RECOMMENDATION SYSTEM AND METHOD

FIELD OF THE INVENTION

5 The disclosures made herein relate generally to the field of user recommendation and more particularly relates to a recommendation system and method for recommending co-buyers for the purpose of buying a property.

BACKGROUND OF THE INVENTION

10 Co-purchasing or co-investing in a property among family members, relatives and business partners is quite common. With the advancement of legal infrastructure and bank facilities, it enhances the possibility for strangers to come together and co-invest in a property, with or without loan. The main reason for co-purchasing a property is to combine individuals' financial strength i.e. purchasing capacity, which
15 includes cash savings and borrowing capacity, for owning huge or expensive properties which cannot be bought by such individuals alone. Subsequently, all the participants could own a certain amount of share in the property based on their contribution. However, finding a co-buyer with similar interests among know people is a difficult process.

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Developments were made in the online social networking to bring in buyers with similar interests together for making a purchase. United States Patent Publication No.: US 2014/0108427 A1 discloses a computer-implemented matching service capable of matching users to other users, and/or to user communities, based on a
25 computer analysis of user affinities for particular items represented in an electronic catalog such as book titles, music titles, movie titles, and/or other types of items that tend to reflect the traits of users.

Similarly, the research work titled "Co-purchaser Recommendation for Online Group
30 Buying", by Chen et al., proposes a couple of methods for recommending co-purchasers for purchasing a bulk order of products with better accuracy. However, the conventional methods for recommending co-buyers are not useful when it comes to purchasing huge or expensive properties, as the accuracy is too low. For

example, if there are 100 properties available for co-purchase and if 20,000 prospective co-investor show interest in buying at least one of the properties, then more than 95% of recommendations using the conventional methods would be junk.

Hence, there is a need for a recommendation system and method for recommending co-buyers for the purpose of buying a huge or expensive property which is not possible for the co-buyers to purchase individually, with high accuracy and minimal effort from the co-buyers.

SUMMARY OF THE INVENTION

The present invention relates to a recommendation system, comprising multiple buyer devices for inputting buyer information and receiving recommendations, wherein the buyer information includes purchasing capacity of a corresponding buyer and at least one host device for inputting property information and receiving purchase information, wherein the property information relates to a expected selling price of a corresponding property. At least one processing unit communicatively connected to each user device and host device receives and processes the buyer information and property information for generating recommendations, wherein each recommendation is forwarded to at least two buyer devices. At least one grouping module in the processing unit forms at least one virtual group of two or more co-buyers for each property based on the buyer information and property information. The buyer devices of the co-buyers are enabled to communicate with each other through the processing unit.

In one aspect, the grouping module forms at least one virtual room for each property, generates an invitation for joining each virtual room and forwards each invitation to at least two buyer devices.

The grouping module analyses the buyer information received from each buyer device and the property information corresponding to each virtual room and selects at least two buyer devices based on the analysis for joining each room, wherein

each invitation is forwarded to the buyer devices selected for joining the corresponding virtual room.

In one aspect, the grouping module sets a minimum purchasing capacity for each virtual rooms and selects a buyer device for forwarding an invitation for joining a virtual room if the purchasing capacity of the corresponding buyer is greater than the minimum purchasing capacity set for the virtual room.

In one aspect, the grouping module dynamically sets the minimum purchasing capacity for each virtual room, such that the minimum purchasing capacity for a virtual room is changed after each time a buyer device joins the virtual room. Preferably, the grouping module dynamically sets the minimum purchasing capacity for each virtual room based on a combined purchasing capacity received from the buyer devices that already joined the virtual room.

The present invention also relates to a recommendation method, comprising the steps of:

i.   inputting buyer information at multiple buyer devices, wherein the buyer information includes purchasing capacity of a corresponding buyer;

ii.   inputting property information at at least one host device, wherein the property information includes a expected selling price of a corresponding property;

iii.   receiving the buyer information and property information at at least one processing unit that is communicatively connected to each user device and each host device;

iv.   processing the received information at the processing unit for generating recommendations, wherein at least one grouping module in the processing unit forms at least one virtual group of two or more co-buyers for each property based on the received information, wherein the buyer devices of said co-buyers are enabled to communicate with each other through the processing unit; and

v.   forwarding each recommendation to at least two buyer devices.

