The purpose of the present invention is to provide a method for rating nutritional balance of meals, with which it is possible for the efforts of participants to be reflected. Provided is a food operator assistance system, characterized by having: a meal information input unit for collecting meal information, including nutritional intake levels of individual meals; and an index calculation unit which has standard value information describing proper per-nutrient levels of meals in terms of ranges, and that, using the nutritional intake levels as variables, calculates per-nutrient point scores as continuous values from a function that changes depending on the range of proper levels described in the standard value information, and calculates a nutritional balance point score in which the per-nutrient point scores are synthesized.
Fig. 1

Food Business Assistance Terminal

Storage Medium

Index Calculation Unit

Index Calculation Unit

Adequacy Ratio Calculation Unit

Score Calculation Unit

Business Plan Making Unit

Subject Extraction Unit

Target Condition Setting Unit

Recommended Menu Setting Unit

Evaluation Calculation Unit

Goal Achievement Determination Unit

Incentive Calculation Unit

Incentive Budget Calculation Unit

Meal Information Input Unit

Database

Meal Information Management Unit

Reference Value Information Management Unit

Goal Information Management Unit

Menu Information Management Unit

Participant Information Management Unit

Business Information Management Unit
### Fig. 2

<table>
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<tr>
<th>USER ID</th>
<th>MEAL ID</th>
<th>REGISTRATION TIME</th>
<th>MEAL PURPOSE</th>
<th>INTAKE MENU</th>
<th>SCORE</th>
<th>ACQUIRE INCENTIVE AMOUNT</th>
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<tr>
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<td>111</td>
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<td>DINNER</td>
<td>A, F, G</td>
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<td>5</td>
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### Fig. 3

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<th>BIRTH DATE</th>
<th>HEIGHT</th>
<th>WEIGHT</th>
<th>SEX</th>
<th>PHYSICAL ACTIVITY LEVEL</th>
<th>NUTRIENT TO BE SCORED</th>
</tr>
</thead>
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<td>User1</td>
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<td>I</td>
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<td>MALE</td>
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<td>ENERGY</td>
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<td>160</td>
<td>50</td>
<td>FEMALE</td>
<td>III</td>
<td>FOOD FIBER, SALT</td>
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<td>STORE ID</td>
<td>PROVISION DATE</td>
<td>MENU CODE</td>
<td>MENU NAME</td>
<td>UNIT PRICE</td>
<td>ENERGY (kcal)</td>
<td>PROTEIN (g)</td>
<td>LIPID (g)</td>
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<td>1</td>
<td>2013/1/30</td>
<td>A</td>
<td>PORK CUTLET ON RICE</td>
<td>500</td>
<td>655</td>
<td>22</td>
<td>25</td>
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<td>STORE ID</td>
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<td>TOTAL NUMBER OF PARTICIPANTS</td>
<td>SALES</td>
<td>SALES INCREMENT</td>
<td>INCENTIVE BUDGET DISTRIBUTION RATE</td>
<td>INCENTIVE BUDGET</td>
<td>AMOUNT OF INCENTIVE PROVIDED</td>
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<td>3000</td>
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<td>11500</td>
<td>10000</td>
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<td>USER ID</td>
<td>RECOMMENDATION DATE AND TIME</td>
<td>MEAL PURPOSE</td>
<td>RECOMMENDED MENU</td>
<td>TARGET SCORE</td>
<td>AMOUNT OF INCENTIVE PROVIDED</td>
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<tr>
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Fig. 8

START 801

PLANNING 802

EXECUTION 803

EVALUATION 804

END 805
Fig. 10

1001

START

1002

READ PARTICIPANT DATA

1003

EXTRACT SUBJECT

1004

SET GOAL

1005

EXTRACT RECOMMEND MENU

1006

PREDICT EFFECT

1007

END
1101

1109

1103

1105

1104

STORE: A
NUMBER OF PERSONS: 100
INCENTIVE BUDGET: 1000

EXTRACTION CONDITION 1
60 < SCORE
EXTRACTION CONDITION 2
350 < SALES PER CUSTOMER

SUBJECT GROUP

SALES PER CUSTOMER

SCORE

NEXT
Fig. 12

START

SELECT STORE

EXTRACT SUBJECT

SET GOAL

PREDICT EFFECT

END

GOAL SETTING

IMPROVE SCORE BY 5%

SET

STORE: A  NUMBER OF PERSONS: 100  INCENTIVE BUDGET: 1000

SUBJECT 1

SCORE

65

SALES PER CUSTOMER

TARGET VALUE

(65,350)

PREDICTED VALUE

(60,300)

AMOUNT OF INCENTIVE PROVIDED

10

RECOMMENDED MENU

MENU A + MENU B + MENU C

RE-EXTRACTION

TO NEXT SUBJECT

NEXT
Fig. 13

STORE: A  NUMBER OF PERSONS: 100  INCENTIVE BUDGET: 1000

BEFORE GOAL SETTING

SALES PER CUSTOMER

SCORE

1305

AVERAGE SCORE = +10
AVERAGE UNIT PRICE = +¥100
(SALES INCREASE ¥10000)

1302

AFTER GOAL SETTING

SALES PER CUSTOMER

SCORE

1303

1304

1305

1306

RESET GOAL

CONFIRM
Fig. 15

RECOMMENDED MENU PRESENTATION SCREEN

USER ID: Mr. ○ ○

TODAY'S RECOMMENDED MENU

MENU A + MENU B + MENU C

98 POINTS!

POINTS OBTAINABLE 100 pt
Fig. 16

START

ACQUIRE SCORE

ACQUIRE GOAL

HAS GOAL BEEN ACHIEVED?

