 13 to 19, 2022 and a total of 213 responses were collected and used for analysis.

<Table 2> shows the age group, occupation, and experience of using M2E services of the 213 respondents used in the analysis. As for the gender of the respondents, 92 males (43.2%) and 121 females (56.8%) seemed to have an appropriate gender distribution. When respondents were divided by age, 1.9% were in teens, 91.5% in 20s, 5.2% in 30s, and 1.4% in 40s or older, with the majority in 20s. According to Similarweb, which provides traffic statistics around the world, the majority of STEPN (stepn.com) users are in 20s, and 78.5% of the total users are in young age. Therefore, the sample used in this experiment seems reasonable. As for the occupation of respondents, students accounted for 61%, office workers 32.9%, self-employed 1.4%, and others 4.7%. Among the total respondents, 62% had experience using M2E services, while 38% had never used them. If respondents with M2E service experience are segmented by usage period, 33.8% of users with less than 6 months, 13.2% with 6 months to 1 year, 9.4% with

<Table 2> Characteristics of Respondents

Demographic and Usage Variable		Frequency	Percentage
Gender	Male	92	43.2%
	Female	121	56.8%
Age	10's	4	1.9%
	20's	195	91.5%
	30's	11	5.2%
	More than 40's	3	1.4%
Occupation	Student	130	61.0%
	Office Worker	70	32.9%
	Self-Employment	3	1.4%
	Others	10	4.7%
M2E Experience	None	81	38.0%
	~ 6 months	72	33.8%
	6 months ~ 1 year	28	13.2%
	1 year ~ 3 years	20	9.4%
	More than 3 years	12	5.6%

1 to 3 years, and 5.6% with users with more than 3 years. Through the experience of users shown in <Table 2>, it can be seen that M2E service has been in service for several years. The large number of user responses within 6 months can be attributed to the timing of the launch of the STEPN and SNKRZ services.

4.2. Factor Analysis

<Table 3> shows the results of exploratory factor analysis. It can be seen that all factors are properly grouped.

<Table 4> shows the results of confirmatory factor analysis. As shown in <Table 4>, we confirmed that all factors were properly set and grouped. In general, it is known that an average variance extracted (AVE) value of 0.5 or more is desirable, and the analysis results showed that the AVE values of all latent variable factors were 0.5 or more. If the construct reliability (CR) is 0.7 or higher, it can be said that there is convergent validity, and it can be confirmed that all factors have a construct reliability of 0.7 or higher.

<Table 3> Exploratory Factor Analysis Results

VAR	Factor							
	1	2	3	4	5	6	7	8
SE3	.938	.088	.037	.109	.016	.067	.099	.090
SE2	.935	.092	-.018	.088	-.007	.099	.156	.127
SE1	.915	.135	-.021	.125	-.009	.105	.150	.095
IU2	.093	.862	.144	.233	.124	.066	.203	.173
IU1	.172	.813	.129	.304	.162	.083	.220	.174
IU3	.124	.813	.145	.212	.209	.116	.224	.220
PEOU3	.015	.090	.902	.114	.137	.066	.108	.059
PEOU2	-.021	.059	.892	.133	.201	.086	.032	.080
PEOU1	.006	.175	.849	.059	.068	-.006	.154	.062
PE3	.064	.200	.086	.823	.147	.092	.199	.218
PE2	.198	.292	.185	.787	.178	.100	.186	.184
PE1	.203	.359	.170	.742	.148	.093	.236	.190
PRF3	-.025	.190	.059	.069	.831	-.009	.085	.204
PRF1	-.008	.057	.129	.118	.812	-.009	.213	-.029
PRF2	.031	.147	.248	.165	.772	-.016	.184	.029
INN2	.083	.089	.038	.046	.018	.881	.029	.144
INN3	.094	.105	.051	-.017	.004	.841	-.056	.011
INN1	.057	-.014	.038	.163	-.046	.815	.118	-.021
PU1	.213	.179	.104	.202	.226	.048	.819	.145
PU2	.229	.391	.146	.269	.282	.038	.712	.071
PU3	.190	.304	.235	.237	.271	.050	.704	.102
SI2	.187	.241	.134	.293	.136	.110	.216	.798
SI1	.227	.349	.121	.294	.095	.066	.060	.782

Note: SE: Self-Expression, IU: Intention to Use, PEOU: Perceived Ease of Use, PE: Perceived Enjoyment, PRF: Profitability, INN: Innovativeness, PU: Perceived Usefulness, SI: Social Influence

For reliability verification, Cronbach's α, which is widely known in general, was used. As a result of reliability verification, all Cronbach's α values were 0.7 or higher, indicating appropriate reliability.

