

Defining online to offline (O2O): a systematic approach to defining an emerging business model

Defining an
emerging
business model

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Abstract

Purpose – A new business model online to offline (O2O) has emerged in recent years. Similar to many new models at an early stage, O2O has inconsistent definitions which not only inhibit its adoption but also poorly differentiate O2O from other existing business models. To resolve the two issues, the authors propose an approach of definition development.

Design/methodology/approach – To show the usefulness of the approach, the authors demonstrate the differences among O2O and other business models with the use of the distinctive definition and thereby evaluate adoption of O2O from a practical perspective and identify research directions from a theoretical perspective based on the differences.

Findings – The authors' proposed approach of definition development integrates the work of Tatarkiewicz (1980) and Nickerson *et al.* (2013). The approach generates a distinctive definition of O2O with important analytical dimensions which help decision-making of adoption of O2O.

Originality/value – The paper aims to make several contributions. First, on theoretical contribution, the authors confine the scope of O2O studies and facilitate accumulation of more coherent knowledge of O2O. The authors help O2O evolve from a "buzz word" of successful stories in real businesses to a more serious concept from an academic perspective. Second, from a practical perspective, the authors' definition provides business executives with critical evaluative dimensions for gauging the adoption of O2O. Lastly, from a methodological perspective, the proposed approach can be used in future to define an emerging concept in real life businesses.

Keywords O2O, Online to offline, E-commerce, Definition creation, Business model

Paper type Research paper

1. Introduction

Whether a business should retain its existing business models or adopt a new and probably less proven business model is a crucial strategic question in today's fast-changing business environment. Businesses are motivated to establish new channels to reach more potential customers for larger revenue income (Neslin *et al.*, 2006; Weinberg *et al.*, 2007). Among various business models that have emerged, online to offline (O2O) deserves our attention as the model integrates channels of very different nature. Whereas offline channels feature intensive interaction with customers, online channels excel in reaching massive customers at low costs. Despite there has been a surge of academic articles exploring O2O in recent years, scholars have not yet arrived at a strong consensus about the definition of O2O. Some existing definitions of O2O focused only on features of online channels (e.g. Cao and Liu, 2015; Sett *et al.*, 2020), whereas some definitions emphasized offline characteristics such as customer experience at stores (e.g. Chi *et al.*, 2015; Hsieh, 2017). Vague definitions are common in O2O papers (see Appendix). For example, the difference between e-marketing and a simple definition of O2O, i.e. driving people from online to offline, is rather unclear. Lack of emphasis



on online payment cannot distinguish O2O implementation from online catalogs. Inadequate attention to high-quality offline experience also cannot justify why offline channels should be integrated into online channels. This type of vague definition creates theoretical confusion and difficulties in evaluating expected benefits of the model.

In this paper, to justify the emerging O2O as a valid, new model, we use a combined approach of [Tatarkiewicz's \(1980\)](#) and [Nickerson et al.'s \(2013\)](#) to first find *differentiae specifica* of O2O, and subsequently integrate the *differentiae specifica* to create a definition of O2O which is distinctive from other relevant business models and initiatives. The *differentiae specifica* of O2O are conceptual dimensions that distinguish O2O from other similar concepts, and the identified *differentiae specifica* of O2O include directional integration from online to offline channels, information exchange, online ordering, locality and offline experience. A customer journey can be divided into three stages, namely the pre-purchase stage, the purchase stage and the post-purchase stage ([Lemon and Verhoef, 2016](#)). Information exchange and online ordering are related to the pre-purchase stage and the purchase stage respectively, whereas locality and offline experience are relevant to the post-purchase stage. Directional integration from online to offline channels refers to customer flow from online communication and payment channels to offline delivery channels for product/service consumption at the post-purchase stage.

With the distinctive definition of O2O, we demonstrate the theoretical differences among O2O and other relevant business models and initiatives. Based on the *differentiae specifica*, we also discuss practical implications of the distinctive definition for the adoption of O2O. Lastly, we come up with a set of research directions based on these *differentiae specifica*.

We intend to make several contributions. On theoretical contribution, we confine the scope of O2O studies and facilitate future accumulation of more coherent knowledge of O2O ([Estellés-Arolas and González-Ladrón-De-Guevara, 2012](#)). The study helps demonstrate that O2O is not another pre-existing e-commerce model or any other known online marketing initiative. O2O has its distinctive features that are worth future research exploration. Second, from a practical perspective, the *differentiae specifica* ([Tatarkiewicz, 1980](#)) generated by the approach can serve as critical performance dimensions to determine whether to adopt O2O. Lastly, from a methodological perspective, our approach of definition development is systematic. The combined approach of [Tatarkiewicz \(1980\)](#) and [Nickerson et al. \(2013\)](#) can be used in future to define a new, innovative business model or an emerging concept.

2. Literature collection

2.1 Background of O2O

O2O has received much attention among executives as well as researchers. O2O commerce is particularly successful in China. China's O2O market is reaching relative maturity covering a wide scope of categories influencing people's daily lives and meeting consumers' demands for various types of consumption ([iResearch, 2018](#)).

O2O, according to [Rampell \(2010\)](#) who proposed the term at the early stage of O2O development, is a business model that "finds consumers online and brings them into real-world stores, a combination of payment model and foot traffic generator for merchants, as well as a discovery mechanism for consumers that creates offline purchases". The mentioned integration is to bring online customers to "offline stores for sales and redemption" ([Phang et al., 2014](#), p. 623). According to the above views, the main goal of O2O is to direct "the customers acquired online to offline stores" ([Li et al., 2018](#), p. 1860) and integrate "online consumer acquisition and offline businesses" (p. 1862).

However, the lack of emphasis on features that distinguished O2O from other models or initiatives resulted in critics that O2O appears to be a buzz word without much practical or theoretical meaning ([Custer, 2014](#)). For example, some researchers defined O2O roughly as "the use of online channel to drive offline sales and redemption" ([Phang et al., 2014](#)). Under this definition, differences between O2O and e-marketing are rather unclear.

Without a well-established definition of O2O with clear emphases on distinctive features, researchers may simply consider it as another pre-existing e-commerce model that deserves no further attention. Demarcation between O2O and pre-existing e-commerce models are not obvious in some scholars' words. In addition, having a vague definition of O2O, senior management cannot appropriately compare their existing models and O2O. The management faces difficulties in determining whether to adopt O2O.

2.2 Data collection

The terms "O2O" and "online to offline" were used to search articles published between 2010 (when Rampell, 2010, a frequently cited O2O reference, proposed the concept of O2O) and 2020 in the Scopus, ScienceDirect and Web of Science databases. The three databases were among the largest academic databases through which we accessed quality articles of O2O. We obtained articles with abstracts or keywords with either term. To ensure the quality of the research articles, only peer-reviewed journal articles were collected at the beginning. Initially, 205 papers, 98 papers and 243 papers were downloaded from Scopus, ScienceDirect and Web of Science respectively.