Y

PROVIDE INCENTIVE

STORE DETERMINATION ON RESULT

END

N

DO NOT PROVIDE INCENTIVE

1601

1602

1603

1604

1605

1606

1607

1608
Fig. 17

1701
START

1702
COUNT SALES INCREMENT

1703
DETERMINE BUDGET DISTRIBUTION

1704
CALCULATE INCENTIVE ADDITION BUDGET

1705
STORE INCENTIVE BUDGET INFORMATION

1706
END
Fig. 18

FOOD BUSINESS ASSISTANCE TERMINAL

INPUT UNIT

OUTPUT UNIT

CPU

MEMORY

STORAGE MEDIUM

INDEX CALCULATION UNIT

ADEQUACY RATIO CALCULATION UNIT

SCORE CALCULATION UNIT

WEIGHT DETERMINATION UNIT

BUSINESS PLAN MAKING UNIT

SUBJECT EXTRACTION UNIT

TARGET CONDITION SETTING UNIT

RECOMMENDED MENU SETTING UNIT

EVALUATION CALCULATION UNIT

GOAL ACHIEVEMENT DETERMINATION UNIT

INCENTIVE CALCULATION UNIT

INCENTIVE BUDGET CALCULATION UNIT

MEAL INFORMATION INPUT UNIT

HEALTH INFORMATION COLLECTION UNIT

DATABASE

MEAL INFORMATION MANAGEMENT UNIT

REFERENCE VALUE INFORMATION MANAGEMENT UNIT

GOAL INFORMATION MANAGEMENT UNIT

HEALTH INFORMATION MANAGEMENT UNIT

MENU INFORMATION MANAGEMENT UNIT

PARTICIPANT INFORMATION MANAGEMENT UNIT

BUSINESS INFORMATION MANAGEMENT UNIT
Fig. 19

1. START
2. ACQUIRE NUTRITIONAL INTAKE
3. ACQUIRE REFERENCE VALUE
4. CALCULATE ADEQUACY RATIO OF EACH NUTRIENT
5. CALCULATE SCORE OF EACH NUTRIENT
6. PERFORM WEIGHTING
7. CALCULATE NUTRITIONAL BALANCE SCORE
8. END
| USER ID | DATE      | HIGH BLOOD PRESSURE | HIGH BLOOD SUGAR | LIPID ABNORMALITY | OVERWEIGHT | ...
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</tbody>
</table>

Fig. 20
Fig. 21

FOOD BUSINESS ASSISTANCE TERMINAL

103 INPUT UNIT

104 OUTPUT UNIT

105 CPU

106 MEMORY

STORAGE MEDIUM

109 BUSINESS PLAN MAKING UNIT

113 SUBJECT EXTRACTION UNIT

114 TARGET CONDITION CREATION UNIT

115 RECOMMENDED MENU SETTING UNIT

110 EVALUATION CALCULATION UNIT

116 GOAL ACHIEVEMENT DETERMINATION UNIT

117 INCENTIVE CALCULATION UNIT

118 INCENTIVE BUDGET CALCULATION UNIT

119 MEAL INFORMATION INPUT UNIT

1803 HEALTH INFORMATION INPUT UNIT

2107 UNIQUE MENU INFORMATION MANAGEMENT UNIT

2101

2103 USER TERMINAL

FOOD BUSINESS ASSISTANCE MANAGEMENT SERVER

108 INDEX CALCULATION UNIT

111 ADEQUACY RATIO CALCULATION UNIT

1801 SCORE CALCULATION UNIT

1802 WEIGHT DETERMINATION UNIT

1805

REFERENCE TERMINAL

REFERENCE VALUE UPDATE UNIT

TERMINAL AUTHENTICATION UNIT

DATABASE

120 MEAL INFORMATION MANAGEMENT UNIT

121 REFERENCE VALUE INFORMATION MANAGEMENT UNIT

122 GOAL INFORMATION MANAGEMENT UNIT

124 PARTICIPANT INFORMATION MANAGEMENT UNIT

125 BUSINESS INFORMATION MANAGEMENT UNIT

1804 HEALTH INFORMATION MANAGEMENT UNIT

1805 PARTICIPATING OPERATOR MANAGEMENT UNIT
Fig. 23

PM 17:00, O(MONTH)/O(DAY)/O(YEAR)

LIST OF RECOMMENDED DINNER MENUS

FOOD OPERATOR C
  MENU AA
  + MENU BB
  + MENU CC
  SCORE 88
  POINT 10

FOOD OPERATOR D
  MENU DD
  + MENU EE
  + MENU FF
  SCORE 85
  POINT 5

FOOD OPERATOR E
  MENU GG
  + MENU HH
  SCORE 90
  POINT 15

BREAKFAST: REGISTERED
LUNCH: REGISTERED
DINNER: NOT REGISTERED (REGISTRABLE)
Fig. 24

MEAL CONTENT REGISTRATION SCREEN
AM 8:00, [MONTH]/[DAY]/[YEAR]

BREAKFAST: REGISTRABLE
LUNCH: NOT REGISTERED (NON-REGISTRABLE)
DINNER: NOT REGISTERED (NON-REGISTRABLE)

PURPOSE OF MEAL
BREIEAKFAST

MENU 1
TOAST

MENU 2
MILK

MENU 3
APPLE

APPLY TEMPLATE
SET TEMPLATE
ADD MENU

REGISTER (SCORE)

78 POINTS!

BREAKFAST INFORMATION HAS BEEN REGISTERED
Fig. 25

START 2501

2502
CALCULATE SUPPLEMENTARY NUTRITIONAL VALUE

2503
SELECT SUPPLEMENTARY FOOD

1404
CALCULATE SCORE

1405
DETERMINE INCENTIVE

1406
DISPLAY DETERMINATION RESULT

1407
PRESENT NUTRITIONAL BALANCE

1408
STORE DATA

2504
END
DESCRIPTION

FOOD OPERATOR ASSISTANCE SYSTEM

TECHNICAL FIELD

5 [0001]

The present invention relates to a device which enables a continuous incentive plan on the basis of an index value of the nutritional balance of a meal.

10 BACKGROUND ART

[0002]

In recent years, the usability of a method using an incentive has drawn attention as a method for guiding the improvement of life habits. For example, as a general method using an incentive, Patent Document 1 discloses a method which sets a predetermined target value to the number of steps and provides a predetermined incentive when the number of steps satisfies the target value.

20 CITATION LIST

PATENT DOCUMENT

[0003]


25 SUMMARY OF THE INVENTION
PROBLEMS TO BE SOLVED BY THE INVENTION

[0004]

As in the technique disclosed in Patent Document 1, in the method which sets a predetermined target value to all of the users and provides a predetermined incentive, the achievement of goals varies depending on the users and it is difficult for all of the users to obtain the effect of improving life habits. When the target value is set to a small value in order to increase the number of users who can achieve goals, the number of users who achieve their goals increases and the amount of incentive provided increases. As a result, it is difficult to maintain the incentive system. In contrast, when the amount of incentive is reduced, it is difficult to motivate the users to improve their life habits.

[0005]

In particular, when attention is focused on the nutritional balance of meals, a certain food (for example, salad) is added to a certain food (for example, noodle) to adjust the nutritional balance. However, when a predetermined threshold value is set as in Patent Document 1, in some cases, the amount of intake of a certain nutrient does not exceed the threshold value, according to the menu at that time, even though one kind of food is added. In this case, even though the subject makes an effort to improve the nutritional balance, the effort is not reflected in evaluation. In addition, in
some cases, a meal is selected considering not only health but also a price. When the incentive is provided or when a nutritious meal is recommended, it is considered to be difficult to change the user's meal selection if the price of the meal is not considered.