4.3. Model Fit and Path Analysis

In order to test the hypotheses of the research model, analysis was conducted using SPSS AMOS software. First, the fit of the research model was confirmed by checking each fit index. Chi-square/df means the chi-square, which shows the difference between the sample data and the estimated covariance matrix, divided by the degree of freedom of the model. Generally, a model is accepted as suitable when chi-square/df is less than 3.0, and in this study, the value was 1.621 and was found to be suitable. CFI is one of the incremental fit indices and is used to compensate for the shortcomings of Normed Fit Index (NFI). The CFI value of the research model

<Table 4> Confirmatory Factor Analysis Results

Factor (Latent Var.)	Questionnaire (Observed Var.)	Cronbach's α	AVE	Construct Reliability
Profitability (PRF)	Profitability1	0.815	0.598	0.816
	Profitability2			
	Profitability3			
Innovativeness (INN)	Innovativeness1	0.819	0.613	0.824
	Innovativeness2			
	Innovativeness3			
Self-Expression (SE)	Self-Expression1	0.959	0.887	0.959
	Self-Expression2			
	Self-Expression3			
Perceived Usefulness (PU)	Percived Usefulness1	0.913	0.781	0.914
	Percived Usefulness2			
	Percived Usefulness3			
Perceived Ease of Use (PEOU)	Percived Esase of Use1	0.901	0.759	0.904
	Percived Esase of Use2			
	Percived Esase of Use3			
Perceived Enjoyment (PE)	Percived Enjoyment1	0.920	0.796	0.921
	Percived Enjoyment2			
	Percived Enjoyment3			
Social Influence (SI)	Social Influence1	0.896	0.812	0.896
	Social Influence2			
Intention to Use (IU)	Intention1	0.950	0.863	0.950
	Intention2			
	Intention3			

Note: Kaiser-Meyer-Olkin's MSA : 0.880, Bartlett's test (p-value) < 0.0001

was 0.968, which was quite good. GFI (Goodness of Fit Index) is one of the most widely used indicators, and the GFI value of the research model was 0.880, which was relatively good. AGFI (Adjusted Goodness of Fix Index) is a modified index of GFI, and is generally known to be good if it is 0.8 or higher. The AGFI value of the research model is 0.843, which can be said to be suitable. RMSEA (Root Mean Error of Approximation) is an indicator of how much error the data used for analysis represents compared to the research model, and if it is less than 0.1, it is judged appropriate. The RMSEA value of the research model is 0.0559, which is considered good. Incremental Fit Index (IFI) and Turker-Lewis Index (TLI) show similar indicators to CFI, and if it is 0.9 or higher, it is judged appropriate. The IFI and TLI values of the model were 0.968 and 0.961, respectively, confirming that the model was suitable. As examined above, an acceptable level of fit was confirmed in most indicators, and it can be seen that there is no problem with the model fit of the research model.

<Table 5> shows the results of path coefficients between variables in the research model. As a result of the analysis, 10 hypotheses were supported among all hypotheses.

In the case of profitability, one of the M2E characteristics, the hypotheses H1a, H1b, and H1c were all accepted that profitability would have a positive effect on perceived usefulness, perceived ease of use, and perceived enjoyment, respectively. It can be seen that profitability has a significant effect on all perceived characteristics when people use M2E services.

Hypotheses H2b and H2c were supported that innovativeness is positively related to perceived ease of use and perceived enjoyment. The more innovative people are, the easier it is to embrace new technologies and seem to be excited about new services like M2E. On the other hand, hypothesis H2a that innovativeness is positively related to perceived usefulness was not supported. A discussion of these findings is provided in the next section.

