# DESCRIPTION

# TITLE OF INVENTION: METHOD FOR PROVIDING DELIVERY ORDER TO CROWDSOURCED RIDER, AND SERVER AND WIRELESS TERMINAL FOR PERFORMING SAME

## Technical Field

The present disclosure relates to a method of providing a delivery order to a crowdsourcing rider, and a server and a wireless terminal for performing the same, and more particularly, relates to a technology for efficiently providing delivery orders to a regular rider and a crowdsourcing rider.

## Background Art

Crowdsourcing is a system in which some of business activities of a company are opened so that consumers or the public can participate therein, and the profits gained with the business ability of the company that is improved by the contribution of participants are shared with the participants. The crowdsourcing, which is a compound of "crowd" and "outsourcing", refers to outsourcing a solution of a problem to non-expert customers and the public instead of experts.

In recent years, as the demands for a delivery service, such as a courier service or food delivery service, rapidly increase compared to the number of riders performing delivery, a technology for providing a high-quality delivery service is required, and a delivery service, to which the crowdsourcing is applied, is thus being released.

In other words, there is a service in which, not only regular riders who contracted for full-time work, but also other people process a delivery work when they want, and take a part of profits as part-time workers. However, an increase in the number of people participating in crowdsourcing causes a decrease in the number of delivery orders that may be performed by the existing regular riders who contracted as full-time workers, which may negatively affect the regular riders' income.

Therefore, a technology for efficiently managing and processing the delivery orders is required so that crowdsourcing riders participating the crowdsourcing and regular riders may coexist together.

## Disclosure of the Invention

### Technical Goals

The present disclosure provides a method of efficiently assigning delivery orders to regular riders and crowdsourcing riders, and a server and a wireless terminal performing

the same.

Technical Solutions

A method of providing a delivery order performed by a server according to an embodiment includes identifying a delivery order including information on a departure location and a delivery location; determining a wireless terminal of a regular rider to provide the delivery order among wireless terminals of regular riders registered in the server based on information on the wireless terminals and a departure location and a delivery location of the delivery order; transmitting the delivery order to the determined wireless terminal of the regular rider; when a processing response is not received from the determined wireless terminal of the regular rider within a predetermined period of time, transmitting a list including the delivery order to the wireless terminals of the regular riders registered in the server; when a processing response is not received from the wireless terminals, to which the list is transmitted, within a predetermined period of time, determining a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server; and transmitting the delivery order to the wireless terminal of the crowdsourcing rider.

The method may include, when a processing response is not received from the wireless terminals, to which the list is transmitted, within a predetermined period of time, redetermining a wireless terminal of a regular rider to provide the delivery order among the wireless terminals of the regular riders registered in the server based on the information on the wireless terminals and the departure location and the delivery location of the delivery order; and transmitting the delivery order to the determined wireless terminal of the regular rider. The determining of the wireless terminal of the crowdsourcing rider may include, when a processing response is not received from the redetermined wireless terminal within a predetermined period of time, determining the wireless terminal of the crowdsourcing rider to provide the delivery order among the wireless terminals of the crowdsourcing riders registered in the server.

The information on the wireless terminal may include i) a terminal position of the wireless terminal, ii) a number of delivery orders assigned to the wireless terminal, and iii) a terminal ID of the wireless terminal.

The determining of the wireless terminal of the regular rider may include determining the wireless terminal of the regular rider to provide the delivery order based on a distance between the departure location and terminal positions of the wireless

terminals of the regular riders.

The determining of the wireless terminal of the regular rider may include determining the wireless terminal of the regular rider to provide the delivery order in consideration of a number of delivery orders assigned to each wireless terminal of the regular riders and a delivery order limit of each wireless terminal of the regular riders.

The determining of the wireless terminal of the crowdsourcing rider may include determining the wireless terminal of the crowdsourcing rider to provide the delivery order based on a distance between the departure location and terminal positions of the wireless terminals of the regular riders.

The determining of the wireless terminal of the crowdsourcing rider may include determining the wireless terminal of the crowdsourcing rider to provide the delivery order in consideration of i) a distance between the departure location and terminal positions of the wireless terminals of the regular riders and ii) a transportation of the crowdsourcing rider.

A method of providing a delivery order performed by a server according to an embodiment includes identifying a delivery order including information on a departure location and a delivery location; transmitting a list including the delivery order to wireless terminals of regular riders registered in the server; when a processing response is not received from the wireless terminals, to which the list is transmitted, within a predetermined period of time, determining a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server; and transmitting the delivery order to the wireless terminal of the crowdsourcing rider.

The determining of the wireless terminal of the crowdsourcing rider may include determining the wireless terminal of the crowdsourcing rider to provide the delivery order based on a distance between the departure location and terminal positions of the wireless terminals of the regular riders.

The determining of the wireless terminal of the crowdsourcing rider may include determining the wireless terminal of the crowdsourcing rider to provide the delivery order in consideration of i) a distance between the departure location and terminal positions of the wireless terminals of the regular riders and ii) a transportation of the crowdsourcing rider.

A method of providing a delivery order performed by a wireless terminal of a

regular rider according to an embodiment includes transmitting information on the wireless terminal to a server; receiving a delivery order including information on a departure location and a delivery location from the server; displaying the departure location and the delivery location of the delivery order on a display of the wireless terminal; and transmitting a processing response to the delivery order to the server.

