

# Pricing models and Motivations for MMO play

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## ABSTRACT

The purpose of this study is to investigate and conceptualize the relationship between pricing models and motivations for MMO play. After the review of previous studies, we conduct an empirical research in the Japanese MMO industry to find determinants of pricing models.

As a result, we found that (1) relationship between monthly fixed fee, continuous play (play period) and social motivation, (2) relationship between per-item billing, relatively short play period and high immersion.

## Author Keywords

MMORPGs, pricing models, motivation, strategy, marketing

## I. INTRODUCTION

The online medium provides us variety of services, and the gaming industry is not an exception. Benefits and values of playing games have become various in the online game era; making friends, PT play, guild war, item collecting, etc.

Accordingly, the price model has been diversifying; prepaid, flat rate (monthly charge), measured rate (per hour, per item, etc.).

Table 1 describes pricing models in Japanese MMO/MO industry (2005-2006). Flat rate (monthly fee) was the most popular price model in 2005 (38 titles; 50.8%). Although in the following year, per-item billing became the most popular choice (60 titles; 59.6%). This is not only because the new games adopted per-item billing but also existing titles changed their pricing model from monthly fee to per-item billing (11 titles). Here arises question why has the pricing model changed though the content of the game is the same.

Pricing strategy, which has been a key factor of marketing mix, needs to be revised to explain various price models for the digital contents such as online games. There is, however, little conceptual or empirical research on the pricing strategy in the online service industry. In this paper, I conduct an empirical study in the Japanese MMO industry and develop a conceptual framework comprising several

marketing factors, users' motivation for play, immersion, satisfaction and payment amount, to explain various price models in the online gaming.

Table 1: Pricing models of MMO/MO in Japan

Pricing Models	Titles as of Sep. 2005	Titles as of Oct. 2006
Monthly fixed fee	30 (50.8%)	20 (22.5%)
Per-item billing	19 (32.2%)	53 (59.6%)
Complex	10 (17.0%)	16 (17.9%)
Total	59 (100.0%)	89 (100.0%)

## 2. PREVIOUS STUDIES REGARDING PRICING IN MMOS

When we make an analysis of pricing of MMOs, we should take account of the two aspects of digital contents service, value based approach and the dynamic approach.

### 2.1 Value based approach

Digital contents can be reproduced and distributed at low costs, and the marginal cost becomes extremely low. Theoretically, cost based pricing leads to free of charge as the marginal cost becomes close to zero. On the contrary, value of intangible digital contents tends to vary widely depending on each consumer. Some customer puts a high value on the contents enough to be immersed in it. For the successful market growth, pricing for intangible contents such as online games should be based on value that consumers perceive.

MMOs are typical of digital contents as complex goods, which have variety of benefits. MMOs encompass many different playing motivations, such as challenge, feeling refreshed, making friends, teamwork, good name and reputation, guild war, collecting and creating items, etc. It is important for marketers and researchers to recognize each benefit that virtual world offers. First of all, we should take a step toward understanding consumers' virtual activities and attempt to classify motivations for MMOs.

Csikszentmihalyi[3] defined entertainment as intrinsic motivated experience. The motivation comes from

experience itself without any other benefits. The intrinsic motivation is often called immersion or flow [3].

The current studies reveal various motivations of gaming in addition to immersion. Bartle [1] proposed taxonomy of MUD users; Achievers, Socializers, Explorers, and Killers. Bartle's model provides a foundation to understand various motivations. Yee [11] conducted an empirical survey on MMO users and performed a factor analysis on survey data to detect the relationship among users' motivations. The factor analysis grouped users' motivations into 3 categories, Achievement, Social, and Immersion.

Different motivation will cause different play style. Motivation for novelty of the game may cause rapid immersion and concentrated play in a short period. On the other hand, people who are motivated by social aspect of the game may continue the game instead of low immersion to keep in touch with game friends. Relationship structure of motivation and purchasing behavior, including payment amount, willingness to pay and play period, is thought to be an important point of MMO business, but there is little research about it. This paper focuses on the issue from the standpoint of marketing strategy.