Two researchers with postgraduate degrees were assigned to independently review the papers. Throughout the review, papers focusing on O2O were selected. Sentences defining O2O in these papers were added to a repository of O2O definitions. Any business models or initiatives which mentioned with O2O in the papers were recorded on a list. The results of the two researchers were compared. Any inconsistencies between the results of sentences recorded were discussed first among the two researchers. If conclusions could not be reached, a faculty member in the business field was invited to make the final decisions. These steps of literature collection and review have been commonly used to strengthen objectivity of the review process (Ngai *et al.*, 2009).

We traced the development of O2O definition with the use of backward review (Webster and Watson, 2002). Any literature cited in the sentences with O2O definitions was collected and reviewed using the same aforementioned approach, regardless of the types of literature. The final set of literature includes peer-reviewed journal articles, conference papers and media articles. Given that the literature was mentioned in peer-reviewed journal papers, the literature should be of good quality even if they are media articles or conference papers. We also conducted the forward literature review and checked any new O2O definitions mentioned in the top 50 most relevant papers citing the definitions in the repository on Google Scholar. Through backward review, 18 papers were further collected and reviewed. No papers with new definitions were found in the process of forward review. Throughout the entire data collection processes, we identified and reviewed 165 papers that focused on O2O, and collected sentences with O2O definitions from 55 papers (see Appendix). Figure 1 shows the flow of the paper collection processes.

2.3 Landscape of O2O emergence

Before the concept of O2O spread, some earlier papers examined how online social networks can cause impacts on the real environment. These online-to-offline papers examined, for example, collaborations between internet users and celebrities/professionals on social networking sites (Ploderer *et al.*, 2010), changes of friendship among adults across the early years of social networking sites (Wang and Wellman, 2010), and the relationship between online identities and offline identities (Gatson, 2011). There are also a few papers concerning the connection between online collective action and offline political participation (Hestres, 2014; Ke and Starkey, 2014). These papers were not considered O2O-related in our study. Since 2014, many papers about O2O business model have been published; the number of papers has been increasing up through 2020 (see Figure 2).

Figure 3 shows empirical papers categorized by fields of study. The O2O model has been adopted in a variety of industries. Adoption of O2O in sectors such as food delivery and tourism has been particularly popular among scholars. Several other fields, such as marketing events, transportation and catering, have also been commonly explored in O2O papers.

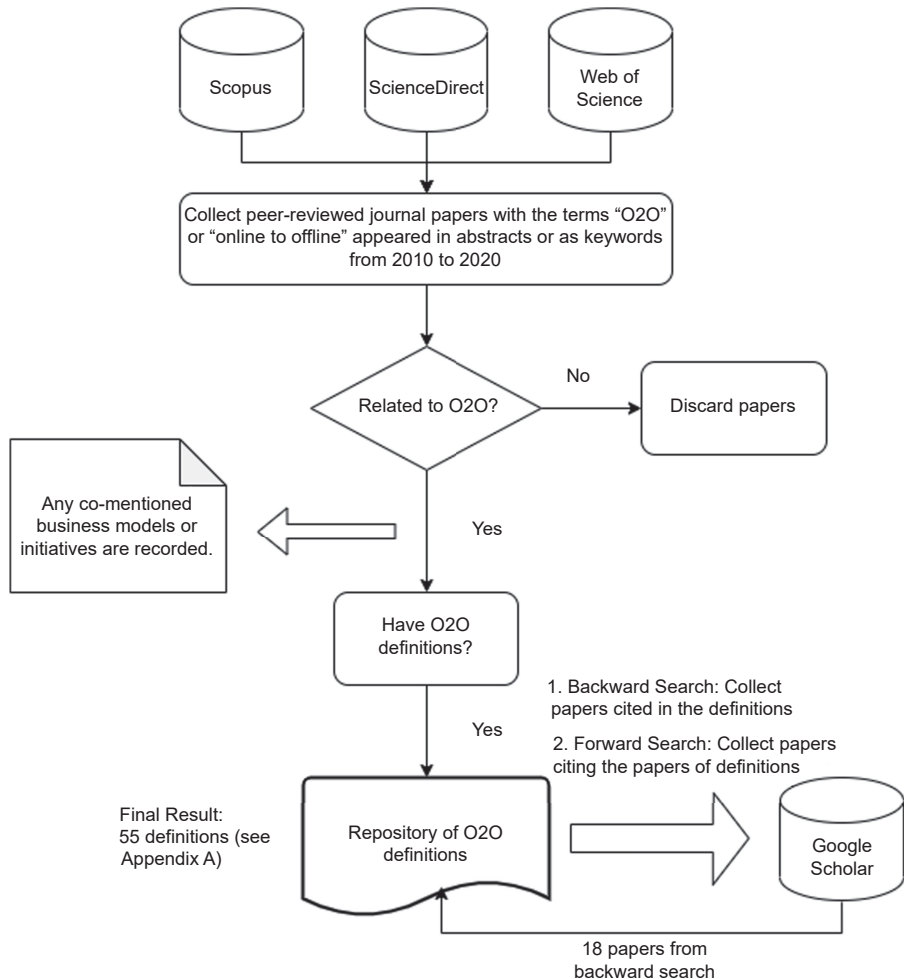


Figure 1.
Flow of data collection

2.4 Method of definition development

To propose a global definition of art, [Tatarkiewicz \(1980\)](#) collected all definitions of art suggested by different authors. Then he identified the union of concepts shown in the definitions, found *differentiae specifica* of art, integrated the *differentiae specifica*, and proposed a global definition of art which showed the intention and effects of art. The *differentiae specifica* of art are conceptual dimensions that distinguish art from other similar concepts. Following [Tatarkiewicz's \(1980\)](#) approach, [Estellés-Arolas and González-Ladrón-De-Guevara \(2012\)](#) created a definition of crowdsourcing that is distinctive from other online collaborative activities. [Cosma and Joy \(2011\)](#) also used the approach to define plagiarism of computer programming. Art, crowdsourcing and plagiarism of computer programming are not similar concepts. Thus, it was shown that the use of [Tatarkiewicz's \(1980\)](#) method of definition creation was not limited to a specific type of concept.