The information on the wireless terminal may include i) a terminal position of the wireless terminal, ii) a number of delivery orders assigned to the wireless terminal, and iii) a terminal ID of the wireless terminal.

A method of providing a delivery order performed by a wireless terminal of a regular rider according to an embodiment includes receiving a list of delivery orders including information on a departure location and a delivery location from a server; displaying the list on a display of the wireless terminal; and transmitting a processing response to one of the delivery orders included in the list to the server.

A method of providing a delivery order performed by a wireless terminal of a crowdsourcing rider according to an embodiment includes transmitting information on the wireless terminal to a server; receiving a delivery order including information on a departure location and a delivery location from the server; displaying the departure location and the delivery location of the delivery order on a display of the wireless terminal; and transmitting a processing response to the delivery order to the server.

The information on the wireless terminal may include i) a terminal position of the wireless terminal, ii) a transportation of the crowdsourcing rider, and iii) a terminal ID of the wireless terminal.

A server for performing a method of providing a delivery order according to an embodiment includes a processor. The processor is configured to identify a delivery order including information on a departure location and a delivery location, determine a wireless terminal of a regular rider to provide the delivery order among wireless terminals of regular riders registered in the server based on information on the wireless terminals and a departure location and a delivery location of the delivery order, transmit the delivery order to the determined wireless terminal of the regular rider, when a processing response is not received from the determined wireless terminal of the regular rider within a predetermined period of time, transmit a list including the delivery order to the wireless terminals of the regular riders registered in the server, when a processing response is not received from the wireless terminals, to which the list is transmitted, within a

predetermined period of time, determine a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server, and transmit the delivery order to the wireless terminal of the crowdsourcing rider.

A server for performing a method of providing a delivery order according to an embodiment includes a processor. The processor is configured to identify a delivery order including information on a departure location and a delivery location, transmit a list including the delivery order to wireless terminals of regular riders registered in the server, when a processing response is not received from the wireless terminals, to which the list is transmitted, within a predetermined period of time, determine a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server, and transmit the delivery order to the wireless terminal of the crowdsourcing rider.

A wireless terminal of a regular rider for performing a method of providing a delivery order according to an embodiment includes a processor. The processor is configured to transmit information on the wireless terminal to a server, receive a delivery order including information on a departure location and a delivery location from the server, display the departure location and the delivery location of the delivery order on a display of the wireless terminal, and transmit a processing response to the delivery order to the server.

A wireless terminal of a regular rider for performing a method of providing a delivery order according to an embodiment includes a processor. The processor is configured to receive a list of delivery orders including information on a departure location and a delivery location from a server, display the list on a display of the wireless terminal, and transmit a processing response to one of the delivery orders included in the list to the server.

A wireless terminal of a crowdsourcing rider for performing a method of providing a delivery order according to an embodiment includes a processor. The processor is configured to transmit information on the wireless terminal to a server, receive a delivery order including information on a departure location and a delivery location from the server, display the departure location and the delivery location of the delivery order on a display of the wireless terminal, and transmit a processing response to the delivery order to the server.

Effects

According to an embodiment of the present disclosure, the delivery orders may be efficiently assigned to the regular riders and the crowdsourcing riders.

Brief Description of Drawings

FIG. 1 is a diagram illustrating a relationship between a server and a wireless terminal according to an embodiment.

FIG. 2 is a flowchart illustrating a method of providing a delivery order according to an embodiment.

FIG. 3 is a flowchart illustrating a method of providing a delivery order with performing subjects according to an embodiment.

FIG. 4 is a flowchart illustrating a method of providing a delivery order according to another embodiment.

FIG. 5 is a flowchart illustrating a method of providing a delivery order with performing subjects according to another embodiment.

FIG. 6 is a diagram illustrating a display included in a wireless terminal of a regular rider according to an embodiment.

FIG. 7 is a diagram illustrating a display included in a wireless terminal of a crowdsourcing rider according to an embodiment.

Best Mode for Carrying Out the Invention

Hereinafter, embodiments will be described in detail with reference to the accompanying drawings. However, various alterations and modifications may be made to the embodiments. Here, the embodiments are not construed as limited to the disclosure. The embodiments should be understood to include all changes, equivalents, and replacements within the idea and the technical scope of the disclosure.

The terminology used herein is for the purpose of describing particular embodiments only and is not to be limiting of the embodiments. The singular forms "a", "an", and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises/comprising" and/or "includes/including" when used herein, 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.

Unless otherwise defined, all terms including technical and scientific terms used

herein have the same meaning as commonly understood by one of ordinary skill in the art to which embodiments belong. It will be further understood that terms, such as those defined in commonly-used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

When describing the embodiments with reference to the accompanying drawings, like reference numerals refer to like components and a repeated description related thereto will be omitted. In the description of embodiments, detailed description of well-known related structures or functions will be omitted when it is deemed that such description will cause ambiguous interpretation of the present disclosure.

FIG. 1 is a diagram illustrating a relationship between a server and a wireless terminal according to an embodiment.

The present disclosure relates to a technology for efficiently assigning delivery orders 107 to 109 to regular riders and crowdsourcing riders, and relates to a method of determining a regular rider to process the delivery orders 107 to 109 among regular riders, and when the regular rider does not process the delivery orders 107 to 109, providing the delivery orders 107 to 109 to the crowdsourcing riders, and a server 101 and a terminal performing the method.