## 2.2 Dynamic approach for long time services

More and more, digital contents or services, which are intangible, are getting popular in the Internet thanks to multimedia and broadband. Tangible goods require customers to pay for ownership of the product. Meanwhile, intangible goods usually charges customers fixed fees for the right to use the service. Customers will not be required to pay a fee each time they use the service but be charged fixed fees for the period of service. The long time service and fixed fee model is now prevailing. This change in payment style causes needs for dynamic marketing approach.

The long time service, such as MMOs, however, customers' usage level is changeable along with time. The long service needs a framework to explain continuous behavior. Previous studies proposed a dynamic approach in service industries.

Bolton & Lemon [2] committed an empirical study of usage of a credit card service and built a dynamic marketing model, which said prior usage level has an effect on the current usage level. Gourville & Soman [4] proposed that timing of payment yield would affect usage level, and conducted an empirical survey of sports club users to test the hypothesis. The type of payment yield (year, quarterly, and monthly) influences the rate of renewal for the subscription. Frequent payment (monthly) led to the longtime usage, for a lump-sum payment (year) made users forget the use of sports club and hesitate for next year subscription.

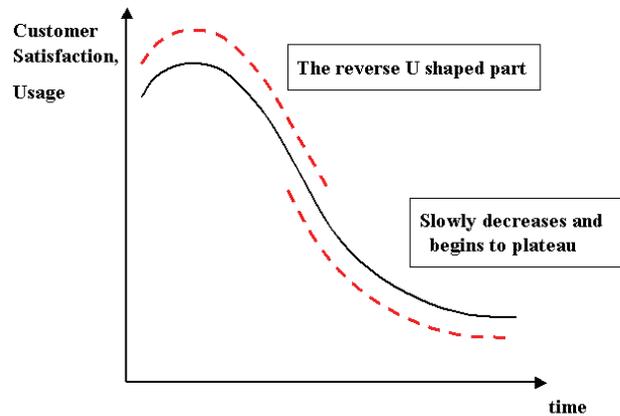


Figure 1: Usage and CS

We should also take into account of dynamic transition of customers' benefits, because the level of customers' satisfaction will change in a long period. Behavioral science and psychology literatures have discussed the issue of the change in benefits of entertainment. According to Shultz [8] and Scitovsky [9], human's reaction to novelty has a reverse U shape. Users perceive high degree of novelty in the beginning of the usage, and then novelty decreases along with time. Furthermore, entertainment services cannot avoid habituation [12], which will accelerate the decrease in the CS level. In the beginning, novelty will increase satisfaction. Then immersion pushes the level of satisfaction to the maximum. As time goes by, novelty and immersion diminishes and satisfaction will decline.

It is possible that duration doesn't lead to lower satisfaction but increase in satisfaction, when users think highly of social aspects of the service, such as friendship and identity in virtual world [10]. The value of human relationship will not only spur the network externality but also provide people a motivation for continuous play. Nojima [6] conducted an empirical survey and draw CS curves of online game users. The shapes are described as combination of a reverse U shape and slowly plateau. This shape indicates that CS declining process is divided to two parts; rapid decrease in immersion or novelty, and long term dissatisfaction. The degree of declination of the latter part depends on the users' subjective importance of social value. The dynamic transition of customer satisfaction is divided into the reverse U shaped part caused by immersion and novelty, and the slowly declination part caused by the interaction among long term dissatisfaction (-), habituation to the game quality (-), and community value (+).

The concept of a single price for a single product has collapsed in the Internet services. Now, the benefits of the Internet services vary from customers and occasion and also vary in time to time. Companies are beginning to attempt various pricing models to suit the various value of the service. Then the choice of a pricing becomes an important part of marketing strategy.