In one aspect, the virtual group is formed by creating at least one virtual room for each property, generating an invitation for joining each virtual room and forwarding each invitation to at least two buyer devices.

5 In one aspect, forming the virtual group further includes analysing the buyer information received from each buyer device and the property information corresponding to each virtual room and selecting at least two buyer devices based on the analysis for joining each room, wherein each invitation is forward to the buyer devices selected for joining the corresponding virtual room.

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In a preferred embodiment, forming the virtual group includes setting a minimum purchasing capacity for each virtual room and selecting a buyer device for forwarding an invitation for joining a virtual room if the purchasing capacity of the corresponding buyer is greater than the minimum purchasing capacity set for the

15 virtual room.

More preferably, setting the minimum purchasing capacity for each virtual room includes changing the minimum purchasing capacity for a virtual room after each time a buyer device joins the virtual room.

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Most preferably, the minimum purchasing capacity for each virtual room is changed based on a combined purchasing capacity received from the buyer devices that already joined the virtual room.

25 Various objects, features, aspects and advantages of the invention will become more apparent from the following detailed description of preferred embodiments, along with the accompanying drawing figures in which like numerals represent like components.

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BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

In the figures, similar components and/or features have the same reference numerals. Further, various components of the same type are distinguished by

following the reference numerals with alphabets that distinguishes among the similar components. If only the first reference numeral is used in the specification, the description is applicable to any one of the similar components having the same first reference numeral irrespective of the alphabets.

5 **FIGURE 1** shows a block diagram of a recommendation system, in accordance with an exemplary embodiment of the present invention.

FIGURE 2 shows a flow diagram of a recommendation method, in accordance with an exemplary embodiment of the present invention.

10 **DETAILED DESCRIPTION OF THE INVENTION**

In accordance with the present disclosure, there is provided a recommendation system and method for recommending a co-buyer for purchasing a property, which will now be described with reference to the embodiment shown in the accompanying

15 drawings. The embodiment does not limit the scope and ambit of the disclosure. The description relates purely to the embodiment and suggested applications thereof.

The embodiment herein and the various features and advantageous details thereof are explained with reference to the non-limiting embodiment in the following

20 description. Descriptions of well-known components and processes are omitted so as to not unnecessarily obscure the embodiment herein. The examples used herein are intended merely to facilitate an understanding of ways in which the embodiment herein may be practiced and to further enable those of skill in the art to practice the embodiment herein. Accordingly, the description should not be construed as limiting

25 the scope of the embodiment herein.

The description hereinafter, of the specific embodiment will so fully reveal the general nature of the embodiment herein that others can, by applying current knowledge, readily modify or adapt or perform both for various applications such specific embodiment without departing from the generic concept, and, therefore,

30 such adaptations and modifications should and are intended to be comprehended

within the meaning and range of equivalents of the disclosed embodiment. It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Various terms as used herein are defined below. To the extent a term used in a claim is not defined below, it should be understood with the broadest definition given by persons in the pertinent art to that term as reflected in publications (e.g. dictionaries, article or published patent applications) and issued patents at the time of filing.

Definitions:

Buyer – A user looking for co-purchasing a property.

Buyer device – Any mobile device such as smart phone, tablet computer, phablet computer or any other portable communication device capable of being installed with a mobile application, and carried by a buyer.

Host – A user looking to find a plurality of buyers such as sole or joined proprietor of a property or intermediate person such as property agent, consultant or a buyer who has found a suitable property and looking for co-buyers to co-purchase the property.

Host device - Any mobile device such as smart phone, tablet computer, phablet computer or any other portable communication device capable of being installed with a mobile application, and carried by a host.

Processing unit – A computing such as one or more remote servers and cloud server environment, capable of wireless communication with mobile devices through internet.

Virtual group – A virtual network of buyer devices connected to each other through the processing unit for communication such as instant message communication or voice over IP (VoIP) communication.

Virtual room – A virtual space within the processing unit for a buyer device to wait until the virtual room is converted into a virtual group.