Hypotheses H3a and H3c were supported that self-expression is positively related to perceived use-

<Table 5> Path Analysis Results of the Research Model

H		Path		Coeff	p-value	Result
H1a	PU	←	PRF	0.699	***	Supported
H1b	PEOU	←	PRF	0.530	***	Supported
H1c	PE	←	PRF	0.653	***	Supported
H2a	PU	←	INN	0.068	0.177	not supported
H2b	PEOU	←	INN	0.132	0.047	Supported
H2c	PE	←	INN	0.182	0.003	Supported
H3a	PU	←	SE	0.275	***	Supported
H3b	PEOU	←	SE	-0.013	0.704	not supported
H3c	PE	←	SE	0.248	***	Supported
H4	IU	←	PU	0.511	***	Supported
H5	IU	←	PEOU	0.026	0.704	not supported
H6	IU	←	PE	0.313	***	Supported
H7	IU	←	SI	0.316	***	Supported

fulness and perceived enjoyment, respectively. Through these results, we can see that expressing oneself through shoe NFTs or avatars in the virtual world of the M2E platform is considered a useful function and gives pleasure to users. Hypothesis H3b, that self-expression is positively related to PEOU, was not supported and will be discussed in the next section.

Hypothesis H4, that perceived usefulness affects intention to use, was supported. This is consistent with many existing TAM research results that people have intention to use when they feel that the service is useful. Similarly, hypothesis H6 that perceived enjoyment affects intention to use was supported. It seems that people's pleasure while using M2E services has a positive effect on their intention to use. On the other hand, hypothesis H5 that perceived ease of use has an effect on intention to use was not supported. Perceived ease of use does not seem to have a significant impact on the intention to use, as those who are interested in and intend to use M2E are likely to already have sufficient knowledge
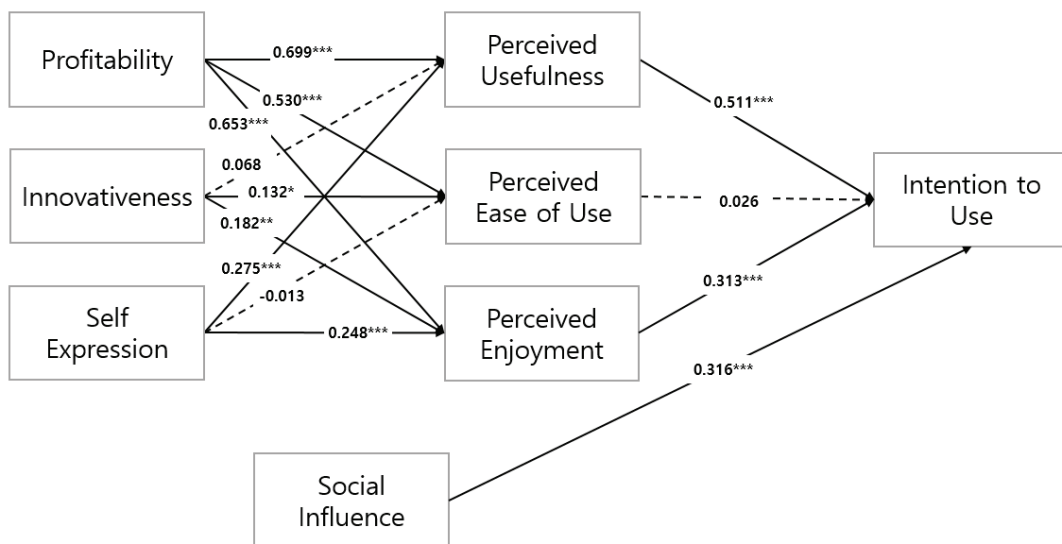
about the latest service-based technologies such as blockchain and cryptocurrency.

Hypothesis H7, that social influence has a positive effect on intention to use, was supported. Through this, it can be seen that people participate in the M2E service when their peers use it, or when other colleagues are using it and only they do not use it, the desire to participate in the group affects the intention to use M2E.

<Figure 3> shows the results of the path analysis of the research model.

4.4. Discussion of Findings

All hypotheses that profitability affects perceived characteristics were supported, indicating that profitability is a very important factor in using M2E services. In general, if the profitability is high, people can have the intention to use it while enduring some inconvenience, and the same results can be seen in blockchain or NFT acceptance research. If profit-

<Figure 3> Analysis Results of the Research Model

ability is not guaranteed stably when using M2E services, it is difficult to attract new users or continuously retain existing users. Therefore, companies providing M2E services need to find ways to continuously provide profitability to users.