To develop a distinctive definition of O2O, we modified [Tatarkiewicz's \(1980\)](#) method of definition creation by incorporating [Nickerson et al.'s \(2013\)](#) taxonomy development

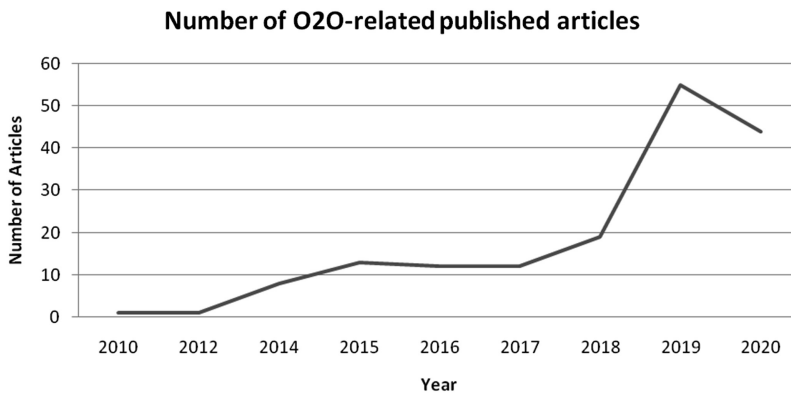


Figure 2. Number of O2O-related articles published between 2010 and 2020

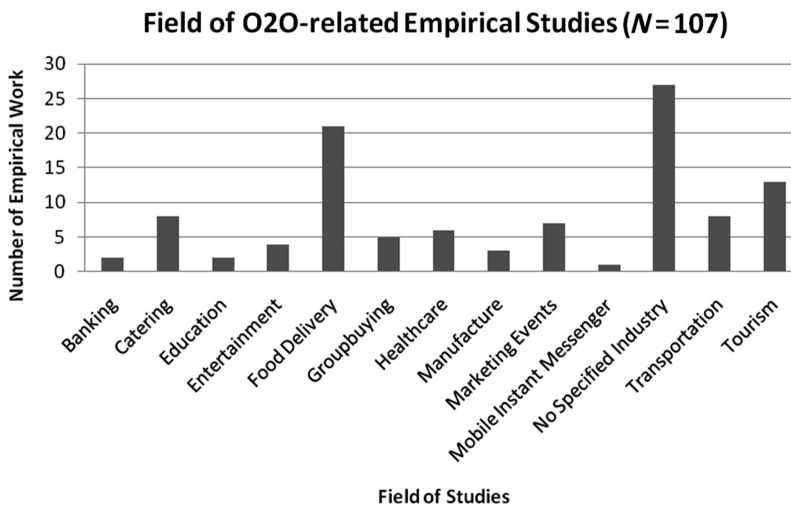


Figure 3. Number of empirical works by field of study

approach into it, given that the Tatarakiewicz's method is rather ad-hoc. Figure 4 shows the flow of our proposed definition development method. We followed Nickerson *et al.* (2013) and specified the choice of characteristics as performance measures of O2O, since the proposed definition and the *differentiae specifica* aim to facilitate the evaluation of O2O implementation. Thus, by meta-characteristic in the combined approach, we referred to performance measures that can be used to evaluate O2O implementation across the online and offline environments. Dimensions are potential *differentiae specifica* of O2O to be considered during the iterative process in Figure 4. The final product of the whole definition creation process is a set of *differentiae specifica*.

Following Nickerson *et al.* (2013), we set two objective ending conditions: (1) each dimension of O2O should be mutually exclusive; (2) these dimensions should be collectively exhaustive. As for subjective ending conditions, besides Nickerson *et al.*'s (2013) suggested subjective conditions, namely concise, robust, comprehensive, extendible and explanatory, we added one more condition: distinctive. Distinctive means to what extent the set of O2O dimensions are able to differentiate itself from other existing relevant business models.

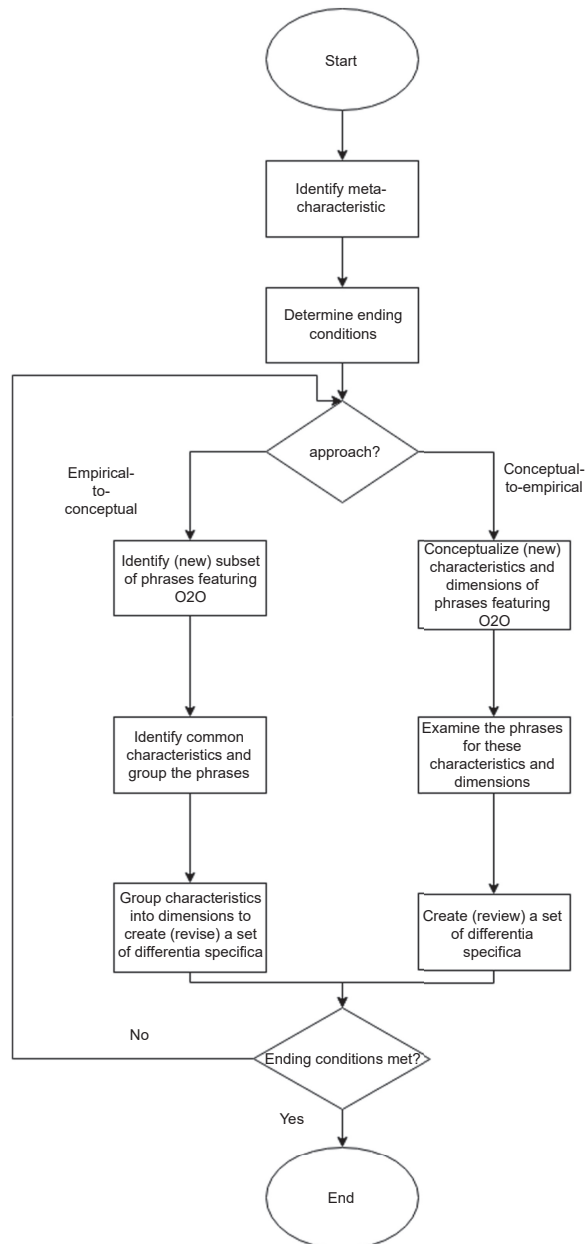


Figure 4.
The definition
development method

Source(s): Adapted from Nickerson *et al.* (2013)

We reviewed the literature of O2O and identified sentences of definitions from the literature. During the literature review process, we also took note of other existing business models that were similar and relevant to O2O. Important phrases featuring O2O were identified from the

paragraphs of definitions. They were “objects” in Nickerson *et al.*'s (2013, p. 345) words. We chose to start with an empirical-to-conceptual approach, since we had both adequate knowledge of O2O and sufficient data (Nickerson *et al.*, 2013). The iterative process went until the ending conditions were met. Following Nickerson *et al.* (2013), in the iterative process, we used the empirical-to-conceptual approach when we aimed to re-examine the sentences of definitions, find new phrases featuring O2O, and determine whether the new characteristics and dimensions are needed to describe O2O. Conceptual-to-empirical approach was adopted when we aimed to review the existing set of dimensions and attempt to find new conceptualizations that had not been identified.

Two researchers with postgraduate degrees were assigned to follow the steps of the combined approach (as illustrated in Figure 4). They first made their judgment independently at each step. Before they moved on to the next step, they compared and discussed their results. The faculty member would make a final decision if no conclusion can be reached between them. This arrangement helps strengthen the objectivity of the processes (Ngai *et al.*, 2009).