FIGURE 1 shows a block diagram of a recommendation system (100), in accordance with an exemplary embodiment of the present invention. The system (100) comprises multiple buyer devices (1), at least one host device (2) and at least one processing unit (3) communicatively connected to each user device (1) and host device (2). Each buyer device (1) is carried by a different buyer for inputting buyer information to the processing unit (3) and receiving recommendations from the processing unit (3). Similarly, each host device (2) is carried by a different host for inputting property information i.e. advertisement posting, to the processing unit (3) and receiving purchase information from the processing unit (3). Preferably, the processing unit (3) is in the form of a remote server wirelessly connected to the buyer devices and host device (2) through internet.

In a preferred embodiment, the host is a sole or joined proprietor of the corresponding property. Alternatively, the host can be an intermediate person such as property agent, consultant or a buyer who is interested in forming a partnership with co-buyers with similar interests to purchase the property. Optionally, the host may choose to keep a certain percentage of share in the property for self owning/buying and to post the remaining share of the property for purchase by other co-buyers through the system (100)

Each buyer device (1) is registered with the system (100) by inputting any conventional user registration information such as but limited to name, address, contact number and email address, or by any conventional user registration mentions. Additionally, a buyer information of each buyer is inputted through the corresponding buyer device (1), wherein the buyer information includes property preferences and purchasing capacity. Preferably, the property preferences include but not limited to property type, style, location, size, rental yield and amenities. In one embodiment, each buyer inputs financial details such as current cash savings available, borrowing capacity of the buyer and the like, and the corresponding buyer device (1) calculates the purchasing capacity from the inputted financial details and transmits the calculated purchasing capacity to the processing unit. Similarly, each host device (2) is registered with the system (100) by inputting property information related to at least one property such as property type, style, location, size, expected selling price, rental yield and amenities.

In a preferred embodiment, each buyer device (1) and host device (2) are mobile devices such as smart phone, tablet computer, phablet computer or any other portable communication device capable of being installed with a mobile application. Furthermore, each buyer device (1) and host device (2) are wirelessly connected to the processing unit (3). Alternatively, each buyer device (1) and host device (2) can be any computing devices capable of running a web application, and the processing unit (3) communicates to the buyer devices (1) and host device (2) through a wired communication network.

The processing unit (3) receives and processes the buyer information and property information for generating recommendations, wherein each recommendation is forwarded to at least two buyer devices (1). At least one grouping module (4) in the processing unit (1) forms at least one virtual group of two or more co-buyers for each property based on the buyer information and property information. The buyer devices (1) of the co-buyers are enabled to communicate with each other through the processing unit (3).

Preferably, the grouping module (4) creates at least one virtual room for each property and generates an invitation to join each virtual room, wherein the invitation includes the property information corresponding the virtual room, a control e.g. URL, for accepting the invitation and another control for rejecting the invitation. Optionally, an invitation may also include a list of co-buyers already in the corresponding virtual room which is updated each time a co-buyer joins the virtual room until the invitation is accepted/rejected or the invitation is cancelled. The grouping module (4) compares the property information with the property preferences received from each buyer device (1) and forms a preliminary group of buyer devices (1) with matching property preferences. More preferably, the grouping module (4) creates at least one virtual room for each property, when the processing unit (1) receives the corresponding property information.

Furthermore, the grouping module (4) sets a target value, target number of members and a minimum purchase capacity for each virtual room, wherein a buyer device (1) is allowed to join a virtual room, if the corresponding purchase capacity is greater than the minimum purchase capacity of the virtual room. When a number

of buyer devices (1) joined a virtual room reaches the corresponding target number members, any pending invitations for joining the virtual room are disabled and the virtual room is automatically converted into a virtual group, wherein the buyers holding the buyer devices (1) joined the virtual room form the co-buyers in the virtual

5 group. In one embodiment, the buyer device (1) that is first to join the virtual room is made as an administrator of the virtual group after conversion of the virtual room into a virtual group. In another embodiment, the buyer device (1) corresponding to the highest purchasing capacity among the buyer devices (1) that joined the virtual room is made as an administrator of the virtual group after conversion.