### 2.3 Pricing models in MMOs

At the advent of MMOs, pricing models of games have been changing from packaged software selling to monthly charged service and virtual item selling. The financial definitions of the major price models are described as follows.

Monthly Fee Model:

Sales = (user accounts \* rate of charge) \* monthly fee (fixed) \* average playing periods.

User accounts include free users such as novices, and the rate of charge represents the percentage of charged customers. Average playing periods is the statistic figure that indicates most customers continue playing the title.

Per-item billing Model:

Sales = (average item price \* total amount of sold items) \* frequency per user \* average sold amount and item price per user

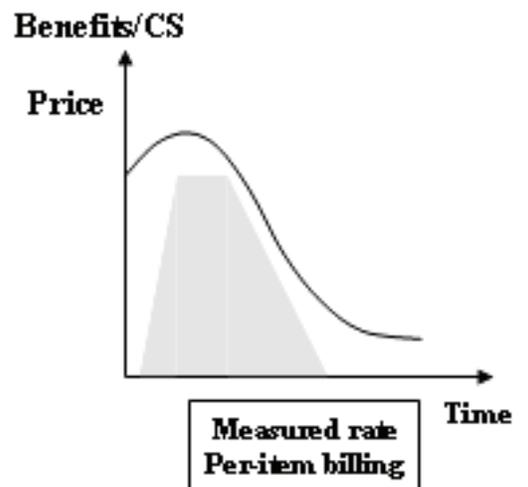
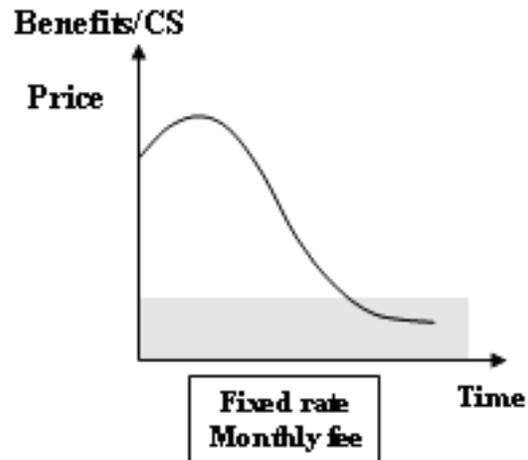
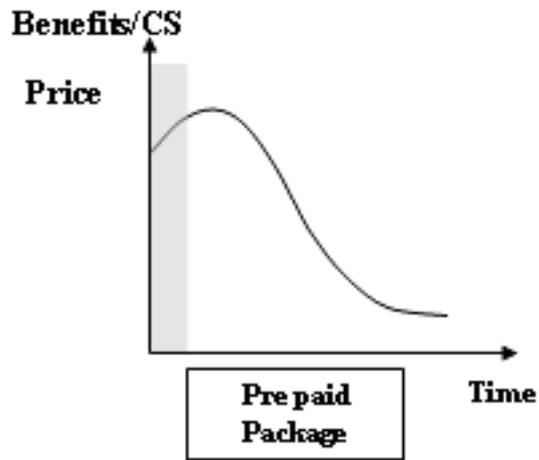
In this paper, we call online game publishers to customers' transaction as per-item billing, while C-to-C transaction is called as item transaction.

The first equation shows that company's sale is divided into price and amount. The second equation represents a marketing standpoint of view that the sale is a sum of individual user's purchasing behavior. The user's average behavior is measured by "frequency," "amount", and "price".

Figure2 shows dynamic transition of benefit and payment amount [6]. The shaded areas represent the total amount of payment. The under the curve area equals to the total amount of customer satisfaction, to say benefit.

In the prepaid model, users estimate the value prior to purchase and consumption. The estimate will base on the information from mass media or their experience of previous consumption. When the reputation or previous experiences are favorable, customers are willing to pay for the new game. Then advertisement and trial are effective to increase the estimated values for the game, which is called to be high-perceived risk goods.

