

METHOD AND SYSTEM FOR PREDICTING COMMERCIAL STORE PREMIUM, ARRANGING TRANSACTION AND MANAGING RIGHT OF PLEDGE

TECHNICAL FIELD

The following description relates to technology for predicting a commercial store premium and arranging a transaction.

RELATED ART

A premium refers to a non-refundable amount additionally paid when renting a commercial store, in consideration of not only a value of the rented commercial store itself but also surrounding market price and economic advantages.

This premium is paid according to trading practices and there is no legal protection for the premium at all. The premium is often set regardless of the actual value of the commercial store itself. Since there is no set standard, commercial tenants have no choice but to engage in unstable transactions.

Therefore, since a premium fairly paid at a correct value is worth protecting, making a correct evaluation of the premium is very important in terms of protecting a tenant's valuable property.

As an example of technology for evaluating a commercial store premium, technology for evaluating a commercial store premium through a database search in the Internet is disclosed in Korean Patent Laid-Open Publication No. 10-2002-0007942 (published on January 29, 2002).

DETAILED DESCRIPTION

TECHNICAL SUBJECT

An example embodiment may introduce a system in which a value is guaranteed in a public sector, such as a security deposit, into a premium market.

An example embodiment may standardize and quantify calculation criteria for a

commercial store premium to predict a change in a value thereof.

An example embodiment may provide the trend in premium change for a single commercial store by recording premium transaction details using an irreversible method.

An example embodiment may provide a general-purpose platform for convenience and transparency in commercial store premium transactions.

SOLUTION

Provided is a premium transaction method performed by a computer system, the premium transaction method including predicting, by at least one processor included in the computer system, a premium for a commercial store based on information related to the commercial store; and providing, by the at least one processor, the premium as a sales reference price for a transaction of the commercial store.

According to an aspect, the predicting may include predicting the premium for the commercial store through a machine learning model using basic commercial store information that includes a location and an area of the commercial store and a security deposit and commercial flow information that includes a change in commercial district indicator and trend in sales information.

According to another aspect, the premium transaction method may further include recording, by the at least one processor, information necessary for premium prediction and transaction of the commercial store in a blockchain-based transaction ledger.

According to still another aspect, the predicting may include training an artificial intelligence (AI)-based machine learning model using data by commercial district; periodically predicting the premium by reflecting change details in commercial elements over time to the machine learning model; and recording periodic premium prediction details in a blockchain-based transaction ledger.

According to still another aspect, the predicting may further include verifying anomaly

for a newly registered premium based on information recorded in the transaction ledger.

According to still another aspect, the premium transaction method may further include providing, by the at least one processor, a loan transaction that takes the premium as collateral based on a blockchain smart contract.

According to still another aspect, the providing of the loan transaction may include calculating a loanable amount using periodic premium prediction details recorded in a blockchain-based transaction ledger; and establishing a right of pledge on the premium and executing a loan for the loanable amount when an investment amount by an investor reaches the loanable amount.

EFFECT

According to example embodiments of the present invention, it is possible to reduce unnecessary social cost and to favorably improve startup conditions for small business owners, through a platform that predicts a commercial store premium through standardized and quantified criteria and transparently records transaction details of the commercial store premium.

According to example embodiments of the present invention, it is possible to arrange a self-employed market in which small business owners may readily enter and exit, while improving the liquidity of premium sales market, and to further provide a loan market that allows fund to be raised using the premium as collateral.

BRIEF DESCRIPTION OF DRAWINGS

FIGS. 1 and 2 illustrate examples of explaining a process of implementing a premium prediction model according to an example embodiment of the present invention.

FIGS. 3 and 4 illustrate examples of explaining a loan transaction process using a premium according to an example embodiment of the present invention.

FIG. 5 illustrates an example of explaining an automated decision variable updating

process for predicting a premium according to an example embodiment of the present invention.

FIG. 6 is a flowchart illustrating a detailed procedure for premium prediction and transaction according to an example embodiment of the present invention.

FIG. 7 is a flowchart illustrating a detailed procedure for loan transaction according to an example embodiment of the present invention.