At the end of the iterative process, a set of the dimensions of O2O was finalized. These dimensions differentiate O2O from other existing business models and initiatives. These dimensions are *differentiae specifica*. Lastly, following Estellés-Arolas and González-Ladrón-De-Guevara (2012) and Tatarkiewicz (1980), we integrated these dimensions and created a distinctive definition of O2O.

3. Features of O2O

3.1 Visual representation

Five *differentiae specifica* were identified from the definitions: directional integration from online to offline channels, information exchange, online ordering, locality, and offline experience. According to Lemon and Verhoef (2016), a customer journey can be divided into 3 stages, namely the pre-purchase stage, the purchase stage and the post-purchase stage, for manageable analysis. The pre-purchase stage focuses on communication with potential customers for need recognition and search, whereas the purchase stage is concerned with ordering and payment. The post-purchase stage emphasizes product/service delivery for consumption and usage (Lemon and Verhoef, 2016). The directional integration features the connection between communication and payment in the virtual, online environment and delivery for consumption and usage in the real, offline environment. Information exchange and online ordering take advantage of the online, digital environment at the pre-purchase and purchase stages, whereas locality and offline experience attend to interactions between sellers and customers in the offline, physical world at the post-purchase stage of the journey. Figure 5 shows a visual representation of these *differentiae specifica* of O2O.

3.2 Directional integration from online to offline channels

Nearly all definitions of O2O in our review mentioned the directional integration from online communication and payment channels to offline product/service delivery channels for consumption and usage. According to Rampell (2010), O2O “finds consumers online and brings them into real-world stores, a combination of payment model and foot traffic generator for merchants, as well as a discovery mechanism for consumers that creates offline purchases”. Through websites and mobile apps, enterprises can alleviate geographical and temporal limitations reaching more potential consumers (Agrawal, 2016; Hwang and Kin, 2018). This is the main gist of O2O.

O2O establishes “a bridge between physical businesses and e-commerce” (Chen *et al.*, 2019a, p. 184). The basic integration involves bringing potential consumers to physical stores

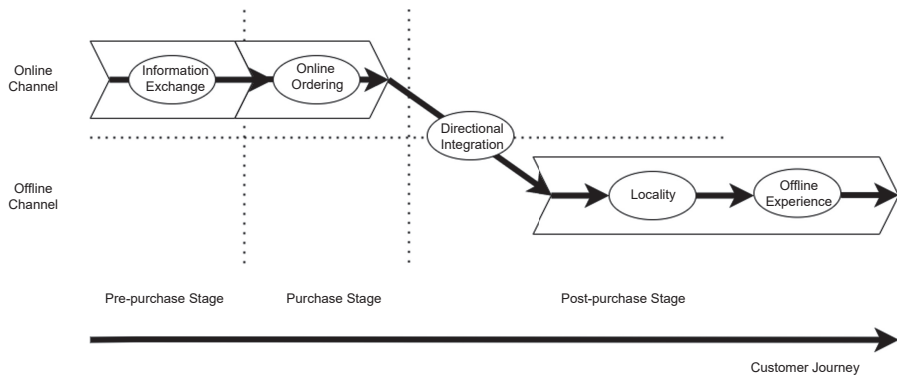


Figure 5.
Differentiae specifica
of O2O

for “offline sales and redemption” (Phang *et al.*, 2014, p. 623). Thus, the main focus of O2O is how to direct “the customers acquired online to offline stores” (Li *et al.*, 2018, p. 1860) and integrate “online consumer acquisition and offline businesses” (p. 1862). This integration links the real economy and helps resolve the competition between online and offline channels (Hsieh, 2017). Discounts can be made occasionally to attract consumers trying online communication and payment channels or visiting brick-and-mortar stores for offline consumption experiences (Ding and Jiang, 2015; Kang and Namkung, 2019; Kim *et al.*, 2016b).

3.3 Information exchange

O2O facilitates information exchange among sellers and buyers via online communication channels at the pre-purchase stage. “Information flow” between two parties can be enhanced through the Internet (Li *et al.*, 2018; Zhang, 2014). First, O2O emphasizes interaction between sellers and buyers. Whereas traditional online marketing offers unidirectional communication, O2O marketing focuses on the customization of marketing information and channels (Xue *et al.*, 2014). Online environments enable precise targeting when compared to the offline environment as online transactions can help trace lots of information easily (Chen *et al.*, 2018; Kang *et al.*, 2015; Xue *et al.*, 2014). The process of information exchange becomes more meaningful. Sellers can easily launch personalized marketing after identifying what particular marketing information buyers want (Ding and Jiang, 2015; Govindan and Malomfalean, 2019; Wang and Scholten, 2016).

Second, O2O customers’ need recognition and their product/service search are enhanced. O2O platforms can provide consumers with more detailed information about the products and services. Consumers can view product catalogs, check the availability of a particular item, and find out if there is any discount or special promotion available. Real-time price comparison online via the O2O platforms is also available (Chang *et al.*, 2018; Ding and Jiang, 2015; Govindan and Malomfalean, 2019; Pan *et al.*, 2017; Sarkar *et al.*, 2019). Some platforms even serve as price comparison sites giving recommendations for good deals (He *et al.*, 2019; Pan *et al.*, 2017). These platforms recommend consumers items based on their selected criterion, specific profiles, and search histories. The online environment inherently facilitates the collection of customers’ data (Li *et al.*, 2018; Rampell, 2010). This kind of information exchange between sellers and buyers is the “technology-related” approach of O2O, in He *et al.’s* (2019, p. 62) words.

Another information-exchange approach, according to He *et al.* (2019, p. 62), is the “customer-related” approach. Platforms adopting this approach serve as social forums in which customers can rate their purchased items and express their views (Pan *et al.*, 2019).

These platforms are occasionally managed by third parties. Intermediary platforms, therefore, can add value to and facilitate the exchange of information between consumers and sellers (Xiao *et al.*, 2018). In summary, these various information-exchange approaches enhance customer informative experience in the O2O models at the pre-purchase stage.

3.4 Online ordering

Online ordering is another dimension well recognized by scholars. O2O platforms serve as an online “trading desk” (Cao and Liu, 2015, p. 167) or “front stage” for transactions (Wu *et al.*, 2015, p. 771), which can help improve operational efficiency (Li *et al.*, 2018; Long and Shi, 2017; Lu and Liu, 2016) at the purchase stage of the customer journey. O2O puts “the information and capital flow online . . . along with development of Internet and web technology” (Lu and Liu, 2016, p. 16). Online orders and flows of capital are more inherently measurable in the online environment (Li *et al.*, 2018; Rampell, 2010). The quantitative information of the online orders and the flows of purchase can also be used to justify whether to continue or cease a specific marketing campaign.