[0006]

The invention has been made in view of the above-mentioned problems and an object of the invention is to provide a method of scoring the nutritional balance of a meal in which the effort of a participant can be reflected. In addition, an object of the invention is to provide a food operator assistance system which recommends a meal, considering the scoring method and a unit price. Furthermore, an object of the invention is to provide an operator assistance system which continuously provides an incentive to a wide range of subjects within budget, using the scoring method, to improve eating habits.

SOLUTIONS TO PROBLEMS

[0007]

According to an aspect of the invention, there is provided a food operator assistance system using a database that stores reference value information indicating a range of a proper amount of each nutrient in a meal. The food operator assistance system includes: a meal information input unit that
collects meal information including a nutritional intake of the meal; and an index calculation unit that calculates scores of each nutrient as continuous values, using a function which has the nutritional intake as a variable and varies depending on the range of the proper amount indicated by the reference value information, and adds the scores of each nutrient to calculate a nutritional balance score.

EFFECTS OF THE INVENTION

According to the invention, the score of the balance of a plurality of nutrients is calculated as a continuous value for the amount of intake of the nutrients, using a predetermined function, and is converted into an index. When a participant makes an effort to improve eating habits, it is possible to catch a very small change and evaluate the content of a meal.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagram illustrating an example of the structure of a food operator assistance system according to Embodiment 1 of the invention.

FIG. 2 illustrates an example of meal information managed by a meal information management unit.

FIG. 3 is a diagram illustrating an example of individual
attribute information managed by a participant information management unit.

FIG. 4 is a diagram illustrating an example of menu information managed by a menu information management unit.

FIG. 5 is a diagram illustrating an example of reference value information managed by a reference value information management unit.

FIG. 6 is a diagram illustrating an example of business information managed by a business information management unit.

FIG. 7 is a diagram illustrating an example of goal information managed by a goal information management unit.

FIG. 8 is a flowchart illustrating an example of the flow of the operation of the food operator assistance system.

FIG. 9 is a flowchart illustrating an example of the flow of a process of calculating a nutritional balance score.

FIG. 10 is a flowchart illustrating an example of the flow of a process of setting a target value and extracting a recommended menu.

FIG. 11 is a diagram illustrating an example of the food operator assistance system and illustrates a state in which a subject is extracted.

FIG. 12 is a diagram illustrating an example of the food operator assistance system and illustrates a state in which the goal of the subject is set and a recommended menu is extracted.
FIG. 13 is a diagram illustrating an example of the food operator assistance system and illustrates a state in which effect prediction is displayed after goal setting.

FIG. 14 is a flowchart illustrating an example of the flow of a process of presenting a recommended menu and an incentive.

FIG. 15 is a diagram illustrating an example of the food operator assistance system and illustrates a state in which a recommended menu is presented to the subject.

FIG. 16 is a diagram illustrating an example of the food operator assistance system and illustrates a state in which a nutritional balance score and an incentive are presented to the subject.

FIG. 17 is a flowchart illustrating an example of the flow of a process of counting sales information and updating an incentive budget.

FIG. 18 is a diagram illustrating an example of the structure of a food operator assistance system according to Embodiment 2 of the invention.

FIG. 19 is a flowchart illustrating an example of the flow of a process of performing weighting to calculate a nutritional balance score.

FIG. 20 is a diagram illustrating an example of health information managed by a health information management unit.

FIG. 21 is a diagram illustrating an example of the
structure of a food operator assistance system according to
Embodiment 3 of the invention.

FIG. 22 is a diagram illustrating an example of the flow
of the process of a plurality of food operators selecting the
subject's meal in cooperation with each other.

FIG. 23 is a diagram illustrating an example of the food
operator assistance system and illustrates a state in which
the menus recommended by the plurality of food operators are
presented to the subject.

FIG. 24 illustrates an example of a screen of a user
terminal on which the subject registers his or her prepared
meal, without using a food operator.

FIG. 25 illustrates an example of the flow of a process
of calculating a nutritional value and providing appropriate
supplementary food.

MODES FOR CARRYING OUT THE INVENTION

Embodiment 1

[0010]

Embodiment 1 of the invention will be described in detail
with reference to the drawings. Here, a food operator
assistance system will be described which performs a series of
a process of evaluating the content of the user's meal, a
process of providing an incentive, and a process of proposing
a desired meal to improve the nutritional balance of the user
and to increase food operator's sales. Here, it is assumed that the food operator is a company cafeteria operator and the user's meal is a lunch.

[0011]

FIG. 1 is a diagram illustrating an example of the structure of the food operator assistance system according to Embodiment 1 of the invention.

The food operator assistance system includes a food business assistance terminal 101 and a database 102.

The food business assistance terminal 101 is a computer device and includes an input unit 103, such as a keyboard, a mouse, or a touch panel, an output unit 104, such as a display, a CPU 105, a memory 106, and a storage medium 107.

[0012]

In addition, the food business assistance terminal 101 includes a meal information input unit 119 which receives user's meal information and stores the user's meal information in the database 102.

[0013]

The food business assistance terminal 101 further includes an index calculation unit 108 including an adequacy ratio calculation unit 111 which extracts reference value information indicating the content of the meals of each user stored in the database 102 and the proper range of a nutritional intake and calculates an adequacy ratio indicating
the degree of adequacy of nutritional intake with respect to a reference value and a score calculation unit 112 which calculates a score using the calculated adequacy ratio. In addition, the food business assistance terminal 101 further includes a business plan making unit 109 including a subject extraction unit 113 which extracts subjects from participant information stored in the database 102, a target condition setting unit 114 which sets the target value of each index, and a recommended menu extraction unit 115 which extracts menu information stored in the database 102 and extracts a combination of menus which enables the achievement of goals.

[0014]

The food business assistance terminal 101 further includes an evaluation calculation unit 110 including a goal achievement determination unit 114 which determines whether a goal has been achieved on the basis of the score information calculated by the index calculation unit 108, an incentive calculation unit 117 which calculates an incentive corresponding to the achievement of the goal, and an incentive budget calculation unit 118 which calculates the next budget on the basis of the amount of incentive provided.

[0015]

The database 102 includes a meal information management unit 120 which stores information about the content of the meal of each person and evaluation, a menu information
management unit 123 which stores the menu information of the meals to be provided, a participant information management unit 124 which stores individual attribute information indicating the state of each person, such as the birth date, height, weight, sex, and physical activity level of the user, a reference value information management unit 121 which stores reference value information indicating a reference value that is the proper amount of nutritional intake of each user, and a business information management unit 125 which stores, for example, sales information or incentive budget information.