FIG. 8 is an example of a service screen linkable to a premium transaction platform according to an example embodiment of the present invention.

FIG. 9 is a block diagram illustrating an example of a computer system according to an example embodiment of the present invention.

BEST MODE

Hereinafter, example embodiments of the present invention will be described in detail with reference to the accompanying drawings.

The example embodiments of the present invention relate to technology for supporting a prediction and transaction arrangement of commercial store premium and pledge management.

The example embodiments including those specifically disclosed herein may provide a general-purpose platform for convenience and transparency in a public sector in association with a commercial store premium.

A premium contract refers to a contract that transfers or uses business facilities, equipment, customers, credit, business know-how, business advantages from a location of a commercial building, and the like, all or individually and pays for it.

This premium includes a premium for a tangible element calculated by a principled cost method and a premium for an intangible element calculated by a gross income multiplier (GIM) method among a yield capitalization method and a transaction case comparison method.

The premium may include a facility premium that represents a compensation for

investment in equipment, a local premium that represents a compensation based on compensation regulations rather than ownership under the Land Compensation Act as leasehold valuation that is a compensation for transferring the right to rent, and a business premium that represents a compensation for business right that is transferred as a whole along with the right to rent the store. In the theory of appraisal, conceptual separate appraisal into the value of the right to rent and the value of the business right may be performed. In reality, appraisal of premium excluding a facility premium may be performed with a sum of the present value of a store's total expected excess operating profits.

A study is being conducted to calculate a commercial store premium by performing a regression analysis on the commercial store premium based on a store floor, a total number of building floors, monthly sales, facility cost, and operating period and by assigning representativeness to monthly sales.

Unlike rental contracts, there is no notarized platform for premium contracts and accordingly, an opaque and inefficient market for transactions is being created.

The example embodiments may provide a platform that serves as a registry office of maintaining premium sales details and an exchange of predicting a change in premium and arranges sales, as a general-purpose platform for a commercial store premium (hereinafter, referred to as a "premium transaction platform"). Further, the example embodiments may provide a loan transaction platform that takes a premium as collateral as a platform that serves to manage the right of pledge for the premium.

The premium transaction platform according to the present invention may include a model for predicting a premium that includes an intangible element in the commercial store premium.

FIGS. 1 and 2 illustrate examples of explaining a process of implementing a premium prediction model according to an example embodiment of the present invention.

Referring to FIG. 1, supervised learning may be performed for a plurality of machine learning models 100 based on premium details 10 by commercial district. Here, the machine learning model 100 may use a model based on an algorithm of regression analysis, machine learning, or deep learning, such as a decision tree, a random forest, a support vector machine (SVM), linear regression, an artificial neural network (ANN), a deep neural network (DNN), a convolution neural network (CNN), and the like. That is, the artificial intelligence (AI) based machine learning model 100 may be trained using data by commercial district for the existing premium contract details 10. An optimal model for premium prediction may be selected from among the plurality of machine learning models 100 through verification of suitability for each parameter search-based model and prediction model by commercial district.

Referring to FIG. 2, a premium may be periodically predicted by reflecting change details in commercial elements over time to a premium prediction model 210 selected from among the plurality of machine learning models 100. A model update may be performed by reflecting a change in decision variables related to a premium to the premium prediction model 210 and anomaly for a premium transaction newly registered on a platform may be verified based on information recorded in a blockchain-based transaction ledger.

The premium transaction platform according to the present invention may include a blockchain-based transaction ledger system that may transparently record commercial store premium transaction details.

The example embodiment may introduce blockchain smart contract technology as a transaction ledger that anyone may view and in which transaction records are not damaged. Product information, such as a location, a size, and a rental condition of a commercial store specified in a rental contract, a premium, and a predicted value of premium according to a trend in card sales and a change in commercial elements may be recorded in the blockchain-based transaction ledger system. Here, a blockchain-based transaction recording system may be

used as a transaction ledger for recording commercial store premium transaction details.

The premium transaction platform according to the present invention may include a system for registering and concluding a transaction of premium for sale.