Depending on the platforms concerned, online payments can be made through intermediary platforms managed by third parties (Xiao *et al.*, 2018). In many other cases, consumers directly pay sellers online (Rampell, 2010; Wang and Scholten, 2016).

3.5 Locality

Given that customers consume products or services offline, the locations of redeeming products/services matter in O2O businesses. Locations of stores have been frequently considered as a key to the success of offline retail businesses (Grewal *et al.*, 2009). Proximity to customers and that to offline competitors are two factors to be seriously considered in the consideration of store locations (Fox *et al.*, 2007). Li *et al.*'s (2018) study of O2O showed that characteristics of local markets, such as transportation expenses, significantly influence the behavior of consumers and vendors on O2O platforms. While consumers are more concerned with the impacts of travel costs, vendors are more concerned with the density of competitors. Thus, O2O is location-oriented; the business model takes the proximity between consumers and sellers into consideration for product/service delivery at the post-purchase stage.

Specifically, in O2O businesses, the time when consumers make their online payments is commonly different from the time when they start their offline journeys to brick-and-mortar stores for consumption of their products/services. Therefore, the physical locations where consumers make their online payments for their products/services are also commonly different from where they start their journeys to the stores. Thus, estimation of consumers' travel cost to the stores is not an easy task.

Mobile technologies enhance the prevalence of O2O (Rampell, 2010; Xue *et al.*, 2014). From the seller side, mobile technologies help locate buyers in real time. O2O mobile marketing is “more flexible and region-oriented”, conveniently promoting “products to consumers' palms directly” (Ding and Jiang, 2015, p. 296). This reduces the time and cost of finding potential customers nearby. Thus, the O2O model is popular among vendors that provide perishable services (Roh and Park, 2019).

3.6 Offline experience

O2O is experience-oriented. It aims to combine the non-replaceable offline experience at brick-and-mortar stores and the convenience of online platforms (Duggan, 2015). This combination creates a more thorough customer experience. Both sales of services and products can be achieved through O2O. Services are purchased online and can be subsequently redeemed and consumed offline. They are “usually perishable in nature and are expected to guarantee the

instant fulfillment of gratification” (Hwang and Kim, 2018, p. 71). These perishable services can be “restaurants, movies, and hotel stays” (Wan and Chen, 2019, p. 153). O2O also targets experience products. “(S)ervice products” (Shi *et al.*, 2019, p. 121; Xiao *et al.*, 2018, p. 733) that cannot be returned or exchanged once they are purchased and redeemed are commonly sold via O2O. Inclusion of in-store experience of product/service consumption and usage into the customer journey is one main reason for adoption of O2O.

The physical five senses with in-store environments cannot be fully replaced with virtual means; therefore, the inclusion of offline, in-store consumption and usage experiences into the O2O customer journey is sometimes necessary. In-store atmospherics, such as room design and music, were shown to be a factor that can be controlled by retailers to generate positive impacts on customer experience (Hollenbeck *et al.*, 2008; Hul *et al.*, 1997; Puccinelli *et al.*, 2009). In addition, store social elements, e.g. crowdedness and interaction with store employees, were found to be influential to perceived service quality (Baker *et al.*, 2002; Hartline and Ferrell, 1996). For example, in the context of O2O, comfortable offline store environments were shown to be conducive to customer loyalty, especially for those who receive advertising check-in messages via social networking sites (Hsieh, 2017). These in-store experiences cannot be easily simulated digitally.

4. Definition of O2O and implications

4.1 Proposed definition

O2O is a business model that consists of five *differentiae specifica*: directional integration from online to offline channels, information exchange, online ordering, locality, and offline experience.

The business model integrates online communication and payment channels and offline delivery channels to provide consumers with seamless purchasing experiences from online to offline environments. The model makes use of an online environment that enhances information exchange at the pre-purchase stage and facilitates customer orders at the purchase stage of the customer journey. The model also makes use of an offline environment allowing customers to physically experience services or products in stores at the post-purchase stage, taking characteristics of locations of experience into consideration.

4.2 Theoretical implications

In this section, we compare and contrast O2O with other co-mentioned business models and initiatives recorded during the review process from the perspective of the five *differentiae specifica*. The section demonstrates the theoretical distinctiveness of our defined O2O. It presents the difference in emphasis placed on the five *differentiae specifica* between O2O and the co-mentioned business models and initiatives.

4.2.1 Traditional e-commerce model. Traditional e-commerce models, such as B2B and B2C that emerged since the 1990s, mainly focus on online communication channels. Traditional e-commerce models can be categorized into four major types: commodity circulation oriented, information service oriented, social interaction oriented, and finance oriented (Lu and Liu, 2016). Although O2O and these traditional e-commerce models both feature information exchange and online ordering, they are different in that traditional e-commerce models lack emphases on the other three *differentiae specifica*. Specifically, O2O involves integration between online communication and payment channels and offline delivery channels, but the traditional e-commerce models do not necessarily involve any offline in-store retailer experiences at their delivery channels.

Wan and Chen (2019) pointed out two major differences between O2O and the traditional e-commerce models. Firstly, O2O aims to create “a closed loop for customers in online and

offline activities” (p. 153). The online component, namely online communication at the pre-purchase stage and online payments at the purchase stage, and offline component, i.e. product/service delivery for consumption and usage at the post-purchase stage, are integrated into one complete flow of customer journey. However, the traditional e-commerce models merely focus on developing an online communication channel that exists alongside any pre-existing offline payment and delivery channels. Secondly, the traditional e-commerce models do not necessarily involve any offline in-store activities. Products can be directly delivered to customers via logistic companies. [Shi et al. \(2019\)](#) identified another difference. In an O2O model, the online channel and the offline channel take different roles in the value chain. The offline channel focuses on providing high-quality service or tangible products, whereas the online channel handles remaining matters such as advertising, directing customers to stores and order processing. Yet, traditional e-commerce models do not have such clearly defined roles for online and offline channels respectively.

The emphasis on customer locations also differentiates O2O from traditional e-commerce models. Although online platforms in both the traditional e-commerce model and the O2O model act as virtual storefronts for online shoppers, the O2O model focuses mainly on local offline markets. The focus of O2O is not identical to those of other e-commerce platforms, which do not consider customers’ locations much ([Li et al., 2018](#)).

From an empirical point of view, [Xiao et al. \(2019a\)](#) compared O2O and the traditional e-commerce models and recognized several other differences. They suggested that O2O models differ from other e-commerce models in the purchasing platform and procedure. O2O models have stronger customer trust, higher flexibility in product provision, lower risk, higher service quality, and higher information transparency than the traditional e-commerce models. Also, O2O models can provide products or services via offline delivery channels, such as stores, whereas the traditional e-commerce models deliver products via logistic companies. Thus, the underlying motivations and expected benefits of adopting O2O and traditional e-commerce models are different.