10 After the virtual room is converted into a virtual group, the corresponding buyer devices (1) are enabled to communicate with each other, so that the co-buyers may discuss among themselves regarding individual contribution, rights of each co-buyer and the like over the corresponding property. By this way, the present invention effectively recommends co-buyers to one another. Since the invitation is forwarded

15 to co-buyers similar purchase capacities and property preferences, the present invention minimizes the confusion caused during discussion.

Upon completing the discussion, the co-buyers may decide to purchase the property and input purchase instructions through each of the corresponding buyer devices (1), wherein the processing unit (3) generates a purchase information based on the

20 inputted purchase instructions and transmits the generated purchase information to the corresponding host device (2) for approval. Preferably, the purchase information includes at least one of bidding price, terms and conditions for completing purchase and time duration for making payment. The terms and conditions for completing purchase may include any known terms and conditions set by a property buyer while

25 purchasing a property.

If the discussion fails and one or more co-buyers decide to exit the virtual group, a request can be raised at the corresponding buyer devices (1) and the grouping module (4) removes the requested buyer devices (1) from the virtual group and converts the virtual group back into a virtual room, wherein the invitation for joining

30 the virtual room is automatically reinstated by the grouping module (4). Optionally, one or more co-buyers in the virtual group is allowed to invite one or more users not

registered with the system (100) to register into the system (100) and subsequently to join the virtual room, when the virtual group is converted into a virtual group after one or more co-buyers exit the virtual group.

It is to be understood that the grouping module (4) is capable of creating multiple virtual rooms for each property, two or more virtual rooms can be converted into virtual groups and one buyer can become a co-buyer in one or more virtual groups. Thereby, a host device (2) may receive purchase information from one or more virtual groups. However, the host device (2) is capable of approving the purchase information from only one virtual group for one property, wherein an approval information is transmitted to the processing unit (1) and the grouping module (4) closes all the virtual groups and virtual rooms corresponding to the property and notifies each buyer device (1) in the closed virtual groups and virtual rooms that the property is no longer available.

Alternatively, the grouping module (4) can be configured in such a way that, when the host device (2) receives the purchase information from one virtual group, the grouping module (4) automatically closes any remaining virtual groups and/or virtual rooms and notifies the corresponding buyer devices (1) that the property is no longer available. Furthermore, the grouping module (4) may be configured to set an upper limit for the number of virtual rooms created for each property or for a number of virtual groups in which a buyer can become co-buyer.

In a preferred embodiment, after creating one or more virtual room for each property, the grouping module (4) generates an invitation for joining each virtual room and forwards each invitation to at least two buyer devices (1). More preferably, the grouping module (4) analyses the buyer information received from each buyer device (1) and the property information corresponding to each virtual room and selects at least two buyer devices (1) for joining each room based on the analysis, wherein each invitation is forwarded to the buyer devices (1) selected for joining the corresponding virtual room.

Preferably, the grouping module (4) sets a minimum purchasing capacity for each virtual rooms and selects a buyer device (1) for forwarding an invitation for joining a virtual room if the purchasing capacity of the corresponding buyer is greater than

the minimum purchasing capacity set for the virtual room. More preferably, the grouping module (4) sets a predefined percentage of its total value as the minimum purchasing capacity. For example, when a virtual room is created with a target value of USD100,000.00, the grouping module (4) may set 20% of the target value i.e. USD20,000.00, as the purchasing capacity and thereby setting a maximum number of members in the virtual group as 5. By this way, the present invention improves accuracy of recommendation and avoids a need for sending the invitation to every buyer.

In an alternate embodiment, the grouping module (4) sets a purchasing capacity range for each virtual room and selects a buyer device (1) if the corresponding purchasing capacity is within the set range to forward the invitation. For example, when a virtual room is created with a target value of USD100,000.00, the grouping may set 20-40% of the target value i.e. USD20,000.00-40,000.00, as the purchasing capacity range. By this way, the present invention minimizes too much differences in the purchasing capacity of the co-buyers within a virtual group, and thus ensuring co-buyers with similar preferences and similar financial capabilities are brought together.