The example embodiment may provide a function of registering a premium for sale according to intention of a premium owner to transfer business and a function of transferring the right by electronic signature of a transferor/transferee and paying sales price (premium) through escrow.

The premium transaction platform according to the present invention may include a loan transaction system that takes a commercial store premium as collateral.

FIGS. 3 and 4 illustrate examples of explaining a loan transaction process using a premium according to an example embodiment of the present invention.

Referring to FIG. 3, when a premium owner 301 applies for a loan by providing a commercial store premium as collateral (S31), a premium transaction platform may calculate a loanable amount and a loan condition (e.g., interest rate, principal repayment date, etc.) by taking the commercial store premium as collateral (S32). The premium transaction platform may disclose a loan product applied for by the premium owner 301 to recruit investors 302 (S33) and then to receive investment from the investors 302 (S34). Here, an escrow system may be used to pay the investment. When the loanable amount is achieved with the investment of the investors 302, the premium transaction platform may establish the right of pledge on the commercial store premium of the premium owner 301 (S35) and then pay a loan amount to the premium owner 301 (S36).

Therefore, the premium transaction platform may execute a loan by establishing the right of pledge on the commercial store premium based on a blockchain smart contract 300 and by calculating the loanable amount and the loan condition.

Referring to FIG. 4, when the premium owner 301 completes repayment of the

principal and interest according to the loan condition (S41), the premium transaction platform may repay the investment according to a principal and interest repayment schedule to the investors 302 based on the blockchain smart contract 300 (S42) and then cancel the right of pledge established by the investors 302 on the commercial store premium of the premium owner 301 (S43).

The premium transaction platform according to the present invention may include modeling for predicting a commercial store premium as the premium prediction model 210. For example, premium prediction modeling may be defined as Equation 1.

[Equation 1]

$$price = \beta_0 + \beta_1 \times x_1 + \beta_2 \times x_2 + \dots + \beta_i \times x_i$$

Here, β_i denotes a decision variable found by supervised learning and x_i denotes a premium decision variable.

The premium transaction platform according to the present invention may automate update for the premium decision variable, x_i .

FIG. 5 illustrates an example of explaining an automated decision variable updating process for predicting a premium according to an example embodiment of the present invention.

Referring to FIG. 5, a premium transaction platform may periodically update a decision variable (x_i) for premium prediction using basic commercial store information 510 registered to the platform and commercial flow information 520 acquired from an external system linkable to the platform. Here, the basic commercial store information 510 may include a location, an area, and a security deposit, and the commercial flow information 520 may include a change in commercial area indicators representing commercial district information and trend in sales information, such as card sales. For example, the commercial district information may be acquired through the Small Enterprise & Market Service (SEMAS)

API and the sales information may be acquired through card sales scrapping of point of sales (POS) system.

The premium transaction platform according to the present invention may include, as a platform configuration for premium prediction and transaction, an interface for premium inquiry/transaction request, a blockchain-based transaction ledger in which information required for premium prediction and transaction is recorded, an interface for updating premium prediction, a premium prediction model for verifying a premium, and an interface for periodically updating an environmental variable based on commercial flow information, and may include, as a platform configuration for a loan transaction, an interface for loan application/loan execution/loan repayment, a blockchain-based transaction ledger in which information required for loan transaction (verification of premium ownership and collateral value, establishment and cancellation of right of pledge on premium) is recorded, and an interface for loan product opening/investment payment/principal and interest payment.

FIG. 6 is a flowchart illustrating a detailed procedure for premium prediction and transaction according to an example embodiment of the present invention.

Referring to FIG. 6, in operation S601, a premium transaction platform may mediate a premium transaction contract between a premium owner and a prospective buyer. When the premium transaction contract is a written contract, the premium transaction contract may be recorded in a blockchain-based transaction ledger by attaching a scanned contract image to a 2-stage blockchain. If a contract is made through a premium transaction system provided from the premium transaction platform, the contract may be proved with an electronic signature (e.g., joint certificate) of each contracting party. Detailed items for the premium transaction contract may include a premium for sale, a commercial rental contract item (e.g., location information, area, rental information such as rental deposit, contract period, etc.), seller/buyer's type of business, seller/buyer's store name.

