Pricing Method of "Make Money by Photography"

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Abstract

Photography to make money is a self-service mode under the mobile internet. Users download APP, register as a member of APP, and then take photos from APP (such as going to the supermarket to check the shelf status of a certain commodity) to earn the remuneration of the task demarcated by APP. This kind of APP provides enterprises with various kinds of business inspection and information collection. Compared with the traditional market survey method, it can greatly save the cost of investigation, effectively guarantee the authenticity of survey data and shorten the period of investigation. ln this paper, the problem of task pricing based on data is studied, discussed, analyzed and established a mathematical model, which is solved by mathematical software. The original data given by the title does not match the tasks with the members one by one. Therefore, we divide longitude and latitude into 0.1*0.1 cells and take out the number of members, task quota, task number, completion rate and reputation value in the function interval as function variables for analysis.At the same time, by analyzing the relationship between each factor and task price, we find that the number of members, task number and price are negatively correlated, the average quota is positively correlated with price, and reputation is not related to price. So we construct the model and solve it with MATLB .y=(7.6215e-4)*X12（5.2029e-6)*X22+0.0051*X32-0.1406*X1+0.0057*X2-0.2819* X3+ 74.3762.To solve the problem of completion rate, factor analysis method is used to calculate the contribution rate of each factor to completion rate. At the same time, the relationship between the factors and the completion rate is made to determine the correctness of the conclusion.

Keywords

Task price Multivariate Nonlinear Regression Factor analysis method.

1. Introduction

With the rapid development of the network, the online O2 O is in full swing, and the "Photo Make Money" APP appears in the public's vision in line with the trend.But for software, the price of photography is undoubtedly the most important. Task pricing in APP is its core element.If the price is unreasonable, some tasks will be left unattended, leading to the failure of commodity inspection. Therefore, we need to analyze the pricing problem and solve it optimally.

Judge the pricing method of Task 1 according to the data given by the title, and analyze the reasons for the unfinished task.

Design a new task pricing scheme for the project in Annex I and compare it with the original one.

2. Problem analysis

This topic is built in the actual situation, so we should consider the logical thinking and the actual situation. In practice, the number of members in the same region, the average task quota, the number of regional tasks, the credit value of regional members, and the latitude and longitude of the region all have an impact on task pricing. In order to achieve the goal that everyone has to do, the price is positioned according to the reasonable degree of the price. This topic mainly aims at the change of pricing schemes under different conditions. In practice, the pricing level is related to the traffic situation of the mission location, the distribution of members around the mission location, the urgency

of the task time, weather conditions, the willingness of the members and the schedule. Therefore, the determination of this problem is a multi-dimensional problem analysis.

For Question 1, we compare the positions of tasks and members. In this process, we find that because the positions are represented by latitude and longitude, the values are not very different. The scatter plots show that the positions are concentrated. The task positions in the 0.1 latitude and longitude regions are equivalent to the positive center positions of the regions by the approximate equivalent substitution method, and then the number of members in each region is screened out by sorting. Task sheet, honor value, completion rate and average quota are used to make scatter plots of these variables and pricing respectively. The relationship between each variable and pricing is analyzed, and the relationship curve between them is fitted. Based on this, the multivariate non-linear regression equation is established. Question 2 requires the optimization of the model, that is, considering the completion rate, the weight of each factor is changed.

3. Model hypothesis

Conversion from coordinates to geographical location and limited range of human activities, it is believed that members will select the task site nearby.

Members'location coordinates are members' small-scale activity centers

Members have the will and time to complete their tasks.

The average price of all tasks in an area of 0.1*0.1 or 0.05*0.05 is taken as the fuzzy price of the region.

Neglect the influence of weather, member's mood and other factors on task price

Members can't accomplish a task together and then privately allocate the amount of the task.

Attributing the geographical, traffic and population distribution of the specific location of the task to the impact of latitude and longitude differences

4. Symbolic Description

X1 is the number of members, X2 is the predetermined limit, X3 is the number of tasks, a, b, c, d, e, f, G are the undetermined coefficients of functions, y is the price variable.

5. Establishment and Solution of Model (Problem 1)

In this section, the main research is the current pricing mode of the merchants, the decision of the price under the influence of different factors, and the analysis of the reasons for the unfinished tasks under the model.