[0016]

FIG. 2 is a diagram illustrating an example of the meal information managed by the meal information management unit 120. The meal information management unit 120 manages a user ID 201 for specifying a user, a meal ID 202 for specifying a meal, a registration time 203 indicating the time when information is registered, a meal purpose 204, a meal menu 205 indicating the content of a meal, a score 206 calculated by the index calculation unit 108, and an acquired incentive amount 207 which is given as the incentive calculated by the evaluation calculation unit 110. The meal information makes it possible to manage the information of meals according to the purpose of the user's meal. Therefore, it is possible to evaluate the life habits of the user in detail to provide the incentive, and to guide the user to improve the life habits.
FIG. 3 is a diagram illustrating an example of the individual attribute information managed by the participant information management unit 124. The participant information management unit 124 manages the user ID 201 for specifying a user, a use store ID 301 for specifying the store used by the user, a birth date 302, height 303, weight 304, sex 305, and a physical activity level 306. It is possible to calculate the reference value of estimated energy requirement or the amount of intake of various nutrients corresponding to a physique, age, and sex, using the individual attribute information.

FIG. 4 is a diagram illustrating an example of the menu information managed by the menu information management unit.

The menu information management unit manages nutrition items, such as a store ID 401 for specifying the place where a menu is provided, a provision date 402, a menu code 403 for specifying a menu, a menu name 404, a unit price 405, energy 406, protein 407, and lipid 408. It is possible to calculate the nutritional intake of the user's meal, using these information items.

FIG. 5 is a diagram illustrating an example of the reference value information managed by the reference value
information management unit 121.

[0021] The reference value information management unit 121 manages, for example, the user ID 201 for specifying a user, an energy lower limit 501 and an energy upper limit 502 which indicate the range of the reference value of each nutrient, a protein lower limit 503, and a protein upper limit 504. The reference value information makes it possible to evaluate the content of a meal, using the reference value optimized for each user.

[0022] FIG. 6 is a diagram illustrating an example of business information managed by the business information management unit 125.

[0023] The business information management unit 125 manages the store ID 401, a date 601, the total number of participants 602, sales 603, a sales increment 604, an incentive budget distribution rate 605 indicating the distribution rate of an incentive budget with respect to the sales increment, and an incentive budget 606. This information makes it possible to ensure an incentive budget from the sales increment 604 and to continuously provide an incentive within the range of the budget.

[0024]
FIG. 7 is a diagram illustrating an example of goal information managed by the goal information management unit 122. The goal information management unit 122 manages the user ID 201 for specifying a user, a recommendation date and time 701, the meal purpose 204, a recommended menu 702, and a target score 703. The goal information makes it possible to compare the score of the evaluation result of the content of the user's meal with a target score managed for each user and thus to effectively guide the user so as to improve eating habits.

[0025]

Next, an operation will be described in detail using a flowchart and a sequence diagram. First, an example of a process which proposes a nutritionally balanced meal to the user using the food business assistance terminal 101 and performs evaluation will be described with reference to the flowchart illustrated in FIG. 8. In a planning step 802, the score of a target nutritional balance is set on the basis of the previous meal information of the user and a menu capable of satisfying the score is extracted from the menu information management unit. Then, a recommended menu is made and is then stored in the goal information management unit 122. In an execution step 803, the recommended menu is presented to the user such that the user improves eating habits. In addition, meal information is acquired through the meal information
input unit 119 and is stored in the meal information management unit 120 and the score of a nutritional balance is calculated from information about the content of the meal. The calculated score is compared with the target score 703 and it is determined whether to provide an incentive. When the score is greater than the target score, an incentive is provided. In an evaluation step 803, in order to manage the incentive in the range of the budget, a value obtained by multiplying the sales increment 603 by the incentive budget distribution rate 605 is incorporated into the next incentive budget to update the incentive budget.

[0026]

Next, an example of a method for calculating the nutritional balance score used in the planning step 802 and the execution step 803 will be described using a flowchart. The nutritional balance score is calculated by the process illustrated in the flowchart of FIG. 9, using the reference value information managed by the reference value information management unit 121 and the meal information managed by the meal information management unit 120. First, in a nutritional intake acquisition step 902, the meal information of the subject is extracted from the meal information management unit 120 and a nutritional intake in a predetermined range is counted. For example, the nutritional intake of each nutrient related to lunch is counted. In a reference value acquisition
step 903, reference value information about the subject's lunch is extracted from the reference value information management unit 121. The reference value information and the meal information are processed to calculate the nutritional balance score. The nutritional balance score is defined by a function with a continuous value. In this way, it is possible to check in detail a change in the daily nutritional balance of the subject. The nutritional balance score is calculated by the following nutrient adequacy ratio calculation step 904, nutrient score calculation step 905, and nutritional balance score calculation step 906.

[0027]

In the nutrient adequacy ratio calculation step 905, the adequacy ratio is calculated using the lower limit and upper limit of the reference value determined for each nutrient item. The reference value is calculated from physique information registered in the participant information management unit. Therefore, for example, when the ideal weight of the user is set as registration information, it is possible to register a nutritional intake required for the ideal weight as the reference value. The adequacy ratio is calculated by a function which is defined according to the reference value. For example, when the upper limit and the lower limit are set to the reference value, the adequacy ratio is calculated by the following three functions. The adequacy ratio is
calculated considering the following cases: (1) a case in which the nutritional intake is less than the lower limit of the reference value; (2) a case in which the nutritional intake is in the range of the lower limit and the upper limit of the reference value; and (3) a case in which the nutritional intake is greater than the upper limit of the reference value. For example, the value of the adequacy ratio is defined in each case, as follows. An adequacy ratio calculation function is used which can calculate the adequacy ratio such that the adequacy ratio is less than 1 in the case (1), is 1 in the case (2), and is greater than 1 in the case (3). The adequacy ratio calculation function may be, for example, a linear function, a non-linear function, or a combination of the linear function and the non-linear function.

However, in this embodiment, the adequacy ratio calculation function is a monotonically increasing function. The adequacy ratio calculation function is an example when only the upper and lower limits of the reference value are set. When a plurality of reference values other than the upper limit and the lower limit are set, the adequacy ratio calculation function may be formed by a plurality of functions.

[0028]

In a score calculation step, each nutrient item is converted into a score on the basis of the adequacy ratio. The score is calculated by a score calculation function which
is a function of the adequacy ratio and has a continuous value. The score calculation function is, for example, a linear function which has the maximum value when the adequacy ratio is 1. However, the score calculation function may be, for example, a linear function, a non-linear function, or a combination of the linear function and the non-linear function. In the above-mentioned example, the adequacy ratio is 1 in the range of the case (2). However, the adequacy ratio is not limited to that value. In a nutritional balance score calculation step 906, the score which is calculated for each nutrient is converted into a nutritional balance score. The nutritional balance score can be calculated by averaging the scores of each nutrient. The type of nutrient included in the score is acquired from a scoring target nutrient 307 in the participant information management unit 124 and the average thereof is finally used as the score. The use of the nutritional balance score calculated by the above-mentioned process makes it possible to convert the nutritional balance of the nutrient in which the user is interested into a numerical value, to evaluate the nutritional balance, and to check a change in the nutritional balance in detail. According to this structure, when the user adds a menu for supplementing the lack of nutrients, it is possible to improve the score and to perform feedback. Therefore, it is possible to evaluate a minute change in the nutritional balance.
Next, an example of the process in each step of the flowchart illustrated in FIG. 8 will be described with reference to flowcharts and the drawings. FIG. 10 is a flowchart illustrating an example of the process performed in the planning step 802. First, in a participant data reading step 1002, participant information is extracted from the participant information management unit 124. At that time, it is possible to read the participant information for each use store, using the use store ID 301 as a key, and to make a plan. The use store is, for example, the store of the food operator. However, the use store may be any place to which the technique according to the invention can be applied. For example, the use store is a business place or a plurality of stores according to circumstances.