In the fixed rate model, money is collected continuously, regardless of the level of CS. This model implies the value of game lie in continuous membership. Theoretically, efforts to extend their playing periods and encourage continuous play style will increase the amount of sales.



. Figure2; CS and pricing

The prepaid model front-loads the timing of collecting money, and the entrance barrier of perceived risk become high. On the other hand, in the fixed rate model, unit price as well as perceived risk has been kept relatively low.

The measured rate model, such as per-item billing, represents the middle course. Both purchase frequency and

unit purchase amount will effect on the company's revenue. Expressed in another way, company has several alternatives to make change in revenue; rate of charge, purchase frequency, item price, and sold amount. Players are explicitly divided into two types, free users and paid users. Compared with the monthly fee model, Per-item billing games have smaller population of paid users, but have larger amount of average paying of paid users [7].

We may say that per-item billing comes close to price differentiation, one-to-one pricing, which has an advantage to expand the company's sales by harvesting consumer surpluses that is described as under-the curve area. Immersion into the game will promote the item selling, because immersed users consider virtual items of value. Then, target users of this pricing might be more enthusiastic and immersed than other pricing model

### 3. RESEARCH QUESTION

The research question of this paper is what is the determinant of pricing models, especially per-item billing. We need explanation of the change to per-item billing in Japanese MMO industry.

There is, however, little empirical research on the relationship in players' activity and pricing. This paper conducts an empirical research exploratory, to find determinant which is related in pricing.

### 4. EMPIRICAL STUDY

The process of the empirical study is divided to two steps.

First, I investigate the relationship between users' attributes and pricing models by T-test method. This analysis is intended to find a marketing index that relates to per-item billing.

Second, I measure users' activities in the game world. And then, I attempt classification of them by hierarchical cluster analysis. Measurement of the activities in the game world is based on previous literatures above mentioned and some users' interviews that I had conducted in advance.

#### 4.1 Data collecting

I conducted online questionnaire surveys twice in order to collect data of Japanese MMOs users' activities. It is because a single survey has a limitation of the number of questionnaires to ensure high reliability of answers, while this kind of exploratory search needs various questionnaires. And also, I failed to get enough sample size in case of the first survey, and then applied the second survey to confirm the findings of the prior survey and to add new precise questionnaires about virtual activities.

The first survey was conducted on a SNS site for MMO players in Japan on October 2006, and 83 samples remains after data cleaning. This SNS site had 2,095 panels at that time. Descriptive statistics of the population are shown in table2. There is not so big difference between the 83 samples and the whole panels.

The second survey was held openly on a website on March 2007 (N=142). The questionnaire site has a linkage to a page of the MMO news column in a famous Internet news site, Japan internet.com (<http://japan.internet.com/home.shtml>).

The ratio of male (or female) differs from the result of survey1. We may say that it is caused by the orientation of each site. Generally, SNS users are community-oriented people, and news site readers are novelty-oriented people. Except this fact, no other significant population bias was found.

These surveys were executed without incentives to respondents to avoid wrong inadequate answers as possible. It is true that a monetary reward has an advantage to gather a lot of answers, but it cause a need for careful data cleaning, while an exploratory research has few clue to eliminate errors from answers.

**Table 2: the Dataset**

	Sample	Sex	Age	MMO Experience
Survey 1 Online game SNS users	83	Male 67.5% Female 32.5%	27.7 years old on average	53 month on average
(The whole panels)	(2,095)	(Male 72.6%) (Female 27.4%)	(25.8 years old on average)	(47 month on average)
Survey 2 Online game news readers	142	Male 84.5% Female 15.5%	25-29 years old 34.5%	3years to 4years 21.8%

#### 4.2 Users' attributes and pricing models

Table2 shows the result of a T-test of users' attributes and pricing models. The test was conducted on paid users of survey1 (N=83-14) and survey2 (N=142-18). I confirmed the difference between users of per-item billing and non per-item billing users statistically. Non per-item billing includes the case of monthly-fee and mixed-payment.