5.1 Data processing

The topic gives a large amount of data, and abstracts all factors by graph theory. According to the analysis of the information and the actual situation, the price is related to the number of members (density), members'task quota and task number (density). Therefore, these data are processed. Because the members and tasks can not be matched one by one in the title, we divide them according to latitude and longitude, and take 0.1o*0.1o area as a unit to get the data of the number of members, task quota and sum, task number, reputation value and completion rate. The relationship between these factors and functions is fitted by EXCEL software to get some function images. The law of function is analyzed.

5.2 Analysis and Establishment of Model 1

From the above images, the task price is negatively correlated with the number of members and tasks, and positively correlated with the average quota; the reputation of members has nothing to do with the price. In the process of fitting function image with EXCEL, we choose many function forms. In the process of fitting three factors with task price, we get the best fitting degree is quadratic

polynomial function. So in the process of fitting, we use the quadratic polynomial form of three factors, and get the following function model:

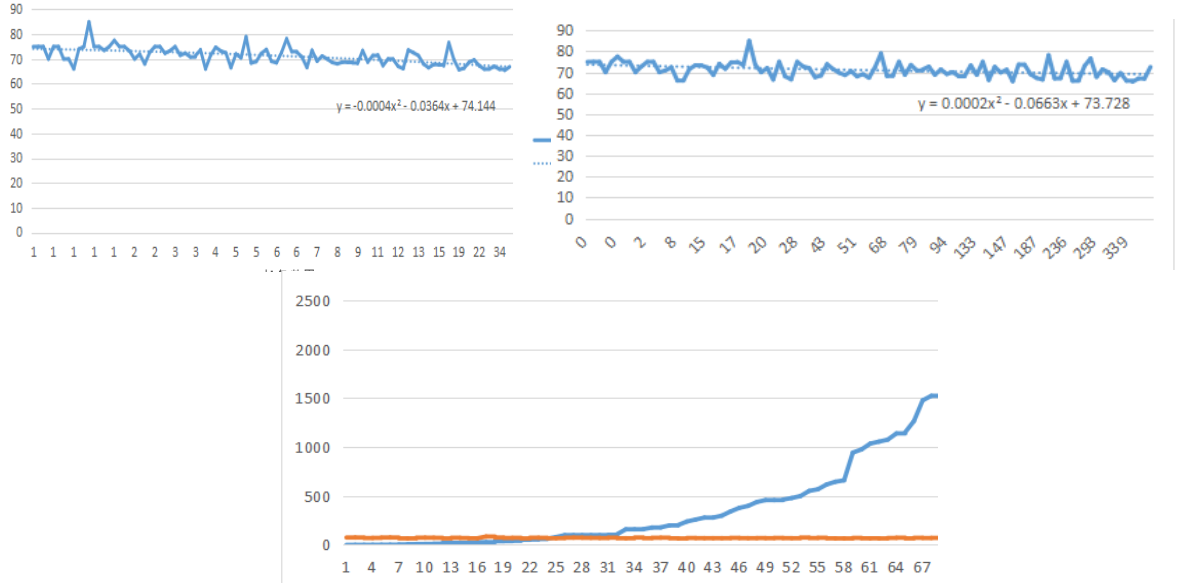
Y = aX1 ^ 2 + bX2 ^ 2 + cX3 ^ 2 + dX1 + eX2 + fX3 + G

Since there is no obvious one-to-one relationship between tasks and data, we partition the data and make statistics on the average price of each area (accuracy is 0.1o*0.1o), the number of tasks, the sum of task quotas, the sum of reputation values and the number of members.

After obtaining the data of these intervals, these functions are treated as average values instead of original data as processing variables. The coefficients are obtained by function fitting after using MATLAB. Using MATLAB software, the data were analyzed by regression a=7.6215e-4, b=-5.2029e-6, c=0.0051 d=-0.1406, e=0.0057 f=-0.2819 g=74.3762.