In a preferred embodiment, the grouping module (4) dynamically sets the minimum purchasing capacity for each virtual room, such that the minimum purchasing capacity for a virtual room is changed after each time a buyer device (1) joins the virtual room. More preferably, the grouping module (4) dynamically sets the minimum purchasing capacity for each virtual room based on a combined purchasing capacity received from the buyer devices (1) that already joined the virtual room. Suppose a virtual room is created with a target value of USD100,000.00 and a minimum purchasing capacity of USD20,000.00, and a combined purchasing capacity of the virtual room reaches USD60,000.00 after two buyer devices (1) join the virtual room. If no further joining happens for a preset period of time, then the grouping module (4) may change the minimum purchasing capacity to USD15,000.00. By this way, the present invention improves the chances of selling the property even when there is a lesser demand for the property.

In one embodiment, the grouping module (4) is capable of including the list of potential joiners of each virtual room and purchasing capacity thereof in the corresponding invitation, such that a recipient of the invitation understands a financial strength of the potential joiners and make better decisions in accepting/rejecting the invitation.

In one embodiment, the grouping module (4) automatically categorizes each buyer device into multiple sub groups based on the corresponding purchasing capacity, and selects at least one buyer device from each sub group for forwarding invitations. After generating the invitations, the buyer device with the highest purchasing capacity in each sub group is selected for forwarding the invitation.

FIGURE 2 shows a flow diagram of a recommendation method (10), in accordance with an exemplary embodiment of the present invention. The method (10) comprises the steps of inputting buyer information at multiple buyer devices (11), inputting property information at at least one host device (12), receiving the buyer information and property information at at least one processing unit (13) that is communicatively connected to each user device and each host device, processing the received information at said processing unit for generating one or more recommendations (14) and forwarding each recommendation to at least two buyer devices (15).

Each buyer information includes purchasing capacity of a corresponding buyer and the property information includes a expected selling price of a corresponding property. The step of processing the received information includes forming forms at least one virtual group of two or more co-buyers for each property based on the received information by at least one grouping module in the processing unit, wherein the buyer devices of the co-buyers are enabled to communicate with each other through the processing unit.

The virtual group is formed by creating at least one virtual room for each property, generating an invitation for joining each virtual room, forwarding each invitation to at least two buyer devices and converting the virtual room into the virtual group, wherein buyer devices in the virtual group are allowed to communicate with each other.

In a preferred embodiment, before forwarding the invitation, the buyer information received from each buyer device and the property information corresponding to each virtual room are analyzed. At least two buyer devices are selected for joining each room based on the analysis, wherein each invitation is forwarded to the selected buyer devices. The buyer devices are selected by setting a minimum purchasing capacity for each virtual room and selecting a buyer device for forwarding an invitation for joining a virtual room if the purchasing capacity of the corresponding buyer is greater than the minimum purchasing capacity set for the virtual room.

More preferably, the minimum purchasing capacity set for each virtual room is changed after each time a buyer device joins the virtual room. Most preferably, the minimum purchasing capacity set for each virtual room is changed after each time a buyer device joins the virtual room, based on a combined purchasing capacity received from the buyer devices that already joined the virtual room.

Since the minimum purchasing capacity for joining a virtual room is set based on the total expected selling price of a corresponding property and the number of co-buyers in a virtual group is restricted, the present invention helps a user to accurately find co-buyers with similar interests with minimal efforts from the user side and therefore improving the chances for the user to make the purchase together with the recommended co-buyers. Furthermore, as the minimum purchasing capacity for joining a virtual room is varied based on the combined purchasing capacity of the previously joined co-buyers, the present invention allows users with lesser purchasing capacity to participate in the group when there is lesser demand for the property from users with higher purchasing capacity, thereby simplifying finding buyers for the host even when the demand for the property is less, while allowing the users already in the virtual room and interested in the property to complete the purchase.

The terminology used herein is for the purpose of describing particular example embodiments only and is not intended to be limiting. As used herein, the singular forms "a", "an" and "the" may be intended to include the plural forms as well, unless the context clearly indicates otherwise. The terms "comprises", "comprising",

"including" and "having" are inclusive and therefore specify the presence of stated features, integers, steps, operations, elements and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components and/or groups thereof.