The result says that the difference in play period is only statistically significant at 0.05 levels. The playing period becomes shorter when per-item billing is chosen. The result doesn't change even under the control of experience of MMO (Play period/Experience of MMO). Users' stickiness to a game seems to relate with the choice of pricing models. This tendency looks robust, because both of survey1 and survey2 has the same result.

Survey2 has additional questionnaires including immersion level and customer satisfaction. Surprisingly, immersion level differs between the pricing models, but customer satisfaction has nothing with the pricing.

**Table3: Measured variables**

Variable	Questionnaire
Age	Users' age in the real life.
Experience of MMO	How many years and months since users played online games for the first time?
Average play Days	Frequency of game play. The average number of days of game playing per week.
Average Play Hours	Frequency of game play. The average hours of game playing per day.
Play Period	The average playing (paying) period for a game, except for free play period.
Willingness to Pay	The amount users felt willing to pay for the game when they started the game.
Payment Amount	The amount users paid for the game in the last month.
Immersion	How much users are immersed into the game. 5 scales.
Customers Satisfaction	The degree of satisfaction of the game service. 5 scales.

**Table 4: T-test analysis**

Survey 1 (N=83-14) Online game SNS users	Users of Per-item Billing (N=20)	Users of non Per-item Billing (N=49)	Difference (p)
Age	26.4	28.2	-1.8 ( 0.322 )
Experience of MMO	34.1 months	47.7 months	-13.6 ( 0.081 )
Average Play Days / Week	5.4 days	4.3 days	1.1 ( 0.103 )
Average Play Hours / Day	3.6 hours	3.3 hours	0.3 ( 0.436 )
<b>Play Period *</b>	<b>9.3 months</b>	<b>21.9 months</b>	<b>-12.6 ( 0.001 )</b>
<b>Play Period / Experience of MMO *</b>	<b>0.20</b>	<b>0.44</b>	<b>-0.24 ( 0.002 )</b>
Willingness to Pay	2,150 yen	1,898 yen	252 ( 0.795 )
Payment Amount	1,887 yen	2,743 yen	-856 ( 0.222 )
Survey 2 (N=142-18) Online game news readers	Users of Per-item Billing (N=48)	Users of non Per-item Billing (N=76)	Difference (p)
Experience of MMO (10 scale)	8.1	8.6	-0.5 ( 0.156 )
<b>Play Period *</b>	<b>20.6 months</b>	<b>27.4 months</b>	<b>-6.8 ( 0.024 )</b>
<b>Immersion (5 scale) *</b>	<b>3.6</b>	<b>3.1</b>	<b>0.5 ( 0.036 )</b>
Customer Satisfaction (5 scale)	2.8	2.7	0.1 ( 0.771 )
Willingness to Pay	3,468 yen	2,871 yen	597 ( 0.159 )
Payment Amount	4,312 yen	2,188 yen	2,124 ( 0.213 )

\* Significant at 0.05level

Per-item billing has more immersed users, but lacks in long-time play style. Shorter play period means users who are more likely to get bored of a game. We may draw 2 scenarios of shorter periods in per-item billing. First, per-item billing promotes users immersion and then harvests the consumer surplus, which cause instability in play style and payment amount. Rapid immersion will not last too long. Other scenario is that when a company chooses per-item billing the target user will change. Users who are not familiar with per-item billing may quit the game and move to another. This statistical result may reflect the difference of the target users.

On the other hand, we can't find any difference in willingness-to-pay and payment amount. Per-item billing is said to increase the unit amount of payment, however, the statistics doesn't show the fact. Also, per-item billing is said to increase in free play users. We can make an interpretation from the data that per-item billing users are various in payments, from free users to immersed well-pay users, and the average amount has little value for further analysis.

#### **4.3 Classification of users' virtual activities**

We focus on in-game behavior which has measured in survey2. The questionnaires are described in table 5. The T-test of these variables is shown in table6.