In operation S602, the premium transaction platform may record transaction details in the blockchain-based transaction ledger. A transaction block that includes details of the premium contract collected in operation S601 and valid contractual matters (written contract, seal certificate or electronic signature, etc.) between contracting parties may be generated.

In operation S603, the premium transaction platform may also record commercial flow information at a time of signing the premium transaction contract in the blockchain-based transaction ledger. The commercial flow information may include a seller's existing sales information acquirable through card sales scrapping of a POS system and commercial district information acquirable through the Small Enterprise & Market Service (SEMAS) API.

In operation S604, the premium transaction platform may verify parameters of a corresponding area based on premium decision factors. For example, the premium transaction platform may determine the appropriateness of a newly registered premium using an optimal model determined to have a high prediction accuracy.

In operation S605, the premium transaction platform may record verification results of operation S604 in the blockchain-based transaction ledger as to whether the premium registered to the platform is anomaly. The premium transaction platform may add a "verified" or "unverified" tag depending on whether the newly registered premium is appropriate.

In operation S606, the premium transaction platform may predict a change in premium based on supervised learning, on the basis of a change in the premium decision factors. The premium transaction platform may calculate the fluctuating value of premium by commercial district by reflecting a change in commercial flow information at predetermined periods (e.g., on a monthly basis).

In operation S607, the premium transaction platform may expose premium prediction details for each commercial store and premium prediction details of at least one neighboring store present within a predetermined radius based on a corresponding commercial store. The

premium transaction platform may record periodic premium prediction details in the blockchain-based transaction ledger, may disclose premium data by commercial store or by commercial district, and may present the same as a sales reference price. If a premium owner is willing to sell, the premium transaction platform may switch a state of a corresponding commercial store to a status available for sale and may receive a bid and arrange a sales contract.

FIG. 7 is a flowchart illustrating a detailed procedure for loan transaction according to an example embodiment of the present invention.

In operation S701, a premium transaction platform may receive a loan application from a premium owner having the right for a commercial store premium.

In operation S702, the premium transaction platform may verify the premium owner applying for a loan from a blockchain-based transaction ledger. That is, the premium transaction platform may verify a legal ownership status through the transaction ledger.

In operation S703, the premium transaction platform may calculate the collateral value through predicted premium price. The premium transaction platform may calculate a loanable amount based on a rule using periodic premium prediction details recorded in the blockchain-based transaction ledger.

In operation S704, the premium transaction platform may expose a loan product applied for by the premium owner for investors. The premium transaction platform may expose the loan product through a loan section on the platform.

In operation S705, the premium transaction platform may establish the right of pledge on the premium and may proceed with investment escrow and loan execution. When the investment reaches a loanable amount, the premium transaction platform may record establishment of premium pledge in the blockchain-based transaction ledger while executing the loan.

In operation S706, the premium transaction platform may proceed with escrow and

loan repayment for the principal and interest of the loan. The premium transaction platform may deliver, to the investors, a principal and interest repayment amount of a borrower, that is, the premium owner having got the loan.

In operation S707, when the principal and interest of the loan is fully repaid by the premium owner, the premium transaction platform may cancel the establishment of the pledge right recorded in the blockchain-based transaction ledger.

The premium transaction platform according to the present invention may be linked to an existing platform that provides commercial store rental information in the form of an API or an affiliate site.

For example, referring to FIG. 8, a service screen 800 that provides commercial store rental information may display premium information 801 by commercial store. A hyperlink linkable to a premium transaction platform for predicting and arranging a transaction for a commercial store premium and managing the right of pledge may be inserted into the premium information 801.

The example embodiments may prevent premium disputes that may arise during a commercial rental contract and may resolve uncertainty by constructing a transparent transaction system.

The premium transaction platform according to the present invention refers to a blockchain-based open platform and may actively provide data to a buyer of a premium and may predict a trend in premium by periodically reflecting all conditions.

The premium transaction platform according to the present invention may perform premium prediction and also determine appropriateness of a premium registered on the platform and may support arrangement of a premium transaction for a corresponding commercial store.

