August 2021

Enabling In-Context Shopping by Unbundling E-commerce Processes

Wenfeng Li

Amit Handa

Sunil Nambiar

Enabling In-Context Shopping by Unbundling E-commerce Processes

ABSTRACT

Shopping aggregator services list products and services from third-party sellers and marketplaces. Sellers can choose to use shopping aggregators for listing only or can delegate the entire selling operation to the shopping aggregator service. In each case, the front-end selling aspects of the transaction and the back-end payment and order processing are performed by a single entity. This disclosure describes mechanisms that unbundle the full chain of operations for an e-commerce transaction by separating the user interface of the front-end selling operation from the back-end operations, enabling shopping aggregators to handle front-end selling while enabling sellers and marketplaces to retain control over back-end order processing and fulfilment. The mechanisms include utilizing encryption and key-management infrastructure to enable data exchange and can be implemented by any platform or application that acts as a shopping aggregator. Customer experience is improved by enabling shopping in context. The mechanisms can generate higher conversion and sales volume for sellers while allowing them to remain in control of the post-order customer experience.

KEYWORDS

- Shopping aggregator
- Online marketplace
- In-context selling
- Unbundled e-commerce
- Third-party seller
- Online advertising

BACKGROUND

Online shoppers can use shopping aggregator services to search for and purchase products and services. Shopping aggregator services, e.g., offered via websites, list products and services from a number of third parties. The third parties can be of any type, such as individual sellers, marketplaces that contain listings from individual sellers, large retail merchants, etc.

Larger third parties, such as retailers, marketplaces, etc., typically provide websites and apps that include a full suite of e-commerce capabilities, such as order placement, payment handling, shipment tracking, customer support, etc. Such parties utilize shopping aggregator services for acquiring customer traffic. In such cases, the shopping aggregator serves the purpose of listing the products and services of the third parties. Shoppers who wish to buy any of the listed products and services can then be directed to the website or app of the third party for initiating and completing the purchase.

In contrast, smaller third parties, such as individual sellers that are not affiliated with marketplaces, do not typically possess the ability to engage in e-commerce transactions with individual customers. In such cases, the shopping aggregator can provide a full suite of e-commerce capabilities such that users can purchase the listed products and services from such sellers directly using the shopping aggregator service. Such operation is similar to that of many marketplaces themselves, where individual third-party sellers list their products and services on marketplaces that handle e-commerce transactions and ultimately pass the payments on to the sellers.

Currently, merchants who partner with a shopping aggregator must choose from one of the above operations modes: either using the shopping aggregator only for listing their products and services and handling e-commerce transactions on their own; or relying on the shopping

aggregator for listing products and services and for handling the entire chain of the e-commerce transaction for purchasing. Neither of the two modes permit merchants to unbundle the front-end selling aspects of the transaction from the back-end payment and order processing.

DESCRIPTION

This disclosure describes mechanisms to unbundle the full chain of operations for an e-commerce transaction by separating the user interface (UI) / user experience (UX) of the front-end selling operation from the back-end operations of payment processing and order fulfilment. Such unbundling can permit the front-end selling and back-end processing operations to be handled by different parties. For instance, a shopping aggregator service can include front-end selling capabilities that allow users to purchase the listed products and services in-context via the front-end UI/UX of the shopping aggregator. The listings can be provided in-context in a variety of ways, e.g., search result pages, shopping section of the aggregator's website, video services, etc. With user permission, payment and order fulfilment can be delegated to the third parties whose products and services are listed and have been ordered via the shopping aggregator.

The unbundling of the front-end and back-end operations as above can be achieved using appropriate encryption and key-management infrastructure, such as public key infrastructure (PKI), for data exchange between the shopping aggregator and third-party merchants. Relevant purchasing and user information of a particular order associated with a particular merchant, obtained by the shopping aggregator with permission during the front-end selling operation, can be securely passed to the third-party merchant by encrypting it with the appropriate key of the merchant. Such information can include a number of items, such as products or services to be purchased, quantity, credit card or other relevant payment information, billing and shipping addresses, contact information, etc. In addition, if users permit, such information can include

other data, such as IP address, browser version, etc., that can be utilized by the merchant for detecting potential fraud.