FIG. 11 illustrates an example of a screen on which a score narrowing-down condition or a sales-per-customer narrowing-down condition is designated to narrow down the subjects in a subject extraction step 1003. For example, a target store, the number of participants, and an incentive budget are displayed in a status display 1109. The flow of screen transition is displayed in a process flow display 1102. Here, feature amounts, such as food ingredients, a recipe, and a price, are extracted from the intake history of each person.
and the probability of each of the extracted feature amounts being selected is calculated. Then, the tendency of each participant is analyzed and a menu which is considered to be selected by the participant from the menus to be provided or a combination of the menus is automatically extracted on the basis of the tendency. The sum of the unit prices of the extracted menus is calculated as sales per customer. In addition, the nutritional balance score is calculated using information about the nutritional values of each menu, such as energy, protein, and lipid. The calculated value is displayed in a subject group display 1106. The predicted sales per customer and the nutritional balance score of each participant are displayed as predicted values 1109. Among the participants, the participants who are considered to have a high intervention effect can be narrowed down, using a score extraction condition input field 1103 and a sales-per-customer condition input field 1104. When conditions are input and an extraction execution button 1105 is pressed, a subject narrowing-down display 1107 is displayed. When a next process transfer button 1110 is pressed, the display is transferred to a screen for performing goal setting for the extracted subject.

[0031]

FIG. 12 illustrates an example of the screen for performing the goal setting in a goal setting step 1004. When all of targets are selected in a goal setting field 1203 and a
setting execution button 1204 is pressed, a recommended menu extraction step is performed and target values for each subject are set by a recommended menu setting unit 115. The recommended menu setting unit 115 extracts a menu, which is combined with a menu that is most likely to be selected by the subject and increases the score, from the menu information management unit 123 on the basis of the past trend of the meals and makes a recommended menu. A nutritional balance score, sales per customer, and the amount of incentive to be provided in the recommended menu are displayed in a goal information display 1202. A set target value 1205 and a predicted value 1108 are displayed in the goal information display 1202 such that a variation can be checked. The recommended menu is displayed in a recommended menu display 1206. When the goal information display 1202 is checked and the recommended menu needs to be changed, the user presses a re-extraction button to extract a menu which has the second highest probability of being selected and resets the target value. When the next process transfer button 1110 is pressed, the display is transferred to a screen for effect prediction. [0032]

Then, in an effect prediction step 1006, effect prediction is counted and displayed on the basis of the information set in the goal setting step 1004. FIG. 13 illustrates an example of an effect prediction display screen.
It is possible to check how the distributions of the sales per customer and the score before goal setting are changed by the goal setting. For example, an average score reference line 1304 and an average sales-per-customer reference line 1305 which indicate the score and the sales per customer, respectively, are illustrated in a distribution chart before goal setting and a distribution chart after goal setting and make it possible to easily compare changes in all of the scores and the sales per customer. In addition, the average score and the average price can be numerically referred to by a summary display 1306. When the result of the effect prediction is insufficient, the user presses a goal resetting button 1307 to return to the goal setting step 1004. When the set goal is confirmed, the user presses a goal confirmation button 1308 to confirm the target. When the goal is confirmed, goal information is stored in the goal information management unit.

[0033]

Next, the operation in the execution step 803 will be described in detail with reference to a flowchart. FIG. 14 is a flowchart illustrating an example of the process performed in the execution step 803. First, in a recommended menu presentation step 1402, the information stored in the goal information management unit is extracted and presented to the subject.
FIG. 15 illustrates an example of a recommended menu presentation screen 1501 for presenting the recommended menu to each subject. The subject can refer to the recommended menu using the food business assistance terminal 101. The recommended menu is displayed in a recommended menu display field 1502. The nutritional balance score of the recommended menu is displayed in a score display field. The amount of incentive which can be obtained is displayed in an incentive display field 1504. The subject can be aware of a menu, which has a better nutritional balance than a usual menu and can receive an incentive, and can select the menu, with reference to the recommended menu and the obtained incentive. The recommended menu may be presented by, for example, a method which transmits mail to the subject or a method which presents the recommended menu on a Web screen through the Internet, in addition to the above-mentioned method. Then, in a meal information collection step 1403, the meal information is collected. The meal information is received from the input unit 103 and the meal information input unit 119 stores the received meal information in the meal information management unit 120. The meal information may be automatically collected from, for example, a payment terminal which is connected to the network. In a score calculation step 1404, the index calculation unit 108 extracts the meal information of the
subject from the meal information management unit 120 and
calculates a score according to the flowchart illustrated in
FIG. 9. In this way, a recommended menu is made, using the
above-mentioned scoring method and information about the unit
price of a meal. Therefore, it is possible to propose a
recommended menu which has a good nutritional balance and is
easily selected by the participant.

[0035]

FIG. 16 illustrates the flow of an incentive
determination process of determining whether to provide an
incentive. First, in a score acquisition step 1602, the score
of the subject is acquired from the meal information
management unit. Then, in a threshold value acquisition step
1603, goal information is acquired from the goal information
management unit 122. In a goal achievement determination step
1604, it is determined whether the score satisfies a target
value. When the score satisfies the target value, information
about a predetermined amount of incentive is extracted from
the goal information management unit 122 in an incentive
providing step 1605. In a determination result storage step,
the incentive information is stored in the acquired incentive
amount 207 of the meal information management unit 120. When
the score does not satisfy the target value, the amount of
incentive is set to 0 and the incentive information is stored
in the acquired incentive amount 207 of the meal information
management unit 120 in an incentive non-providing step 1606.