Also, the premium transaction platform according to the present invention may serve

as an exchange that focuses on financial transactions by providing a pledge establishment and loan service for premium.

FIG. 9 is a block diagram illustrating an example of a computer system according to an example embodiment of the present invention. The aforementioned premium transaction platform may be implemented by a computer system 900 of FIG. 9.

Referring to FIG. 9, the computer system 900 may include a memory 910, a processor 920, a communication interface 930, and an input/output (I/O) interface 940 as components to perform a premium transaction method according to example embodiments of the present invention.

The memory 910 may include, as computer-readable recording media, a permanent mass storage device, such as random access memory (RAM), read only memory (ROM), and disk drive. Here, the permanent mass storage device, such as ROM and disk drive, may be included in the computer system 900 as a separate permanent storage device from the memory 910. Also, an operating system (OS) and at least one program code may be stored in the memory 910. Such software components may be loaded to the memory 910 from separate computer-readable recording media from the memory 910. Examples of the separate computer-readable recording media may include computer-readable recording media, such as a floppy drive, a disk, a tape, a DVD/CD-ROM drive, and a memory card. In another example embodiment, software components may be loaded to the memory 910 through the communication interface 930, rather than the computer-readable recording media. For example, the software components may be loaded to the memory 910 of the computer system 900 based on a computer program installed by files received through a network 960.

The processor 920 may be configured to process an instruction of a computer program by performing basic arithmetic, logic, and I/O operations. The instruction may be provided from the memory 910 or the communication interface 930 to the processor 920. For example,

the processor 920 may be configured to execute a received instruction according to a program code stored in a storage device, such as the memory 910.

The communication interface 930 may provide a function for communication between the computer system 900 and another apparatus through the network 960. For example, a request or an instruction created by the processor 920 of the computer system 900 according to a program code stored in a storage device such as the memory 910, data, and a file may be delivered to other apparatuses over the network 960 under control of the communication interface 930. Inversely, a signal or an instruction, data, and a file from another apparatus may be received at the computer system 900 through the communication 930 of the computer system 900 over the network 960. The received signal or instruction and data may be delivered to the processor 920 or the memory 910 through the communication interface 930 and the file may be stored in a storage medium (the aforementioned permanent storage device) further includable in the computer system 900.

A communication scheme is not limited and may include not only a communication scheme using a communication network (e.g., mobile communication network, wired Internet, wireless Internet, broadcasting network) includable in the network 960 but also near-field wired/wireless communication between devices. For example, the network 960 may include at least one any network among networks that include a personal area network (PAN), a local area network (LAN), a campus area network (CAN), a metropolitan area network (MAN), a wide area network (WAN), a broadband network (BBN), and the Internet. Also, the network 960 may include at least one network topology among network topologies that include a bus network, a star network, a ring network, a mesh network, a star-bus network, and a tree or hierarchical network, but is not limited thereto.

The I/O interface 940 may be a device for interfacing with an I/O device 950. For example, an input device may include a device, such as a microphone, a keyboard, a camera,

and a mouse, and an output device may include a device, such as a display and a speaker. As another example, the I/O interface 940 may be a device for interfacing with a device in which an input function and an output function are integrated into a single function, such as a touchscreen. The I/O device 950 may be configured with a single device with the computer system 900.

Also, in other example embodiments, the computer system 900 may include a greater or smaller number of components than the number of components shown in FIG. 9. However, there is no need to clearly illustrate many conventional components. For example, the computer system 900 may be implemented to include at least a portion of the I/O device 950 or may further include other components, such as a transceiver and various types of databases.

As described above, according to example embodiments of the present invention, it is possible to reduce unnecessary social cost and to favorably improve startup conditions for small business owners, through a platform that predicts a commercial store premium through standardized and quantified criteria and transparently records transaction details of the commercial store premium. According to example embodiments of the present invention, it is possible to arrange a self-employed market in which small business owners may readily enter and exit, while improving the liquidity of premium sales market, and to further provide a loan market that allows fund to be raised using the premium as collateral.