The merchant can decrypt the information using a matching key and process the payment. If the payment is successful, the merchant can proceed to fulfill the order and send relevant information on the order status back to the shopping aggregator for displaying to the user within the front-end UI/UX for the selling operation provided via the shopping aggregator. The order status information can include relevant order tracking parameters, such as order number, estimated delivery date, contact information for customer support, etc.

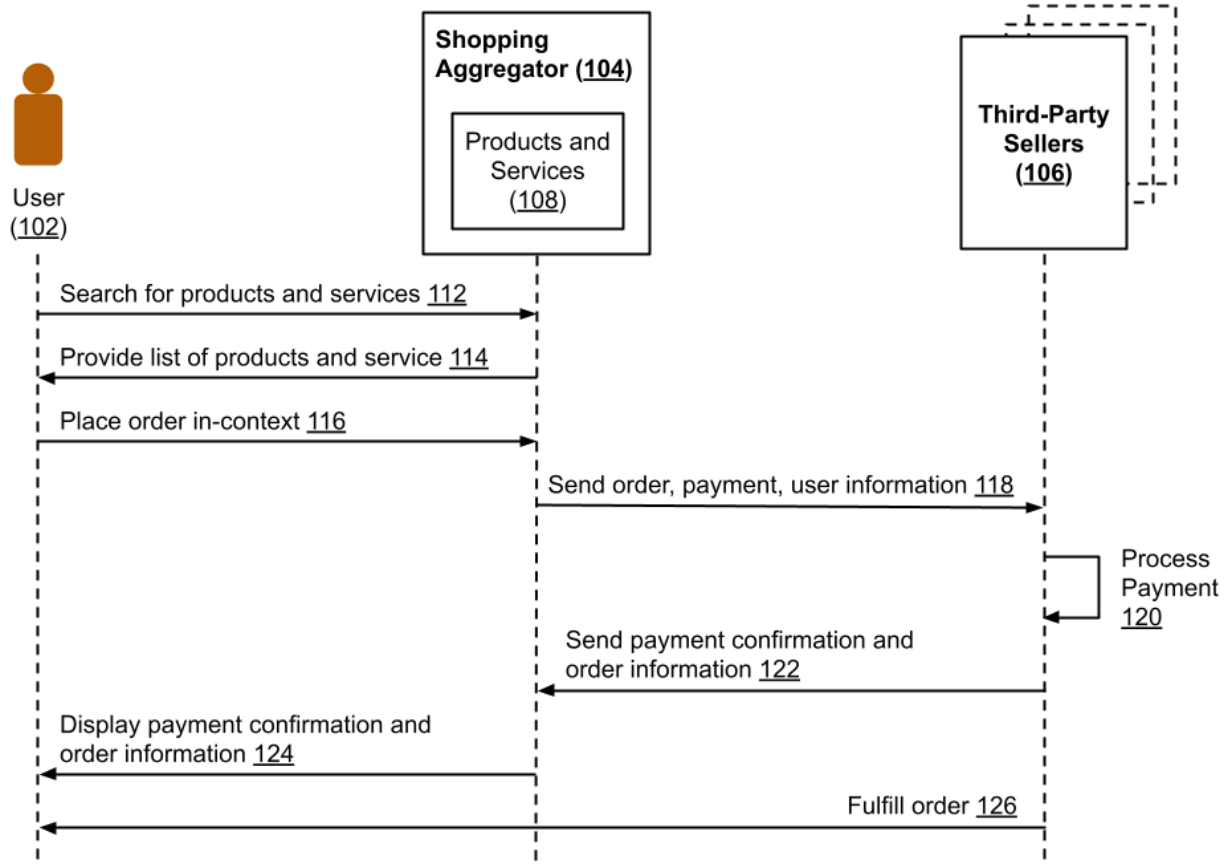

Fig. 1: In-context shopping by unbundling front-end and back-end e-commerce operations

Fig. 1 shows an example of operational implementation of the unbundling mechanism. A user (102) searches for (112) or otherwise views products and services (108) on a shopping aggregator (104) that includes products and services of various third-party sellers (106). The shopping aggregator can provide the list of products and services that match the user's query (114) or context (obtained with user permission).