The server 101 and a wireless terminal each include a processor, and the processor included in the server 101 or the wireless terminal performs a method of providing the delivery orders 107 to 109 of the present disclosure. The server 101 and the wireless terminal may refer to a device including a processor and capable of performing wired or wireless communication, such as a smartphone, personal computer (PC), or tablet.

Referring to FIG. 1, the server 101 receives the delivery order 107 to 109, and provides the received delivery orders 107 to 109 to wireless terminals 102 and 103 of regular riders or wireless terminals of crowdsourcing riders. The regular riders are riders contracted for full-time work, who are different from crowdsourcing riders. The crowdsourcing riders refer to riders who process the delivery orders 107 to 109 for part-time work.

Information on the regular riders and the crowdsourcing riders is stored in a database of server 101. The information on the regular riders may include terminal IDs of the wireless terminals 102 and 103 of the regular riders, transportation of the regular riders, a branch to which the regular riders belong, the delivery orders 107 to 109 assigned to the

wireless terminals 102 and 103 of the regular riders, and the like.

Similarly, the information on the crowdsourcing riders may also include terminal IDs of wireless terminals 104 to 105 of the crowdsourcing riders, transportation of the crowdsourcing riders, a branch to which the crowdsourcing riders belong, the delivery orders 107 to 109 assigned to the wireless terminals 104 to 105 of the crowdsourcing riders, and the like.

The delivery orders 107 to 109 may include information on a departure location and a delivery location. For example, the departure location may be a location of a store for picking up a delivery package, and the delivery location may be a location of a place to receive the delivery package.

According to an embodiment, in order to efficiently provide the delivery orders 107 to 109 to the regular riders and the crowdsourcing riders, the server 101 receives the delivery orders 107 to 109, determines the wireless terminals 102 and 103 of the regular riders to process the delivery orders 107 to 109 among regular riders registered in the server 101, in a case where the regular riders are not able to process the delivery orders 107 to 109, determines the wireless terminals 104 to 105 of the crowdsourcing riders to process the delivery orders 107 to 109 among the crowdsourcing riders, and provides the delivery orders 107 to 109.

The case where the regular riders are not able to process the delivery orders 107 to 109 may refer to a case where the regular riders determine not to process the provided delivery orders 107 to 109, or a case where there is no response from the regular riders, to which the delivery orders 107 to 109 are provided, for a predetermined period of time.

According to another embodiment, the server 101 provides a list of the delivery orders 107 to 109 to the regular riders registered in the server 101, when the delivery orders 107 to 109 are not assigned for a predetermined period of time, determines the wireless terminals 104 to 105 of the crowdsourcing riders to process the delivery orders 107 to 109 among the crowdsourcing riders, and provides the delivery orders 107 to 109.

Referring to FIG. 1, the wireless terminals may be wireless terminals of different riders, and normal orders may include different departure locations or delivery locations.

FIG. 2 is a flowchart illustrating a method of providing a delivery order according to an embodiment.

A server receives a delivery order including information on a departure location and a delivery location from a store or another server that manages delivery orders, and

identifies the received delivery order.

Wireless terminals of regular riders and wireless terminals of crowdsourcing riders are registered in the server in advance. For example, information on the wireless terminals and the riders, such as transportation used by the regular riders or the crowdsourcing riders, terminal IDs of the wireless terminals, and the like may be registered in a database of the server in advance.

In addition, the database may store information on a delivery order, such as the time at which the delivery order is received, a departure location, or a delivery location, the number of delivery orders assigned to a wireless terminal, whether a delivery order is processed, and the like.

For this, the wireless terminal transmits the information on the wireless terminal to the server. The information on the wireless terminal may include the transportation used by a rider, a terminal ID and a terminal position of the wireless terminal, and the like. The server may store the information on the wireless terminal in the database, map the number of delivery orders assigned to the wireless terminal, the type of the delivery order, a delivery order limit, and the like to the corresponding wireless terminal, and store these.

In operation 201, the server determines a wireless terminal of a regular rider to provide a delivery order among the wireless terminals of the regular riders registered in the server based on the information on the wireless terminals, and a departure location and a delivery location of the delivery order. The information on the wireless terminals may include i) a terminal position of the wireless terminal, ii) the number of delivery orders assigned to the wireless terminal, iii) a terminal ID of the wireless terminal, and the like.

For example, the server may determine the wireless terminal of the regular rider to provide a delivery order based on a distance between the departure location of the delivery order and terminal positions of the wireless terminals of the regular riders. For example, the server may determine, among the wireless terminals of the regular riders, a wireless terminal having a shortest distance between the terminal position and the departure location of the delivery order as the wireless terminal of the regular rider to provide the delivery order.

Alternatively, the server may determine, among the wireless terminals of the regular riders, a wireless terminal having a shortest required time for a route to the departure location of the delivery order as the wireless terminal of the regular rider to provide the delivery order. In this case, the required time for the route may be determined

according to the transportation of the rider and traffic conditions.

In another example, the server may determine the wireless terminal of the regular rider to provide the delivery order in consideration of the number of delivery orders assigned to each wireless terminal of the regular riders and a delivery order limit of each wireless terminal of the regular riders.