That is to say, the corresponding function is:

Y=(7.6215e-4)*X12-(5.2029e-6)*X22+0.0051*X32-0.1406*X1+0.0057*X2-0.2819*X3+74.3762



Credit Value and Price

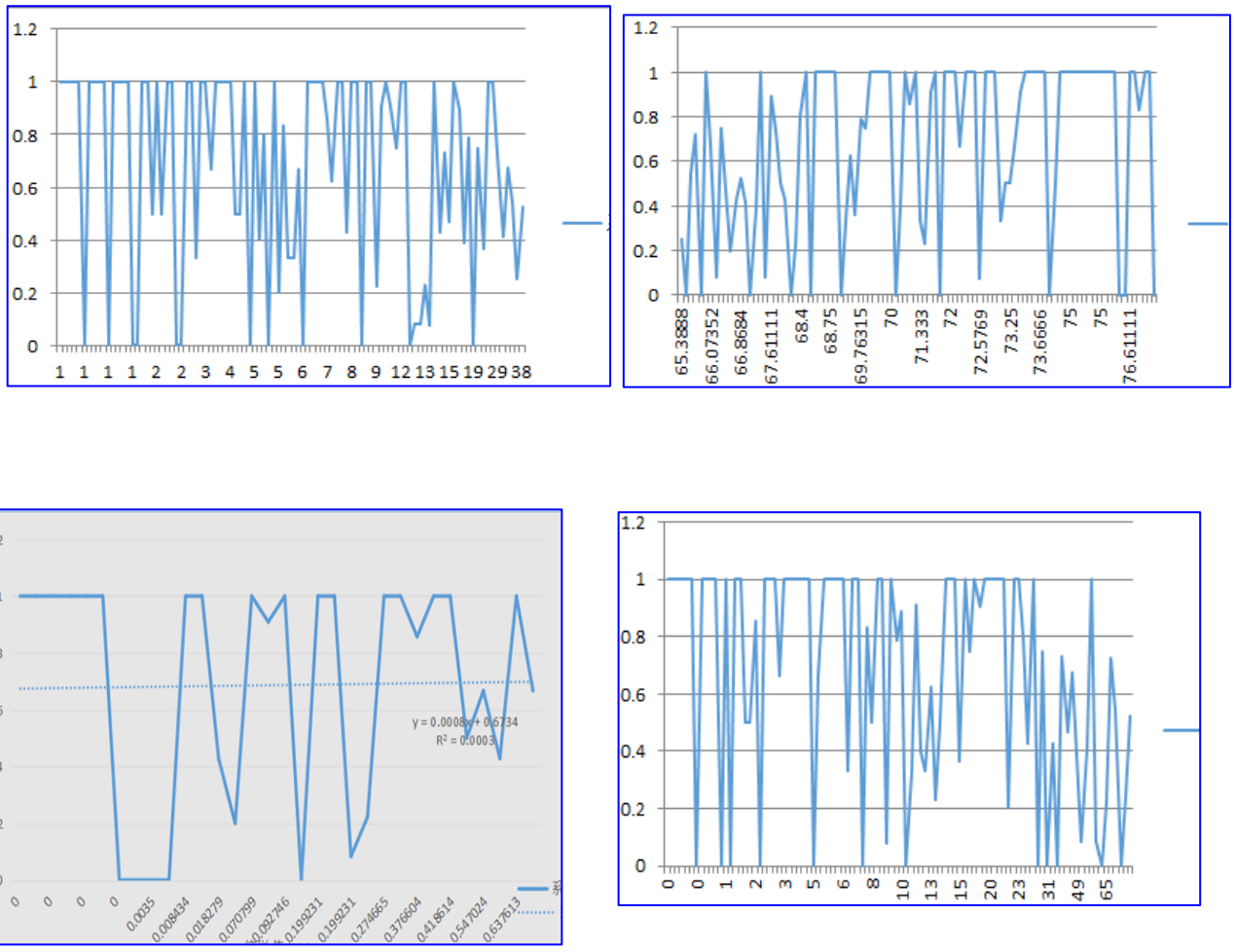
22.5	22.6	22.55	114.4	114.5	114.45	0	0	0	1	2	85	0
22.6	22.7	22.65	113.6	113.7	113.65	0	0	0	1	2	75	1
22.7	22.8	22.75	113.4	113.5	113.45	0	0	0	1	2	75	1
23.4	23.5	23.45	113.4	113.5	113.45	0	0	0	2	4	77.5	1
23.7	23.8	23.75	113.7	113.8	113.75	0	0	0	1	2	75	1
23.8	23.9	23.85	113.5	113.6	113.55	0	0	0	1	2	70	1
23.8	23.9	23.85	113.9	114	113.95	0	0	0	1	2	75	1
22.6	22.7	22.65	114.4	114.5	114.45	1	1	0.0247	2	4	75	0
22.5	22.6	22.55	114.2	114.3	114.25	2	2	0.35	2	4	75	0
22.6	22.7	22.65	114.3	114.4	114.35	6	6	0.5023	1	2	70	0
22.7	22.8	22.75	114.3	114.4	114.35	11	11	0.8434	4	8	71.5	0
23	23.1	23.05	114.1	114.2	114.15	1	1	1.4194	1	2	75	1
22.9	23	22.95	114.1	114.2	114.15	5	5	1.8279	3	6	75	1
22.7	22.8	22.75	114.2	114.3	114.25	27	28	4.4488	7	14	66.5714	0.42857
22.6	22.7	22.65	114.2	114.3	114.25	22	23	7.0799	5	10	66.5	0.2
22.8	22.9	22.85	114.1	114.2	114.15	17	20	8.51513	13	26	73.6153	1
22.7	22.8	22.75	114.1	114.2	114.15	18	18	9.2746	11	22	73.409	0.909
22.8	22.9	22.85	114	114.1	114.05	6	8	11.9538	3	6	72.3333	1
22.4	22.5	22.45	113.8	113.9	113.85	1	9	19.9231	1	2	66	0
22.7	22.8	22.75	113.5	113.6	113.55	1	2	19.9231	7	14	72.7857	1
23.6	23.7	23.65	113.4	113.5	113.45	1	2	19.9231	1	2	70	1
22.5	22.6	22.55	114.1	114.2	114.15	50	60	24.3265	12	24	67.3333	0.0833
22.6	22.7	22.65	114.1	114.2	114.15	65	68	27.4665	9	18	68.2222	0.2222
23	23.1	23.05	114	114.1	114.05	14	20	27.8922	1	2	85	1
22.8	22.9	22.85	113.9	114	113.95	3	17	37.6604	1	2	75	1
22.8	22.9	22.85	113.5	113.6	113.55	2	7	38.8462	7	14	70.85714	0.85714
22.9	23	22.95	114	114.1	114.05	21	39	41.8614	5	10	72	1
22.4	22.5	22.45	113.9	114	113.95	3	8	51.8	4	8	66	1
22.8	22.9	22.85	113.3	113.4	113.35	2	15	54.7024	2	4	73.25	0.5