The user can then place an in-context order (116) for any of the listed products and services from within the UI of the shopping aggregator. With the user's permission, the shopping aggregator can relay relevant order, payment, and user information (118) to the third-party seller or marketplace selling the product or service. The third-party seller can use the information to process the payment (120). If the payment is successful, the third-party seller sends payment confirmation and order information back to the shopping aggregator (122). In turn, the shopping aggregator displays the information to the user in-context (124). The third-party seller then processes and fulfills the order (126) for the user. Optionally, the merchant can directly send the order status information to the user.

The mechanisms described in this disclosure can be integrated within any platform or application that lists products and services for sale, such as search engines, content hosting platforms, shopping aggregator apps or websites, etc. via suitable application programming interfaces (APIs).

The operation split as described above enables flexible deployment of online shopping such that users can make purchases without leaving the context in which they encountered a product or service, and sellers can handle back-end operations as they normally would for on their own website or apps. The aggregator providing the front-end selling can delegate the back-end operations directly to individual sellers which is typically the case for large independent

retailers. Additionally, the back-end operations can be delegated to a marketplace that handles them for individual sellers who are part of the marketplace.

The user interface displaying items for purchase can be provided within any context. For example, the item list may be included in search engine results, advertisements on content platforms and applications, etc. The ability for a user to initiate and complete purchases without leaving the context of the current activity and without needing to create separate accounts with individual merchants, provides a smooth and more efficient user experience. The mechanism can benefit shopping aggregators and content providers as well since in-context selling keeps users from switching away to the website or app of another party.

The enhanced user experience of in-context shopping as described in this disclosure enables users to complete purchases with fewer clicks compared to buying directly from a merchant and can thereby result in better conversion rates than those obtained by simply listing the product on a shopping aggregator service. Moreover, the described mechanisms can help merchants acquire customer traffic from a variety of usage contexts which can boost transaction volume substantially beyond relying solely on traffic to the website or app of the merchant. Further, the shopping experience of in-context selling allows merchants to leverage the user's trust in the brand and reputation of the party that provides the front-end. These benefits are obtained while the merchant retains control over all back-end aspects of the transaction, such as payment, shipment, customer service, etc. and can therefore ensure a smooth post-order customer experience.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs or features described herein may enable collection of user information (e.g., information about a user’s queries or context, a user’s

purchase orders, payment information associated with purchase orders, a user's preferences, or a user's current location), and if the user is sent content or communications from a server. In addition, certain data may be treated in one or more ways before it is stored or used, so that personally identifiable information is removed. For example, a user's identity may be treated so that no personally identifiable information can be determined for the user, or a user's geographic location may be generalized where location information is obtained (such as to a city, ZIP code, or state level), so that a particular location of a user cannot be determined. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

CONCLUSION

This disclosure describes mechanisms that unbundle the full chain of operations for an e-commerce transaction by separating the user interface of the front-end selling operation from the back-end operations, enabling shopping aggregators to handle front-end selling while enabling sellers and marketplaces to retain control over back-end order processing and fulfilment. The mechanisms include utilizing encryption and key-management infrastructure to enable data exchange and can be implemented by any platform or application that acts as a shopping aggregator. Customer experience is improved by enabling shopping in context. The mechanisms can generate higher conversion and sales volume for sellers while allowing them to remain in control of the post-order customer experience.