In summary, in comparison to traditional e-commerce models, O2O integrates online communication and payment channels and offline delivery channels and benefits from the offline consumer consumption and usage experience. It enriches the entire customer experience and takes advantage of customers’ spatial data for predicting consumer behavior (See [Figure 6](#) for visual comparison).

4.2.2 Mobile commerce. Mobile commerce is considered a subset of e-commerce ([Ngai and Gunasekaran, 2007](#)). It can be broadly defined as “an emerging set of applications and services people can access from their Web-enabled mobile devices” ([Venkatesh et al., 2003](#), p. 53). Mobile commerce benefits from the functions of mobile devices, such as location awareness, context sensing, and push delivery ([Kourouthanassis and Giaglis, 2012](#)). It features ubiquity, personalization, flexibility, and dissemination. Ubiquity and dissemination come from wireless telecommunication and infrastructure, whereas personalization and flexibility rely on the portability of mobile devices ([Siau et al., 2001](#)).

O2O and mobile commerce share three *differentiae specifica*, namely information exchange, online ordering and locality (see [Figure 7](#) for the visual comparison between mobile commerce and O2O). Specifically, mobile technologies help locate consumers and improve estimation of customers’ time and cost to brick-and-mortar stores. Yet, whether a case of mobile commerce is O2O depends on whether the actual context involves intense in-store experiences. For example, Starbucks’ mobile app [\[1\]](#) is a case of O2O. It records users’ purchasing history (information exchange), allows users to order online and consume their cups of coffee offline at stores (online ordering with offline experience; the directional integration of online and offline channels), and also helps users find the closest stores in real time (locality). In many other cases of mobile commerce, not all five *differentiae specifica* of O2O are fulfilled. A mobile version of shopping platform that merely facilitates information

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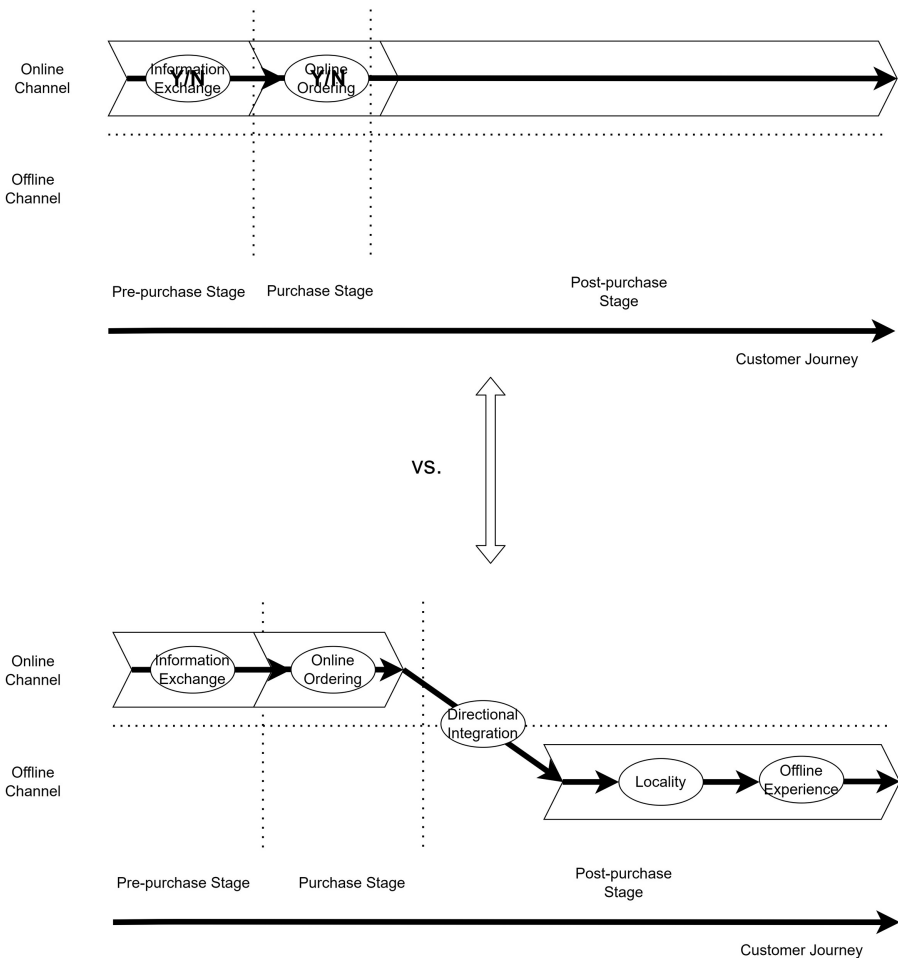
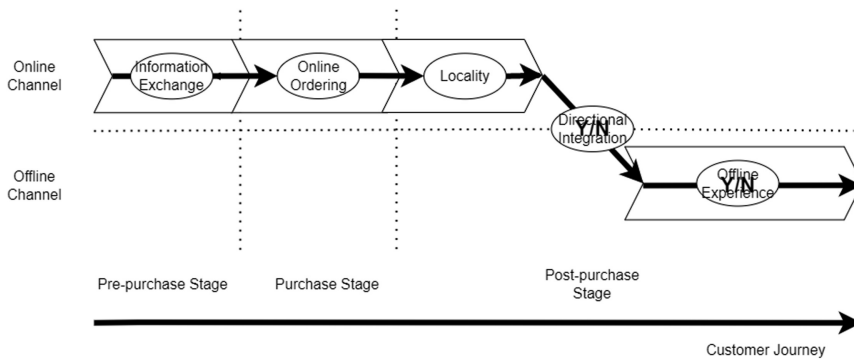



Figure 6. Comparison between traditional e-commerce models and O2O

exchange between vendors and customers, enables online payment and records customers' real-time locations for distance estimation is not an O2O shopping platform, if products ordered are delivered merely via logistics companies. Therefore, mobile commerce does not guarantee enough emphasis placed on offline experience and seamless transition from online communication and payment platforms to offline stores.

4.2.3 Multi-channel model. A multi-channel model, according to Neslin *et al.* (2006, p. 96), involves “the design, deployment, coordination, and evaluation of channels to enhance customer value through effective customer acquisition, retention, and development”. It emphasizes a variety of channels, evaluates each channel separately, and targets objectives per channel (Verhoef *et al.*, 2015). The channels are usually considered independent entities in typical multi-channel research papers (Mirsch *et al.*, 2016; Shen *et al.*, 2018). Thus, although the existence of both online and offline channels is a necessary condition for both multi-channel models and O2O, multi-channel models are commonly not O2O. Only if there is integration from online channels to offline channels, can it possibly be an O2O model (Li *et al.*, 2018; Xiao *et al.*, 2019b). Yet, multi-channel models are not too concerned with smooth



VS. 