"Guidance", "Skills" and "Saving" have statistically significant differences. Less importance in "Guidance" for per-item billing users may relate with the fact that they prefer shorter play periods, which we found in the prior T-test. Leadership will stem from long-time relationship among other players. Veterans will be pleased to teach novices how to live in the game world.

"Skills", ambition to acquire capability to live in the game world, represents high motivation to continue the game life. "Saving" the game money is also means that users put a high value on the game. High score in "Skills" and "Savings" shows that per-item billing users are highly motivated and immersed players.

Let us make an observation about the relationship among in-game activities. Hierarchical cluster analysis (Figure3) was conducted to classify in-game activities.

As a result, three latent variables are found. I named them as "Social", "Progress" and "Identity".

"Friend", "Guild" and "Guidance" belong to the same group, which is named as "Social".

"Unknown maps", "Skills", "Comparison", "Level-up" and "Saving" are grouped into "Progress", which means users have their own aim and forward looking in the game world. They seem to be eager to make progress and establish some virtual status in the game world. "Ideal", "Expression", "Recognition", "Personality", "Rivals" and "Respect" are classified to "Identity". These are interpreted to be symptoms of the existence of virtual identity [10]. They feel vivid reality in the game world, and they are more their real self in the virtual world rather than in the real world.

This taxonomy differs from previous research mentioned above. It is because they observed broadly MMO players behaviors while this paper focuses on the variables, which would be connected to a purchasing behavior from the marketing perspective.

**Table 5: Questionnaires of in-game activities**

Variable	Questionnaire (5 scale)
1 Friends	I have many friends who become acquainted within the game.
2 Guild	I often belong to a user group such as a guild.
3 Guidance	I often teach other users how to play the game within the game.
4 Unknown maps	I think there remain unknown things in the game world, places that I have never been and so on.
5 Skills	I want to be familiar with the game world and be skillful in the world.
6 Comparison	I often compare my own equipments with other users have.
7 Level-up	I am eager to level up as soon as possible.
8 Saving	I often make a saving to prepare for the purchase of some game items.
9 Ideal	I express what I want to be, ideal personality, in the game world.
10 Expression	The game life represents what I really am rather than real life.
11 Recognition	I want to be recognized and respected by other users.
12 Personality	My personality or way to act in the game world differs from that in the real life.
13 Rivals	I have rivals in online game play.
14 Respect	I have someone to look up to in the game world.

**Table 6: T-tests of in-game activities and pricing models**

Survey 2 (N=142-18) Online game news readers	Users of Per- item Billing ( N=48 )	Users of non Per- item Billing ( N=76 )	Difference ( p )
<b>In-game activities</b>			
1 Friends	4.00	4.17	-0.17 (0.488)
2 Guild	4.06	4.11	-0.05 (0.876)
<b>3 Guidance *</b>	<b>3.83</b>	<b>4.25</b>	<b>-0.42 (0.006)</b>
4 Unknown maps	3.83	3.61	-0.22 (0.322)
<b>5 Skills *</b>	<b>3.69</b>	<b>3.24</b>	<b>0.45 (0.043)</b>
6 Comparison	3.25	3.24	0.01 (0.960)
7 Level-up	3.42	3.12	0.30 (0.241)
8 Saving	3.42	3.00	0.42 (0.128)
9 Ideal	2.15	2.13	0.02 (0.950)
10 Expression	2.23	2.22	0.01 (0.980)
11 Recognition	2.56	2.29	0.27 (0.256)
12 Personality	2.58	2.26	0.32 (0.224)
13 Rivals	2.33	2.11	0.22 (0.359)
14 Respect	2.54	2.36	0.18 (0.472)