In this case, the delivery order limit refers to the maximum number of delivery orders that may be assigned to each wireless terminal. The delivery order limit may be determined according to a skill level of a regular rider carrying a wireless terminal. For example, a well-experienced regular rider may efficiently process multiple delivery orders, and therefore, the number of delivery orders to be assigned may also increase.

In addition, the delivery order limit may be determined based on the number of delivery orders from a branch and the number of regular riders. For example, when the number of delivery orders is greater than the number of regular riders by a predetermined ratio or more, the server may determine the delivery order limit of the wireless terminal of the regular rider at that time to be higher than before.

In addition, the delivery order limit may be determined according to the transportation of the regular rider. For example, a delivery order limit in a case where the transportation of the regular rider is a two-wheeled vehicle may be determined to be higher than a delivery order limit in a case where the transportation of the regular rider is a bicycle.

The server may determine the wireless terminal to provide the delivery order among wireless terminals of the regular riders in which the number of delivery orders assigned to a wireless terminal of a regular rider is less than the delivery order limit of the wireless terminal. For example, the server may determine, among the wireless terminals of the regular riders in which the number of delivery orders assigned to the wireless terminal of the regular rider is less than the delivery order limit of the wireless terminal, a wireless terminal of a regular rider having a shortest distance between the terminal position and the departure location of the delivery order, as the wireless terminal of the regular rider to provide the delivery order.

The server may exclude wireless terminals set not to be assigned automatically among the wireless terminals of the regular riders registered in the server, and determine the wireless terminal of the regular rider to provide the delivery order among wireless terminals of the remaining regular riders.

In operation 202, the server provides the delivery order to the determined wireless terminal of the regular rider. The regular rider receiving the delivery order may transmit a processing response or a rejection response to the received delivery order to the server through the wireless terminal.

In operation 203, the server determines whether a processing response is received from the wireless terminal of the regular rider. When the processing response is received from the wireless terminal of the regular rider, the server provides the delivery order to the wireless terminal of the regular rider that transmitted the processing response.

However, when the processing response is not received from the wireless terminal of the regular rider for a predetermined period of time, the server performs operation 204. The case where the processing response is not received from the wireless terminal of the regular rider refers to a case where the regular rider transmits a rejection response to the server or a case where the regular rider does not transmit the processing response to the server within the predetermined period of time.

In operation 204, when the processing response is not received from the determined wireless terminal of the regular rider within the predetermined period of time, the server transmits a list including delivery orders to the wireless terminals of the regular riders registered in the server.

The wireless terminal of the regular rider receives the list including the delivery orders. The regular riders may select a delivery order to process among the delivery orders included in the list, and transmit the processing response to the selected delivery order to the server.

In operation 205, the server determines whether a processing response is received from the wireless terminals of the regular riders receiving the list. When the processing response is received from the wireless terminal of the regular rider, the server provides the delivery order to the wireless terminal of the regular rider that transmitted the processing response first.

However, when the processing response is not received from the wireless terminals of the regular riders receiving the list for a predetermined period of time, the server performs operation 206. In operation 206, the server determines a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server.

Specifically, the server determines the wireless terminal of the crowdsourcing rider

to provide the delivery order among the wireless terminals of the crowdsourcing riders registered in the server based on information on the wireless terminals, and a departure location and a delivery location of the delivery order. The information on the wireless terminals may include i) a terminal position of the wireless terminal, ii) the number of delivery orders assigned to the wireless terminal, iii) a terminal ID of the wireless terminal, and the like.

For example, the server may determine the wireless terminal of the crowdsourcing rider to provide a delivery order based on a distance between the departure location of the delivery order and terminal positions of the wireless terminals of the crowdsourcing riders. For example, the server may determine, among the wireless terminals of the crowdsourcing riders, a wireless terminal having a shortest distance between the terminal position and the departure location of the delivery order as the wireless terminal of the crowdsourcing rider to provide the delivery order.

In another example, the server may determine a required time for a route to the departure location of the delivery order and a required time for a route from the departure location to the delivery location of the delivery order, and determine the wireless terminal of the crowdsourcing rider to provide the delivery order among the wireless terminals of the crowdsourcing riders in consideration of the determined required times.

In this case, the required time may be determined based on the transportation of the crowdsourcing rider. The transportation of the crowdsourcing rider may be one of walking, a bicycle, an electric scooter, a two-wheeled vehicle, or a four-wheeled vehicle. The route, which may be used by the crowdsourcing rider, may also vary depending on the transportation.

For example, when the transportation of the crowdsourcing rider registered in the server is walking, the required time for a specific delivery order may increase, as the route from the departure location to the delivery location becomes longer, although the distance between the departure location and the terminal position is short.

Therefore, the server may determine the required time to process the delivery order in consideration of the transportation of the crowdsourcing riders, and provide the delivery order to a wireless terminal of a crowdsourcing rider having a required time that is determined to be shortest for the delivery order.

In operation 207, the server transmits a delivery order including information on a departure location and a delivery location to the wireless terminal of the crowdsourcing

rider determined in operation 206. However, the crowdsourcing rider receiving the delivery order may also transmit a processing response or a rejection response to the received delivery order to the server through the wireless terminal.