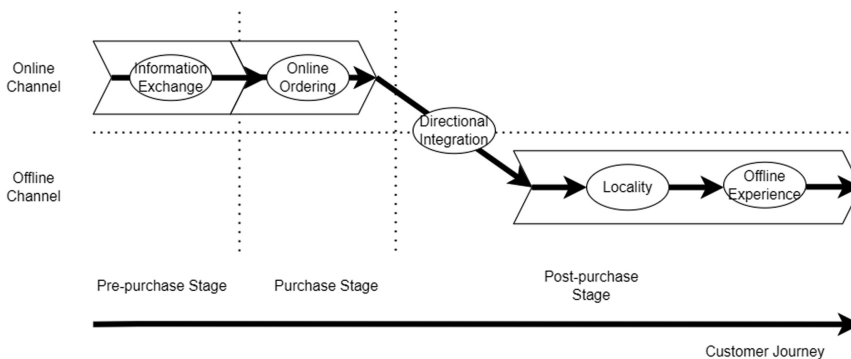


Figure 7. Comparison between mobile commerce and O2O

transition of customers from one channel to another channel along a customer journey. [Figure 8](#) shows the comparison between the multi-channel model and O2O.

In multi-channel literature, cross-channel effects among channels have been commonly examined ([Abhishek et al., 2016](#); [Yan et al., 2018](#)). Given that channels in O2O are directionally integrated, the variety of cross-channel effects is relatively less than that of typical multi-channel models. Limited by its design, a basic O2O's cross-channel effects should theoretically be carryover effects: how perception of online shopping (communication) and payment experience (an early stage in a customer journey) carryovers to perception of offline delivery of products/services (a later stage in a customer journey). Nevertheless, spillover effect still possibly exists in O2O. Spillover effect is cognitive bias that is attributable to the influence of a product's overall impression on judgment of the product's specific properties or similar others ([Zhang et al., 2019](#)). Some prior studies examined the spillover effect between mobile applications and the two channels in O2O ([Cho et al., 2019](#); [Hwang and Kim, 2018](#)). Interestingly, [Chang et al. \(2018\)](#) found no significant spillover effect between online travel agencies and hotels which operate an O2O model.

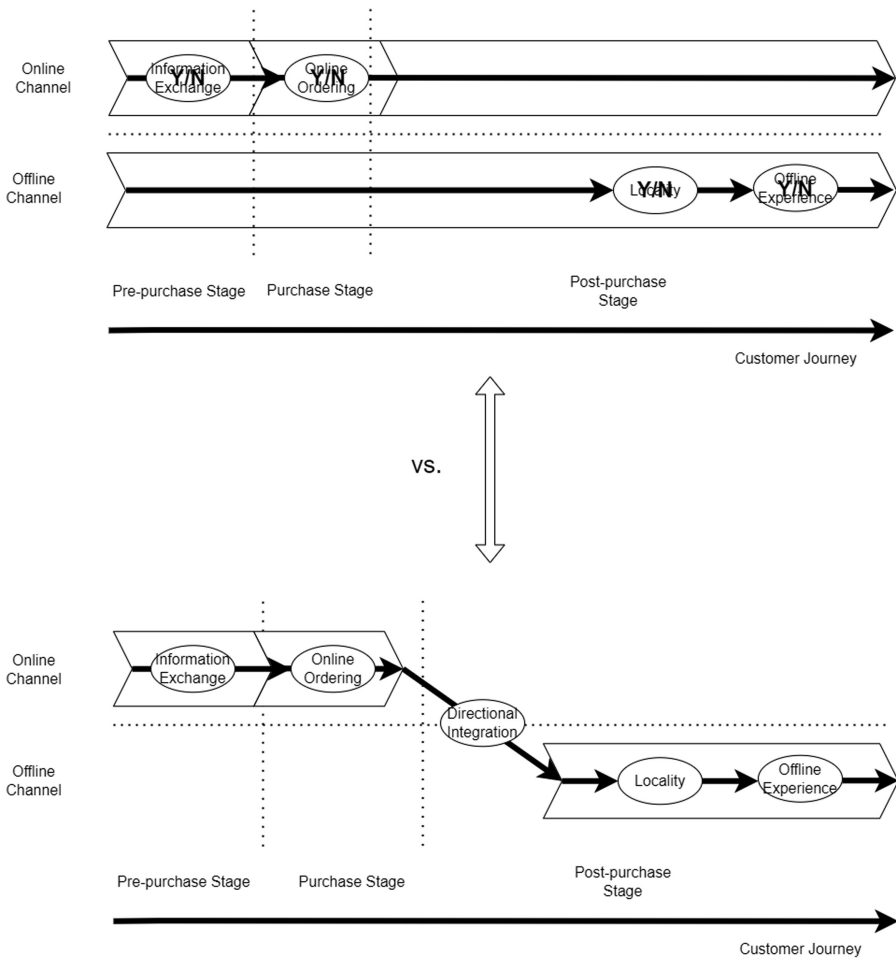


Figure 8.
Comparison between
multi-channel model
and O2O

4.2.4 Omni-channel model. An omni-channel model is different from a multi-channel model. According to Verhoef *et al.* (2015, p. 176), an omni-channel model involves “synergetic management of the numerous available channels and customer touchpoints, in such a way that the customer experience across channels and the performance over channels is optimized”. The omni-channel model aims at integrating widespread channels to provide seamless retail experiences along a customer journey. It focuses on customers’ overall cross-channel experience. Thus, in contrast to the multi-channel model, the omni-channel model emphasizes the “simultaneous use” and the “synergetic management” of various channels (Shen *et al.*, 2018, p. 63). In comparison to O2O, the channel integration of the omni-channel model is bi-directional. In an omni-channel model with online and offline channels, not only websites can drive customers to shops but also frontline salespeople can invite customers to visit the firms’ websites for ordering. Customers can use offline channels as showrooms and subsequently make their orders online in a seamless way. Similar to those in O2O, the omni-channel customers can conduct product/service research in online channels and make orders

online before visiting offline channels. They, unlike those in O2O, can even compare products/services online, and make orders only when they visit offline channels. This customer flow of online comparison and offline orders was believed to be the most common form of research shopping (Verhoef *et al.*, 2007).

Figure 9 shows the comparison between the omni-channel model and O2O. Although O2O and the omni-channel model share some similarities, the *differentia specifica* directional integration of O2O means a more proactive approach to direct people to follow a designated customer pathway from online channels to offline channels. The other way of customer flow from offline to online is de-emphasized or even non-existent in an O2O model. The omni-channel model, on the other hand, appears to passively accept patterns of existing customer flows. The models strive to offer seamless movement across widespread channels to accommodate customer preference. The underlying motivations between implementing directional or bi-directional integration are different.