Next, an operation in the evaluation step 804 will be described in detail with reference to a flowchart. FIG. 17 is a flowchart illustrating an example of the process in the evaluation step 804. After the business hours or at any time during the business hours (for example, after a lunch service time), the evaluation step 804 is performed. First, in a sales increment counting step 1702, a difference value between a sales predicted value obtained by counting and calculating the predicted value of the sales per customer which have been calculated from the menu selection prediction in the goal setting step 1004 and the actual sales is calculated as a sales increment R. In a budget distribution determination step 1703, the incentive budget calculation unit 116 determines an incentive addition budget \( I_{add} \) at a predetermined rate from the sales increment. For example, the incentive budget distribution rate 605 which is a variable indicating the distribution rate is \( r \) \((0 \leq r \leq 1)\). The value of \( r \) is determined on the basis of the history of the total number of participants 602 or the sales 603, sales prediction, and the balance of the current incentive budget. In an incentive addition budget calculation step 1704, the incentive addition budget \( I_{add} \) which is distributed with respect to the sales increment R is calculated as follows: \( I_{add} = r \times R \). In an
incentive budget information storage step 1705, the calculated
incentive addition budget is \( I_{\text{add}} \) and the balance of the
incentive budget at that time is \( I_{\text{rem}} \). When a previous
incentive budget 606 is \( I_{\text{pre}} \) and the amount of incentive 607
provided on the day is \( I_{\text{out}} \), \( I_{\text{rem}} \) is calculated as follows:
\[ I_{\text{rem}} = I_{\text{pre}} - I_{\text{out}}. \]
When the next incentive budget 606 is \( I \), \( I \) is
calculated as follows:
\[ I = I_{\text{add}} + I_{\text{rem}}. \]
Then, the calculated
value of \( I \) is stored in the business information table. When
the update of the incentive budget is completed, the process
ends. The incentive may be, for example, points or cash
equivalents. According to the above-described embodiment, a
value obtained by dividing the incentive budget by the number
of subjects is used as the amount of incentive per person.
Therefore, even when all of the subjects achieve their goals,
the total amount of incentive does not exceed the budget. In
addition, when the goal is achieved, sales increase and the
incentive budget is ensured from the sales increment 604.
Therefore, it is possible to circularly ensure the incentive
budget. As described above, the incentive is provided on the
basis of the score and the amount of incentive provided is set
in the range of an increase in the unit price by the proposal
of the recommended menu. Therefore, it is possible to operate
an incentive system which is sustainable in the improvement of
eating habits.

Embodiment 2
Embodiment 2 of the invention will be described in detail with reference to the drawings. Here, a food business assistance terminal 101 will be described which weights a specific nutrient according to the health conditions of a subject and evaluates a nutritional balance. Here, the result of health diagnosis is assumed as health conditions.

FIG. 18 is a diagram illustrating Embodiment 2.

Embodiment 2 includes a weight determination unit that weights a specific nutrient using health information, a health information input unit that collects the health information of a user, and a database 102 including a health information management unit 1803 that manages the health information. FIG. 15 is a diagram illustrating an example of the health information managed by the health information management unit 1803. Information related to health, such as a user ID 201 for specifying a user, a date 2001, high blood pressure 2002, high blood sugar 2003, lipid abnormality 2004, and overweight 2005, is recorded in a health information table. A weight determination unit 1801 extracts the health information from the health information management unit 1803 and determines a weight $w_i$ for each nutrient.

FIG. 19 is a flowchart illustrating a method which
weights each nutrient and calculates a score. In a weighting step after a nutrient score calculation step, the weight \( w_1 \) is set to the calculated score of each nutrient. A weight determination unit calculates the weight \( w_1 \) on the basis of the result of health diagnosis. For example, when the result of the health diagnosis indicates an abnormal value, data is input to a corresponding health condition field in the health information table illustrated in FIG. 20. For example, in the case of high blood pressure, "present" is recorded in the high blood pressure 2001.

[0040]

An arbitrary positive value is set as the initial value of the weight \( w_1 \). A predetermined value is added to the weight \( w_1 \) of a nutrient corresponding to an abnormal item among the health condition items recorded in the health information table to perform weighting. On the contrary, a method may be used which reduces the weight \( w_1 \) of a nutrient corresponding to a normal item. In a nutritional balance score calculation step, a nutritional balance score considering the weight \( w_1 \) is calculated. In order to consider the weight \( w_1 \), the nutritional balance score is calculated by a weighted average using a score \( P_i \) for each nutrient and the weight \( w_1 \) for \( P_i \), which is represented by the following expression:

\[
\text{(Expression 1)} \quad P_i = \sum_{x=1}^{n} \frac{P_i w_j}{w_j}
\]
(where \( n \) is the number of nutrient items).

Therefore, the score is calculated considering the ratio of a specific nutrient. For example, in the case of the subject who has high blood pressure, a salt intake is greatly reflected in the score such that the subject is strongly aware of nutrients related to the health conditions. Therefore, it is possible to evaluate the nutritional balance in which the health conditions are reflected and to recommend the menu optimized for each person.

Embodiment 3

Embodiment 3 of the invention will be described in detail with reference to the drawings. Here, the method in which a plurality of food operators use information stored in a database 102 will be described. Here, it is assumed that the food operators include retailers who handle food, such as the owners of general supermarkets and convenience stores. A plurality of food operators cooperate with each other such that it is possible to comprehensively evaluate the nutritional balance of the subject.

FIG. 21 is a diagram illustrating Embodiment 3. A food operator assistance system includes a food business assistance management server 2104, a food business assistance terminal
2101, and a database 2108, which enables a plurality of food operators to use the food operator assistance system in cooperation with each other. The food business assistance management server 2104 and the food business assistance terminal 2101 are connected to each other by an Internet 2103. The food business assistance management server 2104 includes an authentication management unit 2106 which authenticates the food business assistance terminal 2101, an information collection unit which receives information from each food business assistance terminal 2101 and stores the information in the database 2108, an index calculation unit 108 which extracts meal information and reference value information from a meal information management unit 120 and a reference value information management unit 121 of the database 2108, respectively, and calculates a score, and a reference value update unit 2102 which calculates a reference value of the nutritional intake of the subsequent meals from the amount of previous nutrients and stores the reference value in the reference value information management unit 121.

The food business assistance terminal 101 of each food operator includes a business plan making unit, an evaluation calculation unit, a meal information input unit 119, a health information input unit 1803, and a unique menu information management unit 2107. The food business assistance terminal
101 can store information related to the subject in the
database 2108 of the food business assistance management
server 2104 through the Internet 2103.