The apparatuses described herein may be implemented using hardware components, software components, and/or combinations thereof. For example, the apparatuses and the components described herein may be implemented using one or more general-purpose or special purpose computers, such as, for example, a processor, a controller, an arithmetic logic unit (ALU), a digital signal processor, a microcomputer, a field programmable gate array (FPGA), a programmable logic unit (PLU), a microprocessor, or any other device capable of responding to and executing instructions in a defined manner. The processing device may

run an operating system (OS) and one or more software applications that run on the OS. The processing device also may access, store, manipulate, process, and create data in response to execution of the software. For purpose of simplicity, the description of a processing device is used as singular; however, one skilled in the art will be appreciated that a processing device may include multiple processing elements and/or multiple types of processing elements. For example, a processing device may include multiple processors or a processor and a controller. In addition, different processing configurations are possible, such as parallel processors.

The software may include a computer program, a piece of code, an instruction, or some combinations thereof, for independently or collectively instructing or configuring the processing device to operate as desired. Software and/or data may be permanently or temporarily embodied in any type of machine, component, physical equipment, or a computer storage medium or device, to be interpreted by the processing device or to provide an instruction or data to the processing device. The software also may be distributed over network coupled computer systems so that the software is stored and executed in a distributed fashion. The software and data may be stored by one or more computer readable storage media.

The methods according to example embodiments may be implemented in a form of a program instruction executable through various computer methods and recorded in computer-readable media. Here, the media may be to continuously store a computer-executable program or to temporarily store the same for execution or download. Also, the media may be various types of recording methods or storage methods in which single hardware or a plurality of hardware is combined and may be distributed over a network without being limited to a medium that is directly connected to a computer system. Examples of the media include magnetic media such as hard disks, floppy disks, and magnetic tapes; optical media such as CD ROM and DVD; magneto-optical media such as floptical disks; and hardware devices that

are specially configured to store and perform program instructions, such as read-only memory (ROM), random access memory (RAM), flash memory, and the like. Examples of other media may include recording media and storage media managed by an app store that distributes applications or a site, a server, and the like that supplies and distributes other various types of software.

MODE

While the example embodiments are described with reference to specific example embodiments and drawings, it will be apparent to one of ordinary skill in the art that various alterations and modifications in form and details may be made in these example embodiments without departing from the spirit and scope of the claims and their equivalents. For example, suitable results may be achieved if the described techniques are performed in a different order, and/or if components in a described system, architecture, device, or circuit are combined in a different manner, or replaced or supplemented by other components or their equivalents.

Therefore, other implementations, other example embodiments, and equivalents of the claims are to be construed as being included in the claims.

WHAT IS CLAIMED IS:

1. A premium transaction method performed by a computer system, the premium transaction method comprising:

predicting, by at least one processor included in the computer system, a premium for a commercial store based on information related to the commercial store; and

providing, by the at least one processor, the premium as a sales reference price for a transaction of the commercial store.

2. The premium transaction method of claim 1, wherein the predicting comprises predicting the premium for the commercial store through a machine learning model using basic commercial store information that includes a location and an area of the commercial store and a security deposit and commercial flow information that includes a change in commercial district indicators and trend in sales information.

3. The premium transaction method of claim 1, further comprising:
recording, by the at least one processor, information necessary for premium prediction and transaction of the commercial store in a blockchain-based transaction ledger.

4. The premium transaction method of claim 1, wherein the predicting comprises:
training an artificial intelligence (AI)-based machine learning model using data by commercial district;
periodically predicting the premium by reflecting change details in commercial elements over time to the machine learning model; and
recording periodic premium prediction details in a blockchain-based transaction ledger.

5. The premium transaction method of claim 4, wherein the predicting further comprises verifying anomaly for a newly registered premium based on information recorded in the transaction ledger.

6. The premium transaction method of claim 1, further comprising:
providing, by the at least one processor, a loan transaction that takes the premium as collateral based on a blockchain smart contract.

7. The premium transaction method of claim 6, wherein the providing of the loan transaction comprises:

calculating a loanable amount using periodic premium prediction details recorded in a blockchain-based transaction ledger; and

establishing a right of pledge on the premium and executing a loan for the loanable amount when an investment amount by an investor reaches the loanable amount.