In operation 208, the server determines whether the processing response is received from the wireless terminal of the crowdsourcing rider. When the processing response is received from the wireless terminal of the crowdsourcing rider, the server provides the delivery order to the wireless terminal of the crowdsourcing rider that transmitted the processing response.

However, when the processing response is not received from the crowdsourcing rider receiving the delivery order within a predetermined period of time, the server performs the process again from operation 203. That is, the server redetermines a wireless terminal of a regular rider to provide a delivery order among the wireless terminals of the regular riders registered in the server based on the information on the wireless terminals, and the departure location and the delivery location of the delivery order.

That is, the process from operation 203 to operation 208 may be repeatedly performed until the delivery order is processed. In another example, when a processing response is not received from the redetermined wireless terminal within a predetermined period of time, the server determines a wireless terminal of a crowdsourcing rider to provide the delivery order among the wireless terminals of the crowdsourcing riders registered in the server, and provides the delivery order to the determined wireless terminal of the crowdsourcing rider.

FIG. 3 is a flowchart illustrating a method of providing a delivery order with performing subjects according to an embodiment.

In operation 301, a server receives a delivery order including information on a departure location and a delivery location from a store or another server that manages delivery orders. In operation 302, the server determines a wireless terminal of a regular rider to provide a delivery order among the wireless terminals of the regular riders registered in the server based on the information on the wireless terminals, and a departure location and a delivery location of the delivery order.

In operation 303, the server transmits the delivery order to the determined wireless terminal of the regular rider. The wireless terminal of the regular rider may receive the delivery order, and transmit a processing response or a rejection response to the delivery

order to the server through the wireless terminal.

However, when the processing response is not received from the wireless terminal of the regular rider for a predetermined period of time, the server performs operation 304. In operation 304, the server transmits a list including delivery orders to the wireless terminals of the regular riders registered in the server.

Referring to FIG. 3, a wireless terminal of a regular rider registered in the server receives the list of the delivery orders. When any one of the wireless terminals of the regular riders receiving the list transmits the processing response to the server, the server provides the delivery order to the wireless terminal of the regular rider transmitting the processing response.

However, when the processing response is not received from the wireless terminals of the regular riders receiving the list for a predetermined period of time, the server performs operation 305. In operation 305, the server determines a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server. In operation 306, the server transmits the delivery order to the determined wireless terminal of the crowdsourcing rider.

FIG. 4 is a flowchart illustrating a method of providing a delivery order according to another embodiment.

A server receives a delivery order including information on a departure location and a delivery location from a store or another server that manages delivery orders, and identifies the received delivery order.

In operation 401, the server transmits a list including delivery orders to the wireless terminals of the regular riders registered in the server. The wireless terminal of the regular rider receives the list including the delivery orders. The regular riders may select a delivery order to process among the delivery orders included in the list, and transmit the processing response to the selected delivery order to the server.

In operation 402, the server determines whether the processing response is received from the wireless terminals of the regular riders receiving the list. When the processing response is received from the wireless terminal of the regular rider, the server provides the delivery order to the wireless terminal of the regular rider that transmitted the processing response first.

However, when the processing response is not received from the wireless terminals of the regular riders receiving the list for a predetermined period of time, the

server performs operation 403. In operation 403, the server determines a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server.

Specifically, the server determines the wireless terminal of the crowdsourcing rider to provide the delivery order among the wireless terminals of the crowdsourcing riders registered in the server based on information on the wireless terminals, and a departure location and a delivery location of the delivery order. The information on the wireless terminals may include i) a terminal position of the wireless terminal, ii) the number of delivery orders assigned to the wireless terminal, iii) a terminal ID of the wireless terminal, and the like.

For example, the server may determine the wireless terminal of the crowdsourcing rider to provide a delivery order based on a distance between a departure location of the delivery order and terminal positions of the wireless terminals of the crowdsourcing riders. For example, the server may determine, among the wireless terminals of the crowdsourcing riders, a wireless terminal having a shortest distance between the terminal position and the departure location of the delivery order as the wireless terminal of the crowdsourcing rider to provide the delivery order.

In another example, the server may determine a required time for a route to the departure location of the delivery order and a required time for a route from the departure location to the delivery location of the delivery order, and determine the wireless terminal of the crowdsourcing rider to provide the delivery order among the wireless terminals of the crowdsourcing riders in consideration of the determined required times.

In this case, the required time may be determined based on the transportation of the crowdsourcing rider. The transportation of the crowdsourcing rider may be one of walking, a bicycle, an electric scooter, a two-wheeled vehicle, or a four-wheeled vehicle. The route, which may be used by the crowdsourcing rider, may also vary depending on the transportation.

For example, when the transportation of the crowdsourcing rider registered in the server is walking, the required time for a specific delivery order may increase, as the route from the departure location to the delivery location becomes longer, although the distance between the departure location and the terminal position is short.

Therefore, the server may determine the required time to process the delivery order in consideration of the transportation of the crowdsourcing riders, and provide the

delivery order to a wireless terminal of a crowdsourcing rider having a required time that is determined to be shortest for the delivery order.

In operation 404, the server transmits a delivery order including information on a departure location and a delivery location to the determined wireless terminal of the crowdsourcing rider. However, the crowdsourcing rider receiving the delivery order may also transmit a processing response or a rejection response to the received delivery order to the server through the wireless terminal.