[0045]

A method in which a plurality of food operators support
the selection of a meal with better nutritional balance in
cooperation with each other, using daily meal information of
the subject, will be described with reference to the flowchart
illustrated in FIG. 22. First, in a recommended breakfast
menu presentation step 2202, a plurality of food operators who
provide breakfast present a recommended menu and the score and
incentive to be obtained. The subject selects a food operator
and a menu with reference to the recommended menu and has a
meal. The food operator transmits the content of the
subject's meal and the user ID 201 to the food business
assistance management server 2104 using the food business
assistance terminal 2101 during payment for the meal and the
information is stored in the database 2108. In a breakfast
registration state check step 2203, it is determined whether
breakfast information has been registered. When it is
determined that the breakfast information has been registered,
the score of the breakfast is calculated in a breakfast score
calculation step 2204. When the score satisfies a
predetermined target value, an incentive is provided. In a
breakfast information registration step, the breakfast
information and incentive information are stored in the meal information management unit 124. In a lunch/dinner reference value data update step 2206, in order to make up the score which has not been obtained from the breakfast with the remaining meals, the nutritional intake of the breakfast is subtracted from a daily reference value to determine a reference value for lunch and a reference value for dinner. For example, when a nutritional intake at breakfast is insufficient, for example, a process of increasing the reference values of lunch and dinner and supplementing the nutritional intake is performed to update the reference values. In a recommended lunch menu presentation step 2207, the food operator recommends a menu on the basis of the updated reference value data.

The subject selects a menu with reference to the recommend menu and is provided with a meal from the food operator. The subject is authenticated by the same method as that in the breakfast and meal information is stored in the database 2108. In a lunch registration state check step 2208, when it is checked that lunch information has been registered, a score is calculated in a lunch score calculation step 2209. When the score satisfies a predetermined target value, an incentive is provided. In a lunch information registration step 2210, lunch information and incentive information are
stored in the meal information management unit 124.

[0047]

In a dinner reference value information update step 2211, in order to make up the score which has not been obtained from the breakfast and the lunch with the remaining meals, the nutritional intake of the breakfast and the lunch is subtracted from a daily reference value to determine a reference value for dinner. For example, when the nutritional intake at breakfast and lunch is insufficient, for example, a process of increasing the reference value of dinner and supplementing the nutritional intake is performed to update the reference values. In a recommended dinner menu presentation step 2212, the menu set by the recommended menu setting unit 115 is recommended on the basis of the updated reference value information. The subject selects a menu with reference to the recommend menu and is provided with a meal from the food operator. The food business assistance terminal 2101 stores the meal information of the subject in the database 2108 through the food business assistance management server 2104, on the basis of the user ID 201 of the subject.

[0048]

The meal information is stored in the database 2108. In a dinner score calculation step 2214, a score is calculated. When the score satisfies a predetermined target value, an incentive is provided. In a dinner information registration
step 2215, dinner information and incentive information are stored in the meal information management unit 124.

[0049]

FIG. 23 illustrates an example of a plural-food-operator-menu recommendation screen 2301 on which a plurality of food operators present recommended menus to the subject. The registration state of the meal information stored in the meal information management unit 120 is reflected in a meal information registration state display 2302. Information indicating a provider, detailed menu information, a score which is expected to be acquired, and an incentive are displayed in a recommended menu display field 2303. More detailed information, for example, information about the nutritional value of each menu, the price of each menu, other recommended menus, and store information may be displayed. This screen enables the subject to know a menu with a desired nutritional intake at a glance through the score. The subject is motivated to select a menu with a high nutritional balance score among the presented menus. Therefore, the subject can select better meal.

[0050]

In Embodiment 3, in addition to the information of the meals provided by the food operators, information of meals prepared at home may be registered. FIG. 24 illustrates an example of a screen on the user terminal 2102 when not the
food operator but the subject registers his or her prepared meal. The screen includes, for example, a meal purpose input field 2402, a menu information registration field 2403, a meal information registration status 2302, a button 2404 for applying a template of a combination of the previously registered menus, a template setting button 2405, a menu information registration field addition button 2406, a menu information registration button 2407, and a score display field 2408. When a meal is registered, the purpose of a meal is selected in the meal purpose input field 2402 and a menu that he or she had is selected in the menu information registration field. When the menu information registration button 2407 is pressed, meal information is registered in the meal information management unit 120. When the subject presses a menu information registration button, data is registered in the score display field 2408. Then, the index calculation unit 108 calculates a score and the calculation result is displayed on the screen.

According to the above-described embodiment, a plurality of food operators cooperate with each other to improve the daily nutritional balance of the subject's meal.

Embodyment 4

[0051]

Embodyment 4 of the invention will be described in detail with reference to the drawings. Here, a food business
assistance terminal is used in order to supplement nutrients which have not been taken from meals. The subjects have different physiques and there is a great difference in the reference value of a nutritional intake between the subjects. Therefore, in some cases, it is difficult for the food operators to provide a menu with a desired nutritional value to all of the subjects. Supplementary food which makes up a nutritional value such that the nutritional balance score is the maximum is provided to the subject who is not provided with a menu with a desired nutritional value.

[0052]

FIG. 25 illustrates the flow of a process which calculates a nutritional value and provides appropriate supplementary food. In a supplementary nutritional value calculation step 2502, a nutritional value for maximizing the nutritional balance score of a meal is calculated. For example, when the nutritional balance score of a meal is 60 points out of 100, a difference value between the nutritional values which can improve the nutritional balance score by a maximum of 40 points is calculated. Then, in a supplementary food selection step 2503, supplementary food which satisfies a nutritional value for increasing the score is selected. There are many types of supplementary food and the supplementary food is composed of a plurality of nutrients. Therefore, in order to satisfy a target nutritional value, it is necessary
to combine some types of supplementary food to perform optimization calculation. For example, a method which maximizes an objective function under a given constraint condition, such as linear programming, can be used as the optimization calculation. Here, the constraint condition is the nutritional value and the objective function is the nutritional balance score. In this case, it is possible to obtain a combination of desired supplementary foods at a high speed.

At that time, the reference values used to calculate the nutritional balance score are replaced with the upper limit, the lower limit, and the calculated difference value between the nutritional values and then the nutritional balance score is calculated. In a score calculation step 1404, a score is calculated using the nutritional value including the meal menu and the supplementary food. In an incentive determination step 1405, it is determined whether to provide an incentive. In a determination result display step 1406, the determination result is displayed. In a nutritional balance presentation step 1407, the final nutritional balance is presented. In a data storage step 1408, meal information is updated and stored in the meal information management unit 120. According to the above-described embodiment, since the optimization calculation is performed using the nutritional balance score, it is
possible to easily select supplementary food and to reduce sales costs or accelerate the improvement of the nutritional balance of the subject.