The hypothesis that innovativeness is positively related to perceived ease of use and perceived enjoyment, respectively, was supported. In general, the higher an individual's innovativeness, the higher the willingness to use a new technology or product. Therefore, innovativeness appears to be positively correlated with perceived ease of use and perceived enjoyment. It is also consistent with the tendency of early adopters to try something new if it is fun and accessible even if it is not particularly useful. Innovativeness, a personal characteristic, was not found to be positively related to perceived usefulness. Some studies have shown the same results (Huang, 2013; Hur et al., 2017), suggesting that individual innovativeness may have a limited effect on the perceived usefulness of a system. Individual innovativeness can create interest in new systems and services or bring a better user experience, but if the innovative features do not meet user needs, a product or system may not be perceived as useful no matter how innovative it is. Conversely, products or services that meet users' needs and expectations may be perceived as useful even if they do not contain innovative features. In the case of M2E, a lot of relatively new technologies are applied, so innovative users can enjoy and use it easily, but it seems that they do not find it useful in contrast to profitability.

Self-expression was found to is positively related to perceived usefulness and perceived enjoyment, respectively. M2E is a suitable service for self-expression, and it seems that users find it useful and fun while using it. On the other hand, self-expression was found not to be significantly related to perceived

ease of use. It seems that a product or system may not be perceived as easy to use if its self-presentation features do not align with the user's tasks or goals, or interfere with the user's ability to do the job efficiently. In the case of M2E, it is a good platform for self-expression, but in order to use it as a means of self-expression, understanding of various technologies (such as NFT, blockchain, and metaverse) and complex settings are required, so self-expression does not appear to be significantly related to perceived ease of use.

Perceived usefulness was found to have a positive effect on the intention to use M2E services. Since M2E service users generally feel useful, such as the profit generated while using the service or expressing themselves, it seems that the perceived usefulness has a significant effect on the intention to use. Perceived ease of use did not affect intention to use, as is often found in other acceptance studies (Cheng, 2019; Goebert and Greenhalgh, 2020; Kim et al., 2022; Liu and Tao, 2022; Oyman et al., 2022; Thomas et al., 2019; Williams, 2021). There may be several reasons why perceived ease of use does not affect the intention to use. First, it is a case where other factors are more important than perceived ease of use. perceived ease of use is one of the important factors that determine whether a user will use the system or not, but it is not the only factor. If the usefulness of the system is high, users may have an intention to use it even if it is not easy to use. In addition, as users become familiar with new technologies due to the recent development of IT, they can have a continuous intention to use even if the usability is somewhat poor. For example, many people use outdated software or services when there are better alternatives. Some users use the system despite its poor usability, when the benefits of using the system outweigh the cost. They are willing to put

up with difficult interfaces when complex software like Photoshop or CAD is essential to their work. As mentioned above, there are many reasons why perceived ease of use does not affect the intention to use, but in the case of M2E, it seems that the service is used regardless of perceived ease of use because it is possible to earn revenue with actual currency value.

Perceived enjoyment was found to have a positive effect on intention to use. It seems that the pleasure that users feel when using M2E services is positively reflected and has a significant effect on intention to use.

Finally, it was found that social influence had a positive effect on the intention to use M2E. If there are people using M2E services around them, it seems that they reflect the desire to participate in the service and to make profits together.

Ⅴ. Conclusion

In this study, we tried to identify the structural relationship between the intention to use and the influencing factors for M2E service, which is one of the types of X2E currently used mainly by the so-called MZ generation. As a result of empirical analysis after establishing a research model and hypotheses, it was found that external factors such as profitability, innovativeness, and self-expression affect or are positively related to perceived characteristics. Perceived usefulness and perceived enjoyment had a positive effect on intention to use, but perceived ease of use did not have a positive effect on intention to use. It seems that the M2E service is used regardless of perceived ease of use because it is possible to earn revenue. Finally, from the results that social influence has a positive effect on the intention to use, we can confirm that M2E users feel a sense of kinship while using the service with others, and the intention to participate in the community and exchange information.

Based on these research results, practical implications are presented as follows: First, companies developing M2E services need to come up with a plan to continuously maintain profitability for users. In addition, it seems that a community meeting that can expand the influence amog users should be activated, and a place for active communication among users beyond simple information exchange should be prepared.

In the future, if M2E services are more widely used by the public, it is necessary to expand the scope of the study to various age groups. Further research will be needed to compare M2E service users and non-users. Through a comparative study, it is expected that the factors affecting M2E service can be identified more accurately.

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