In operation 405, the server determines whether the processing response is received from the wireless terminal of the crowdsourcing rider. When the processing response is received from the wireless terminal of the crowdsourcing rider, the server provides the delivery order to the wireless terminal of the crowdsourcing rider that transmitted the processing response.

However, when the processing response is not received from the crowdsourcing rider receiving the delivery order within a predetermined period of time, the server performs the process again from operation 401. That is, the server redetermines a wireless terminal of a regular rider to provide a delivery order among the wireless terminals of the regular riders registered in the server based on the information on the wireless terminals, and the departure location and the delivery location of the delivery order.

That is, the process from operation 401 to operation 405 may be repeatedly performed until the delivery order is processed.

FIG. 5 is a flowchart illustrating a method of providing a delivery order with performing subjects according to an embodiment.

In operation 501, a server receives a delivery order including information on a departure location and a delivery location from a store or another server that manages delivery orders, and identifies the received delivery order.

In operation 502, the server transmits a list including delivery orders to the wireless terminals of the regular riders registered in the server. In addition, the server determines whether a processing response is received from the wireless terminals of the regular riders receiving the list. When the processing response is received from the wireless terminal of the regular rider, the server provides the delivery order to the wireless terminal of the regular rider that transmitted the processing response first.

In operation 503, when the processing response is not received from the wireless

terminals of the regular riders receiving the list for a predetermined period of time, the server determines a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server.

In operation 504, the server transmits a delivery order including information on a departure location and a delivery location to the determined wireless terminal of the crowdsourcing rider.

FIG. 6 is a diagram illustrating a display included in a wireless terminal of a regular rider according to an embodiment.

A part (a) of FIG. 6 illustrates that a list of delivery orders received from a server is displayed on a display of a wireless terminal of a regular rider 600. A part (b) of FIG. 6 illustrates that delivery orders are displayed on the display of the wireless terminal of the regular rider 600 when the delivery orders are automatically assigned from the server.

Referring to the part (a) of FIG. 6, the list received from the server includes delivery orders 602 to 606 which are not processed at a current time point. The list received from the server is displayed as a delivery list 601 on the display of the wireless terminal. The delivery orders 602 to 606 may be delivery orders 602 to 606 having different departure locations and different delivery locations.

The regular rider 600 may select one delivery order 602, that the regular rider 600 is able to process, among the delivery orders 602 to 606. The wireless terminal of the regular rider 600 may transmit a processing response to the selected delivery order 602 to the server by an input of the regular rider 600 such as a click. In this case, the wireless terminal of the regular rider 600 may transmit information on the wireless terminal, such as a terminal ID together.

When the processing response to the delivery order 602 is received from the wireless terminal of the regular rider 600, the server provides the delivery order 602 to the wireless terminal of the regular rider 600.

Referring to the part (b) of FIG. 6, even though two delivery orders 608 and 609 are assigned to the wireless terminal of the regular rider 600, a delivery order 610 may be automatically assigned from the server. The regular rider 600 may transmit a processing response or a rejection response to the automatically assigned delivery order 610 to the server.

FIG. 7 is a diagram illustrating a display included in a wireless terminal of a crowdsourcing rider according to an embodiment.

A part (a) of FIG. 7 illustrates that delivery orders 702 to 704 automatically assigned from the server are displayed on a display of a wireless terminal of a crowdsourcing rider 700. A part (b) of FIG. 7 illustrates that, when one of delivery orders automatically assigned from the server is clicked, information on a delivery order 702 is displayed on a display of the wireless terminal of the crowdsourcing rider 700.

Referring to the part (a) of FIG. 7, the transportation of the crowdsourcing rider 700 is a bicycle, and the server provides the delivery orders 702 to 704 to the crowdsourcing rider 700 in consideration of the transportation of the crowdsourcing rider 700, a terminal position, departure locations and delivery locations of the delivery orders 702 to 704, and the like.

The crowdsourcing rider 700 may transmit a processing response or a rejection response to each of the delivery orders 702 to 704 displayed on a received delivery list 701 to the server through the wireless terminal.

In addition, referring to the part (b) of FIG. 7, a departure location 710 and a delivery location 711 of a delivery order 707, and a terminal position 712 of the wireless terminal of the crowdsourcing rider 700 are shown on a map displayed on the display. Accordingly, the crowdsourcing rider 700 may easily check a route required to process each delivery order.

In addition, referring to the part (b) of FIG. 7, the departure location 710 and the delivery location 711 of the delivery order 707 may also be displayed in letters, the crowdsourcing rider 700 may change the transportation using a button 708, and a route or an estimated period of time may be set again when the transportation is changed. Also, the processing response may be transmitted to the server through a button 709 displayed on the display.

The method according to embodiments may be written in a computer-executable program and may be implemented as various recording media such as magnetic storage media, optical reading media, or digital storage media.

Various techniques described herein may be implemented in digital electronic circuitry, computer hardware, firmware, software, or combinations thereof. The implementations may be achieved as a computer program product, i.e., a computer program tangibly embodied in an information carrier, e.g., in a machine-readable storage device (for example, a computer-readable medium) or in a propagated signal, for processing by, or to control an operation of, a data processing apparatus, e.g., a

programmable processor, a computer, or multiple computers. A computer program, such as the computer program(s) described above, may be written in any form of a programming language, including compiled or interpreted languages, and may be deployed in any form, including as a stand-alone program or as a module, a component, a subroutine, or other units suitable for use in a computing environment. A computer program may be deployed to be processed on one computer or multiple computers at one site or distributed across multiple sites and interconnected by a communication network.