Processed data

5.3 Reasons for incomplete model results

The function in Task 1 can not accomplish a large number of tasks. We use factor analysis to analyze the factors and function prices to get the factor contribution rate, and get the influence of each factor on the completion rate through factor contribution rate.

In order to verify the above conclusions, we use Excel tables to make corresponding broken-line maps based on the experimental data already processed, as follows:



From the graph analysis, it is known that the number of tasks will have an impact on the completion rate, that is, within a certain range of quantities, the completion rate almost remains unchanged, and after exceeding a certain value, the completion rate gradually decreases with the increase of the number of tasks. (It can be understood that the number of tasks is too large, the number of members is insufficient to complete the task.)

From the analysis of Figure 2, it is known that the low price of tasks will lead to the lack of enthusiasm of users and the low completion rate of tasks.

Fig. 3 shows that the completion rate of tasks increases with the increase of members'reputation value, and the fluctuation of completion rate decreases with the increase of reputation value, and the completion rate tends to be stable.

From Figure 4, it can be concluded that the increase of membership and the decrease of completion rate correspond to the unreasonable assignment of tasks due to the dense number of members.

Fig. 5 shows that when the quota is higher or lower, the completion rate will fluctuate dramatically. The analysis shows that when the quota is lower, the user's overall reputation value is lower and the

enthusiasm is worse. When the quota is higher, it means that the number of users is larger, and there is also the problem of unreasonable task allocation.

With the above methods, we may get unfinished tasks because of the high number of tasks, membership, low price, low reputation of members and low quota.

5.4 5.4 Evaluation of Model

1) Make the price attractive to the members where the task and membership are intensive or sparse in real situation, and at the same time, it will not cause too low price to cause looting. Therefore, the function model has practical significance.

2) The pricing model makes the member's incomplete rate higher, so the model needs to be modified and optimized.