\* Significant at 0.05level

\*\*\*\*\* HIERARCHICAL CLUSTER ANALYSIS \*\*\*\*\*

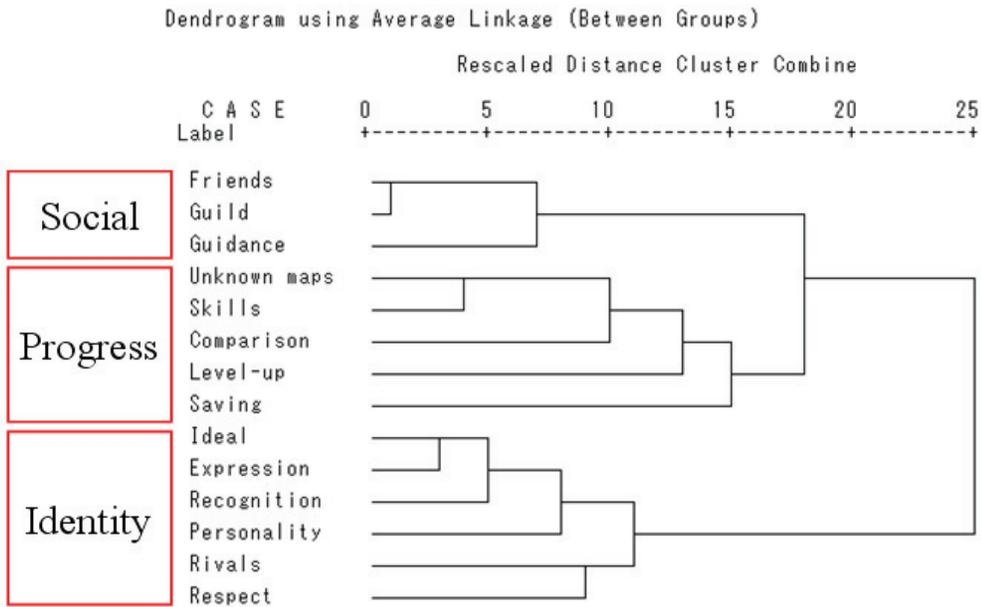


Figure 3: Hierarchical cluster analysis

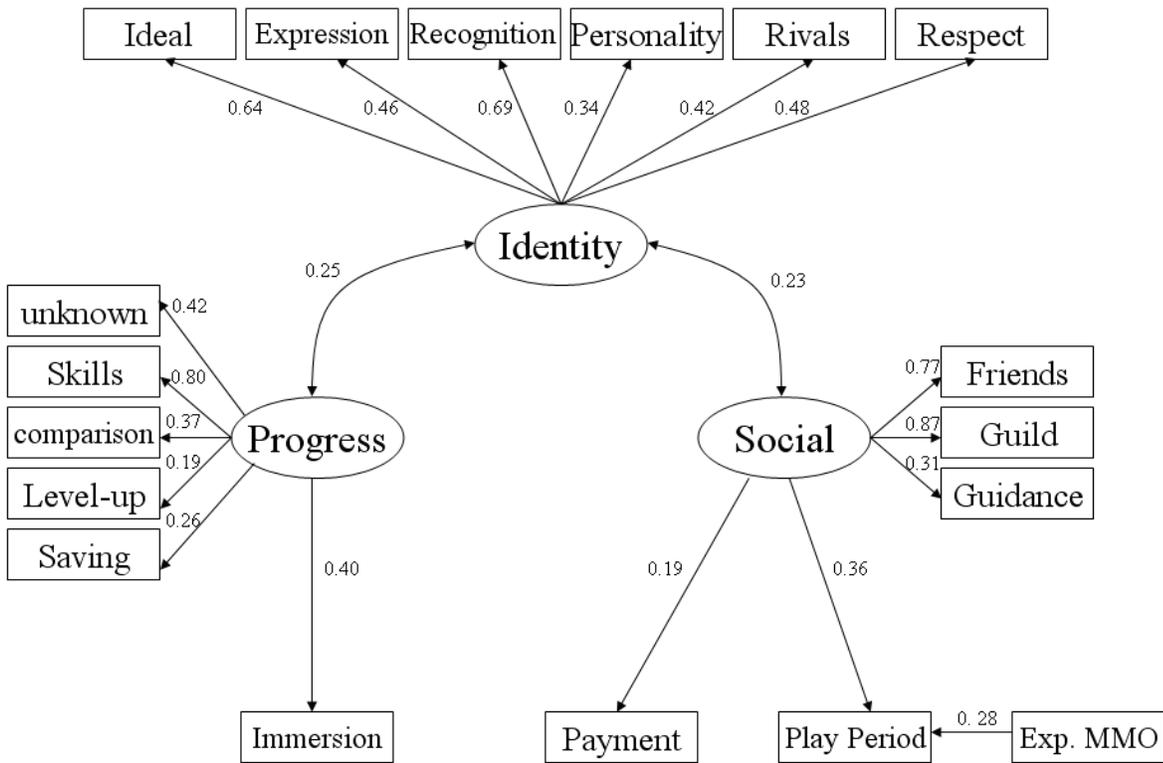


Figure4: SEM

## 5. CONCLUSIONS AND DISCUSSION

To research connection of motivation and pricing, I conducted user questionnaire surveys of Japanese MMOs users, and conducted several analyses, T-test of users' attribute and pricing models, T-test of in-game activities and pricing and cluster analysis of in-game activities.

As a result, some relationships were found, (1) relationship between monthly fixed fee, continuous play (play period) and social motivation, (2) relationship between per-item billing, relatively short play period and high immersion.

But question remains; how these variables interact with each other? I attempt the structural equation modeling method (SEM) to describe the structure of users' virtual behaviors and marketing indexes regarding of pricing models, using the dataset of survey2. In fact, there is a limitation of relatively poor data fitness (AGFI=0.822), which is attributable to the large number of measured variables (18) for the sample size (N=142). However, I venture to show the model for discussion about some business implications.

In SEM (Figure4), measured variables indicated by squares and latent variables are indicated by ellipses. The diagram describes statistically significant ( $p < 0.05$ ) pathways. Three latent variables were set in the model which are extracted from the prior clustering analysis, "Social", "Progress" and "Identity". The double-headed curved arrows represent covariances. We can see the path between "Progress" and "Identity" (0.25), "Social" and "Identity" (0.23). Identity has no direct pathway to marketing indexes, but it has an effect on the other in-game behavior, "Progress" and "Social".

We should pay attention to the fact that not only "Social" leads to good marketing performances, high payment amount and long play period, but also "Social", "Identity" and "Progress" has interactions each other (covariance). This implies the importance of structural analysis for MMO motivations.