Processors suitable for processing of a computer program include, by way of example, both general and special purpose microprocessors, and any one or more processors of any kind of digital computer. Generally, a processor will receive instructions and data from a read-only memory or a random-access memory, or both. Elements of a computer may include at least one processor for executing instructions and one or more memory devices for storing instructions and data. Generally, a computer also may include, or be operatively coupled to receive data from or transfer data to, or both, one or more mass storage devices for storing data, e.g., magnetic, magneto-optical disks, or optical disks. Examples of information carriers suitable for embodying computer program instructions and data include semiconductor memory devices, e.g., magnetic media such as hard disks, floppy disks, and magnetic tape, optical media such as compact disk read only memory (CD-ROM) or digital video disks (DVDs), magneto-optical media such as floptical disks, read-only memory (ROM), random-access memory (RAM), flash memory, erasable programmable ROM (EPROM), or electrically erasable programmable ROM (EEPROM). The processor and the memory may be supplemented by, or incorporated in special purpose logic circuitry.

In addition, non-transitory computer-readable media may be any available media that may be accessed by a computer and may include both computer storage media and transmission media.

Although the present specification includes details of a plurality of specific embodiments, the details should not be construed as limiting any invention or a scope that can be claimed, but rather should be construed as being descriptions of features that may be peculiar to specific embodiments of specific inventions. Specific features described in the present specification in the context of individual embodiments may be combined and implemented in a single embodiment. On the contrary, various features described in the context of a single embodiment may be implemented in a plurality of embodiments

individually or in any appropriate sub-combination. Furthermore, although features may operate in a specific combination and may be initially depicted as being claimed, one or more features of a claimed combination may be excluded from the combination in some cases, and the claimed combination may be changed into a sub-combination or a modification of the sub-combination.

Likewise, although operations are depicted in a specific order in the drawings, it should not be understood that the operations must be performed in the depicted specific order or sequential order or all the shown operations must be performed in order to obtain a preferred result. In specific cases, multitasking and parallel processing may be advantageous. In addition, it should not be understood that the separation of various device components of the aforementioned embodiments is required for all the embodiments, and it should be understood that the aforementioned program components and apparatuses may be integrated into a single software product or packaged into multiple software products.

The embodiments disclosed in the present specification and the drawings are intended merely to present specific examples in order to aid in understanding of the disclosure, but are not intended to limit the scope of the disclosure. It will be apparent to those skilled in the art that various modifications based on the technical spirit of the present disclosure, as well as the disclosed embodiments, can be made.

# CLAIMS

[Claim 1] A method of providing a delivery order performed by a server, the method comprising:

identifying a delivery order comprising information on a departure location and a delivery location;

determining a wireless terminal of a regular rider to provide the delivery order among wireless terminals of regular riders registered in the server based on information on the wireless terminals and a departure location and a delivery location of the delivery order;

transmitting the delivery order to the determined wireless terminal of the regular rider;

when a processing response is not received from the determined wireless terminal of the regular rider within a predetermined period of time, transmitting a list comprising the delivery order to the wireless terminals of the regular riders registered in the server;

when a processing response is not received from the wireless terminals, to which the list is transmitted, within a predetermined period of time, determining a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server; and

transmitting the delivery order to the wireless terminal of the crowdsourcing rider.

[Claim 2] The method of claim 1, further comprising:

when a processing response is not received from the wireless terminals, to which the list is transmitted, within a predetermined period of time, redetermining a wireless terminal of a regular rider to provide the delivery order among the wireless terminals of the regular riders registered in the server based on the information on the wireless terminals and the departure location and the delivery location of the delivery order; and

transmitting the delivery order to the determined wireless terminal of the regular rider,

wherein the determining of the wireless terminal of the crowdsourcing rider comprises:

when a processing response is not received from the redetermined wireless terminal within a predetermined period of time, determining the wireless terminal of the crowdsourcing rider to provide the delivery order among the wireless terminals of the crowdsourcing riders registered in the server.

[Claim 3] The method of claim 1, wherein the information on the wireless terminal comprises i) a terminal position of the wireless terminal, ii) a number of delivery orders assigned to the wireless terminal, and iii) a terminal ID of the wireless terminal.

[Claim 4] The method of claim 1, wherein the determining of the wireless terminal of the regular rider comprises:

determining the wireless terminal of the regular rider to provide the delivery order based on a distance between the departure location and terminal positions of the wireless terminals of the regular riders.

[Claim 5] The method of claim 1, wherein the determining of the wireless terminal of the regular rider comprises:

determining the wireless terminal of the regular rider to provide the delivery order in consideration of a number of delivery orders assigned to each wireless terminal of the regular riders and a delivery order limit of each wireless terminal of the regular riders.

[Claim 6] The method of claim 1, wherein the determining of the wireless terminal of the crowdsourcing rider comprises:

determining the wireless terminal of the crowdsourcing rider to provide the delivery order based on a distance between the departure location and terminal positions of the wireless terminals of the crowdsourcing riders.