The model is applied to the average price of a region, and the average price of goods is regarded as the price of all the regions. Therefore, the application of the model is limited and inaccurate.

6. Optimization of Functional Model

6.1 Optimization and Establishment of Functional Model

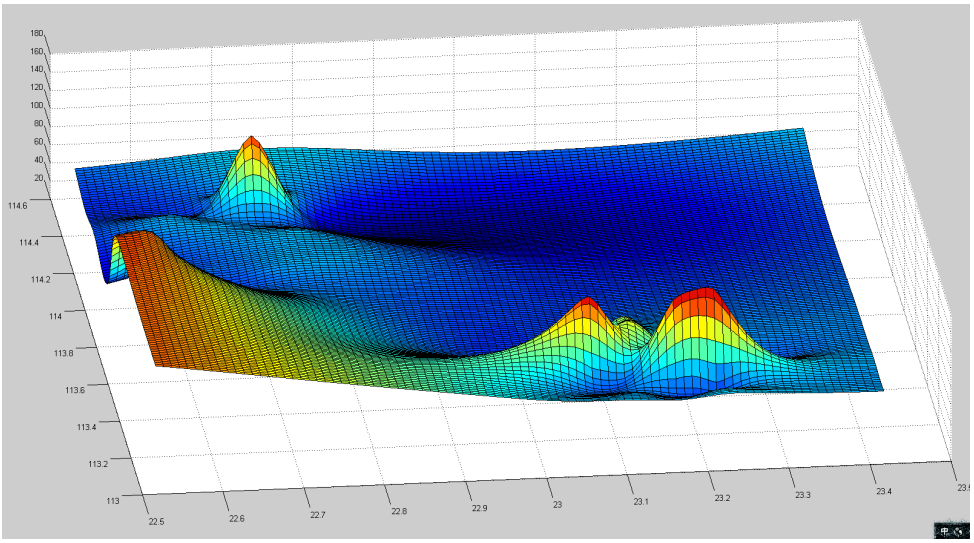
he purpose of this paper is to optimize the function, so that the task completion rate can be improved while the overall pointing remains basically unchanged. We focus on the parameters a, b, c, d, e, f, g and the influence of the contribution rate of factor analysis on the coefficient of function. These parameters are the weights of several independent variables on task pricing. At the same time, the coefficients are adjusted by the weights of contribution rate.

We can improve the completion rate by reducing the values of a and c, increasing the values of D and F and keeping the values of b, E and G in a certain range. At the same time, in order to improve the task completion rate of functional data, we use data with higher data completion rate to fit data. The following functions are obtained:

Y=-0.0048x12+-6.7752*10-6x22+0.0251x32+0.0251x1+0.0064x2+-0.7639x3+74.6179

6.2 Investigation of Functional Model

After getting the model 2, we take a new consideration of the data and compare it with the higher success rate part of the original data task. The data of R2 from the original model and R2 from the high success rate and model 2 are compared with the original data and the high success rate part. It can be seen from the pictures that the model can improve the fitting degree of the success rate. At the same time, the reduction of R2 of all data can lead to the conclusion that the original model needs to be optimized, which proves that the optimization of model 2 is of practical significance and practical consideration.



The new task pricing model is used to price the task. In order to evaluate its implementation effect, we use MATLB to analyze the function.

The 3D model effect map of function processing is obtained. At the same time, by comparing the model with the similar part of Task 1, we find that the task price is similar to the higher part of the previous task completion rate, which simply proves the feasibility of the Task Pricing Model.

7. Smmary

As a pricing model, the model can process data in a large amount of data and get the price decision of tasks under multi-factor control. Given the idea of this function, we can get a reasonable price by statistic the demand of both suppliers and suppliers in the same region. It can be used in this kind of app or other apps.

Improvement direction:

Due to the limited information in the title and the limited ability of the author, there must be some problems in this model. If we have enough information, we can improve on the following aspects:

1) Consideration of the specific location of the general dimension

The terrain of a specific area can be taken into account in the model. At the same time, the prosperity of the area and traffic congestion will also affect the pricing.

2) Examine the willingness of members around known tasks

The research of member's willingness can get the member's favorite project, which enables the project publisher to take the member's psychological factors as a function variable. Due to the limited information in the title and the limited ability of the author, there must be some problems in this model. If we have enough information, we can improve on the following aspects:

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