This result is consistent with the rule of thumb that identity is a basis of human relationship and everyday life. Even in the virtual game world, identity does exist [11], and it will play a key role for their virtual activities.

I have conducted several empirical researches from the perspective of companies' profitability. Whenever I make a statistical survey, social motivation is the only to have a direct effect on marketing performances [5] [7]. The advantages of per-item billing have not appeared in the survey data.

The combination of monthly fee model and users' community will boost the profitability of the game that had made a good beginning, however, will not lead to an improvement for the game that had failed to attract enough

number of users. On the other hand, per-item billing model, which allows free users, seems to be successful in gathering a lot of users, even at a cost of temporary profitability, and fostering users' community and value of the game. In addition, per-item billing has an opportunity to make high payment amounts from immersed users. This paper has an aim to describe the feature of per-item billing model.

The result of SEM analysis shows that social motivation is not completely isolated from other variables; it is related with virtual identity, and identity leads to progress and immersion. This structure suggests us multiple factors that related each other consist of the value of the game.

This study has some limitations that should be addressed by future research. An important limitation is the small size of sample, and I am beginning further empirical investigation. And also, as game users' behaviors are various and complicated several methods for measurement should be explored in future investigations.

We thank One's Communications and Co. and Japan internet.com for providing data and assistance with the online data survey.

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