Reference Signs List

5  [0054]

101  Food business assistance terminal
102  Database
103  Input unit
104  Output unit
105  CPU
106  Memory
107  Storage medium
108  Index calculation unit
109  Business plan making unit
110  Evaluation calculation unit
111  Adequacy ratio calculation unit
112  Score calculation unit
113  Subject extraction unit
114  Target condition creation unit
115  Recommended menu setting unit
116  Goal achievement determination unit
117  Incentive calculation unit
118  Incentive budget calculation unit
119  Meal information input unit
120  Meal information management unit
121 Reference value information management unit
122 Goal information management unit 122
123 Menu information management unit
124 Participant information management unit
125 Business information management unit
201 User ID
202 Meal ID
203 Registration time
204 Meal purpose
205 Intake menu
206 Score
207 acquired incentive amount
301 Use store ID
302 Birth date
303 Height
304 Weight
305 Sex
306 Physical activity level
401 Store ID
402 Provision date
403 Menu code
404 Menu name
405 Unit price
406 Nutritional value
407 Energy
408  Protein
409  Lipid

501  Daily reference value (lower limit) of energy
502  Daily reference value (upper limit) of energy

503  Daily reference value (lower limit) of protein
504  Daily reference value (upper limit) of protein

601  Date

602  Total number of participants
603  Sales

10  604  Sales increment

605  Incentive budget distribution rate

606  Balance of incentive budget

607  Amount of incentive provided

701  Recommendation date and time

15  702  Recommended menu

703  Target score

802  Planning step

803  Execution step

804  Evaluation step

20  902  Nutritional intake acquisition step

903  Reference value acquisition step

904  Nutrient adequacy ratio calculation step

905  Nutrient score calculation step

906  Nutritional balance score calculation step

25  1001 Participant data reading step
1002 Subject extraction step
1003 Goal setting step
1004 Recommended menu extraction step
1005 Effect prediction step

5
1101 Extraction condition setting screen
1102 Display of process flow
1103 Score extraction condition input field
1104 Sales-per-customer condition input field
1105 Extraction execution button

10
1106 Subject group display
1107 Subject narrowing-down display
1108 Predicted value
1109 Status display
1110 Next process transfer button

15
1201 Goal setting screen
1202 Goal information display
1203 Goal setting field
1204 Setting execution button
1205 Target value

20
1206 Recommended menu display
1207 Re-extraction button
1208 Next subject transfer button

1301 Effect prediction display screen
1302 Subject distribution before goal setting

25
1303 Subject distribution after goal setting
1304 Average score reference line
1305 Average sales-per-customer reference line
1306 Summary display
1307 Goal resetting button
1308 Goal confirmation button
1402 Recommended menu presentation step
1403 Meal information collection step
1404 Score calculation step
1405 Incentive determination step
1406 Determination result display step
1407 Nutritional balance presentation step
1408 Data storage step
1501 Recommended menu presentation screen
1502 Recommended menu display field
1503 Score display field
1504 Incentive display field
1602 Score acquisition step
1603 Goal acquisition step
1604 Goal achievement determination step
1605 Point providing step
1606 Point non-providing step
1607 Determination result storage step
1702 Sales increment counting step
1703 Budget distribution determination step
1704 Incentive budget calculation step
1705 Incentive budget information storage step
1801 Weight determination unit
1802 Health information input unit
1803 Health information management unit

5
1901 Weighting step
2001 State of high blood pressure
2002 State of high blood sugar
2003 State of lipid abnormality
2004 State of overweight

10
2101 Unique menu information management unit
2102 Reference value update unit
2103 User terminal
2104 Internet
2202 Recommended breakfast menu presentation step

15
2203 Breakfast registration state check step
2204 Breakfast score calculation step
2205 Breakfast information registration step
2206 Lunch/dinner reference value information update step
2207 Recommended lunch menu presentation step

20
2208 Lunch score calculation step
2209 Lunch registration state check step
2210 Lunch score calculation step
2211 Lunch information registration step
2212 Dinner reference value information update step

25
2213 Dinner registration state check step
2214 Dinner score calculation step
2215 Dinner information registration step
2301 Plural-food-operator-menu recommendation screen
2302 Meal information registration state display
2303 Recommended menu list display
2401 Meal information registration screen
2402 Meal purpose registration field
2403 Menu registration field
2404 Template application button
2405 Template addition button
2406 Menu addition button
2407 Menu information registration button
2408 Score display field
2502 Supplementary nutritional value extraction step
2503 Supplementary food selection step
CLAIMS

1. A food operator assistance system using a database that stores reference value information indicating a range of a proper amount of each nutrient in a meal, comprising:
   a meal information input unit that collects meal information including a nutritional intake of the meal; and
   an index calculation unit that calculates scores of each nutrient as continuous values, using a function which has the nutritional intake as a variable and varies depending on the range of the proper amount indicated by the reference value information, and adds the scores of each nutrient to calculate a nutritional balance score.

2. The food operator assistance system according to claim 1, further comprising:
   a target condition setting unit that sets a target value of the nutritional balance score, using the nutritional balance score calculated by the index calculation unit and a unit price of the meal,
   wherein the meal information input unit receives information about the unit price of the meal.

3. The food operator assistance system according to claim 2, further comprising:
   a menu information management unit that manages menu
information in which the amount of nutrition and the unit price of a meal menu to be provided are described; and

a recommended menu setting unit that extracts a menu to be provided from the menu information management unit, using the nutritional balance score calculated by the index calculation unit and the unit price of the meal.

4. The food operator assistance system according to claim 2, further comprising:

a business information management unit that manages an incentive budget, an incentive budget distribution rate, and sales prediction information; and

an incentive budget calculation unit that calculates a sales increment from a difference between sales, which are the sum of the unit prices input from the meal information input unit, and the sales prediction information and uses an amount of money obtained by multiplying the sales increment by the incentive budget distribution rate as an amount of money added to the incentive budget.

5. The food operator assistance system according to claim 4, further comprising:

a health information input unit that receives health information indicating health conditions of each user and stores the health information in a health information
management unit of a database,

wherein the index calculation unit weights the score of a related nutrient which is calculated by the index calculation unit, on the basis of the health information recorded in the health information management unit, and calculates the score in which the weight is reflected as one index.

6. The food operator assistance system according to claim 5, further comprising:

10 a reference value update unit that acquires previous meal information from the meal information recorded in the meal information management unit and resets the reference value of the next meal.

7. The food operator assistance system according to claim 2, further comprising:

15 a target condition setting unit that calculates an amount of supplementary nutrition which is required to improve the nutritional balance score of the provided meal menu; and

20 a recommended menu setting unit that sets a combination of supplementary foods satisfying the amount of supplementary nutrition.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
G06Q50/22(2012.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06Q50/22

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2013
Kokai Jitsuyo Shinan Koho 1971-2013 Toroku Jitsuyo Shinan Koho 1994-2013

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A A</td>
<td>JP 5-250423 A (Kawasaki Steel Corp.), 28 September 1993 (28.09.1993), entire text; all drawings (Family: none)</td>
<td>1-7</td>
</tr>
</tbody>
</table>

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
“A” document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search
16 July, 2013 (16.07.13)

Date of mailing of the international search report
23 July, 2013 (23.07.13)

Name and mailing address of the ISA
Japanese Patent Office

Authorized officer

Telephone No.

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