[Claim 7] The method of claim 1, wherein the determining of the wireless terminal of the crowdsourcing rider comprises:

determining the wireless terminal of the crowdsourcing rider to provide the delivery order in consideration of i) a distance between the departure location and terminal positions of the wireless terminals of the crowdsourcing riders and ii) a transportation of the crowdsourcing rider.

[Claim 8] A method of providing a delivery order performed by a server, the method comprising:

identifying a delivery order comprising information on a departure location and a

delivery location;

transmitting a list comprising the delivery order to wireless terminals of regular riders registered in the server;

when a processing response is not received from the wireless terminals, to which the list is transmitted, within a predetermined period of time, determining a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server; and

transmitting the delivery order to the wireless terminal of the crowdsourcing rider.

[Claim 9] The method of claim 8, wherein the determining of the wireless terminal of the crowdsourcing rider comprises:

determining the wireless terminal of the crowdsourcing rider to provide the delivery order based on a distance between the departure location and terminal positions of the wireless terminals of the crowdsourcing riders.

[Claim 10] The method of claim 8, wherein the determining of the wireless terminal of the crowdsourcing rider comprises:

determining the wireless terminal of the crowdsourcing rider to provide the delivery order in consideration of i) a distance between the departure location and terminal positions of the wireless terminals of the crowdsourcing riders and ii) a transportation of the crowdsourcing rider.

[Claim 11] A method of providing a delivery order performed by a wireless terminal of a regular rider, the method comprising:

transmitting information on the wireless terminal to a server;

receiving a delivery order comprising information on a departure location and a delivery location from the server;

displaying the departure location and the delivery location of the delivery order on a display of the wireless terminal; and

transmitting a processing response to the delivery order to the server.

[Claim 12] The method of claim 11, wherein the information on the wireless terminal comprises:

i) a terminal position of the wireless terminal, ii) a number of delivery orders assigned to the wireless terminal, and iii) a terminal ID of the wireless terminal.

[Claim 13] A method of providing a delivery order performed by a wireless terminal of a regular rider, the method comprising:

receiving a list of delivery orders comprising information on a departure location and a delivery location from a server;

displaying the list on a display of the wireless terminal; and

transmitting a processing response to one of the delivery orders included in the list to the server.

[Claim 14] A method of providing a delivery order performed by a wireless terminal of a crowdsourcing rider, the method comprising:

transmitting information on the wireless terminal to a server;

receiving a delivery order comprising information on a departure location and a delivery location from the server;

displaying the departure location and the delivery location of the delivery order on a display of the wireless terminal; and

transmitting a processing response to the delivery order to the server.

[Claim 15] The method of claim 14, wherein the information on the wireless terminal comprises i) a terminal position of the wireless terminal, ii) a transportation of the crowdsourcing rider, and iii) a terminal ID of the wireless terminal.

[Claim 16] A non-transitory computer-readable storage medium storing instructions that, when executed by a processor, cause the processor to perform the method of one of claims 1 to 15.

[Claim 17] A server for performing a method of providing a delivery order, the server comprising:

a processor,

wherein the processor is configured to:

identify a delivery order comprising information on a departure location

and a delivery location;

determine a wireless terminal of a regular rider to provide the delivery order among wireless terminals of regular riders registered in the server based on information on the wireless terminals and a departure location and a delivery location of the delivery order;

transmit the delivery order to the determined wireless terminal of the regular rider;

when a processing response is not received from the determined wireless terminal of the regular rider within a predetermined period of time, transmit a list comprising the delivery order to the wireless terminals of the regular riders registered in the server;

when a processing response is not received from the wireless terminals, to which the list is transmitted, within a predetermined period of time, determine a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server; and

transmit the delivery order to the wireless terminal of the crowdsourcing rider.

[Claim 18] A server for performing a method of providing a delivery order, the server comprising:

a processor,

wherein the processor is configured to:

identify a delivery order comprising information on a departure location and a delivery location;

transmit a list comprising the delivery order to wireless terminals of regular riders registered in the server;

when a processing response is not received from the wireless terminals, to which the list is transmitted, within a predetermined period of time, determine a wireless terminal of a crowdsourcing rider to provide the delivery order among wireless terminals of crowdsourcing riders registered in the server; and

transmit the delivery order to the wireless terminal of the crowdsourcing rider.

[Claim 19] A wireless terminal of a regular rider for performing a method of providing a delivery order, the wireless terminal comprising:

a processor,

wherein the processor is configured to:

transmit information on the wireless terminal to a server;

receive a delivery order comprising information on a departure location and a delivery location from the server;

display the departure location and the delivery location of the delivery order on a display of the wireless terminal; and

transmit a processing response to the delivery order to the server.

[Claim 20] A wireless terminal of a regular rider for performing a method of providing a delivery order, the wireless terminal comprising:

a processor,

wherein the processor is configured to:

receive a list of delivery orders comprising information on a departure location and a delivery location from a server;

display the list on a display of the wireless terminal; and

transmit a processing response to one of the delivery orders included in the list to the server.

[Claim 21] A wireless terminal of a crowdsourcing rider for performing a method of providing a delivery order, the wireless terminal comprising:

a processor,

wherein the processor is configured to:

transmit information on the wireless terminal to a server;

receive a delivery order comprising information on a departure location and a delivery location from the server;

display the departure location and the delivery location of the delivery order on a display of the wireless terminal; and

transmit a processing response to the delivery order to the server.