5   The method steps, processes and operations described herein are not to be construed as necessarily requiring their performance in the particular order discussed or illustrated, unless specifically identified as an order of performance. It is also to be understood that additional or alternative steps may be employed. The use of the expression "at least" or "at least one" suggests the use of one or more

10 elements, as the use may be in one of the embodiments to achieve one or more of the desired objects or results.

CLAIMS

1. A recommendation system (100), comprising:

    i.   multiple buyer devices (1) for inputting buyer information and receiving recommendations, wherein said buyer information includes purchasing capacity of a corresponding buyer;

    ii.   at least one host device (2) for inputting property information and receiving purchase information, wherein said property information relates to a expected selling price of a corresponding property;

    iii.   at least one processing unit (3) communicatively connected to each user device (1) and said host device (2) for receiving and processing said buyer information and property information for generating recommendations, wherein each recommendation is forwarded to at least two buyer devices (1); and

    iv.   at least one grouping module (4) in the processing unit (1) for forming at least one virtual group of two or more co-buyers for each property based on said buyer information and property information, wherein the buyer devices (1) of said co-buyers are enabled to communicate with each other through the processing unit (3).

2. The system (100) of claim 1, wherein said grouping module (4) creates at least one virtual room for each property.

3. The system (100) of claim 2, wherein said grouping module (4) generates an invitation for joining each virtual room and forwards each invitation to at least two buyer devices (1).

4. The system (100) of claim 3, wherein said grouping module (4) analyses the buyer information received from each buyer device (1) and the property information corresponding to each virtual room and selects at least two buyer devices (1) based on the analysis for joining each room, wherein each invitation is forward to the buyer devices (1) selected for joining the corresponding virtual room.

5. The system (100) of claim 4, wherein said grouping module (4) sets a minimum purchasing capacity for each virtual rooms and selects a buyer

device (1) for forwarding an invitation for joining a virtual room if the purchasing capacity of the corresponding buyer is greater than the minimum purchasing capacity set for the virtual room.

6. The system (100) of claim 5, wherein said grouping module (4) dynamically sets the minimum purchasing capacity for each virtual room, such that the minimum purchasing capacity for a virtual room is changed after each time a buyer device (1) joins the virtual room.

7. The system (100) of claim 6, wherein said grouping module (4) dynamically sets the minimum purchasing capacity for each virtual room based on a combined purchasing capacity received from the buyer devices (1) that already joined the virtual room.

8. A recommendation method (10), comprising the steps of:

   i.   inputting buyer information at multiple buyer devices (11), wherein said buyer information includes purchasing capacity of a corresponding buyer; for inputting buyer information and receiving recommendations,

   ii.   inputting property information at at least one host device (12), wherein said property information includes a expected selling price of a corresponding property;

   iii. receiving said buyer information and property information at at least one processing unit (13) that is communicatively connected to each user device and each host device;

   iv.   processing the received information at said processing unit (13) for generating recommendations, wherein at least one grouping module in the processing unit forms at least one virtual group of two or more co-buyers for each property based on the received information, wherein the buyer devices of said co-buyers are enabled to communicate with each other through the processing unit; and

   v.   forwarding each recommendation to at least two buyer devices (14).

9. The method (10) of claim 8, wherein forming said virtual group includes:

   -   creating at least one virtual room for each property;

   -   generating an invitation for joining each virtual room; and

- forwarding each invitation to at least two buyer devices.

10. The method (10) of claim 9, wherein forming said virtual group further includes:

- analysing the buyer information received from each buyer device and the property information corresponding to each virtual room;
- selecting at least two buyer devices based on the analysis for joining each room, wherein each invitation is forward to the buyer devices selected for joining the corresponding virtual room.

11. The method (10) of claim 10, wherein forming said virtual group further includes:

- setting a minimum purchasing capacity for each virtual room; and
- selecting a buyer device for forwarding an invitation for joining a virtual room if the purchasing capacity of the corresponding buyer is greater than the minimum purchasing capacity set for the virtual room.

12. The method (10) of claim 11, wherein setting the minimum purchasing capacity for each virtual room includes:

- changing the minimum purchasing capacity for a virtual room after each time a buyer device joins the virtual room.

13. The method (10) of claim 12, wherein the minimum purchasing capacity for each virtual room is changed based on a combined purchasing capacity received from the buyer devices that already joined the virtual room.