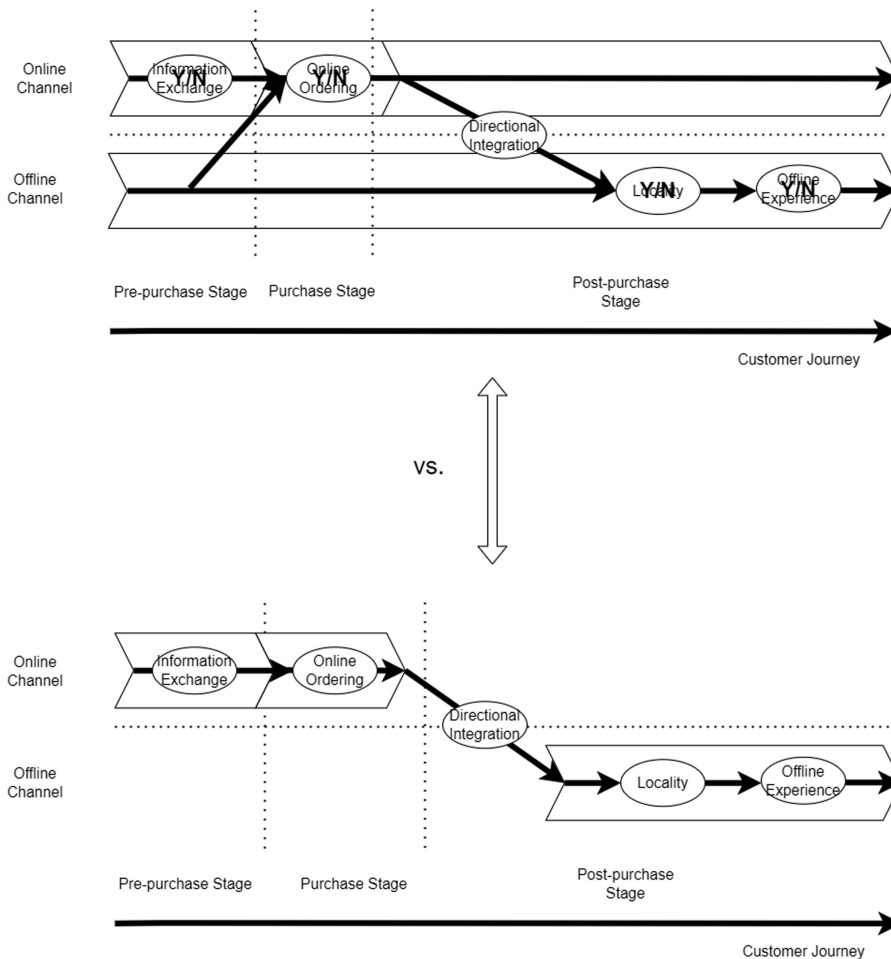


Figure 9. Comparison between omni-channel model and O2O

Table 1 summarizes the presence of *differentiae specifica* of the aforementioned e-commerce models. Y/N indicates that the presence of the dimensions is not necessary. Y indicates the presence of a *differentia specifica*, whereas N indicates that the models lack emphasis on that *differentia specifica*. Although O2O and these aforementioned models share some *differentia specifica*, only O2O places emphases on all five *differentia specifica*. Thus, the set of *differentia specifica* helps differentiate O2O from the other models.

It is noteworthy that the *differentiae specifica* are developed in the domain of O2O and they are used to distinguish O2O from other similar concepts. Thus, the five *differentiae specifica* are not a global set of features that distinguish one business model from another. For example, if one business model features directional integration from online to offline channels but not the other four *differentiae specifica*, it does not necessarily suffice to be an omni-channel model. On the other hand, if a business model is said to be a mobile commerce model, and the model focuses not only on information exchange, online ordering and locality but also on offline experience at stores and customers' seamless transition from online communication and payment channels to offline delivery channels, the business model can be considered as an O2O model.

4.3 Practical implications

Based on the proposed definition of O2O, senior management can easily identify the distinctive advantages of O2O in comparison to other business models and initiatives. The differences of *differentiae specifica* between O2O and one specific model indicate the expected benefits of O2O when a firm (which is running that specific model) adopts O2O. On the other hand, the expected cost is the establishment of additional channels for O2O adoption at different stages of the customer journey. The management can therefore more systematically evaluate whether they should adopt O2O and spend costs on extra channel establishment for benefits of additional *differentia specifica*.

4.3.1 Online business vs O2O: offline experience and locality. For an online business without any offline delivery channels, adoption of an O2O model requires rental costs as well as human resources and operating costs at brick-and-mortar stores for post-purchase product/service delivery. Customers of the business benefit from more customized offline delivery and consumption experience. Although technological advancement has facilitated our communication in virtual environments (Chau and Xu, 2012), not all face-to-face interactions can be replaced virtually. Particularly, businesses of which customers are much influenced by in-store retailer experience at the post-purchase stage are largely benefited by the O2O model. Some hedonic factors, such as customers' preference for in-store atmospherics (e.g. design, scents, temperature and music) (Verhoef et al., 2009) and desire for social experience with store employees during product/service consumption and usage (Baker et al., 2002), should be considered. Furthermore, the online business should examine to what extent customers' five senses during delivery and consumption of products/services at

Models/Initiatives	Directional integration	Information exchange	Online ordering	Locality	Offline experience
O2O	Y	Y	Y	Y	Y
Traditional E-commerce (e.g. B2B and B2C)	N	Y	Y	N	N
Mobile Commerce	Y/N	Y	Y	Y	Y/N
Multi-channel Model	N	Y/N	Y/N	Y/N	Y/N
Omni-channel Model	Y	Y/N	Y/N	Y/N	Y/N

Table 1.
Differentiae specifica of various business models

stores foster customers' satisfaction and their future purchase intention. If the online business sells experience products, the offline channels in O2O shall be highly conducive to the sales.

As for locality, the online business should examine their target customers' privacy concerns with sharing their geospatial data. If the customers are willing to share their real-time geospatial data with the firm, the potential of O2O can be more fully realized. Also, if the customers mainly use mobile communication channels instead of laptop communication channels as the pre-purchase and purchase touch points, the online business may find it easier to collect the customers' real-time geospatial data.

In addition, the online business should evaluate its target customers' sensitivity to travel costs to its offline stores. If the customers are sensitive to the costs, say travel time, the business may need to target specific local markets where the distance of its stores from customers is shorter than that of competitors.

4.3.2 Offline business vs O2O: information exchange and online ordering. For a business with only offline sales channels, adoption of the O2O model incurs establishment cost of online communication and payment channels at the pre-purchase and purchase stages of the customer journey. The strategic foci of the established online channels should be on the two beneficial *differentiae specifica*, namely information exchange and online ordering. Information exchange features informative acquisition of customers and precise targeting of vendors. If the offline business sells search goods, its customers shall be interested in detailed information presented on its O2O online platform. Features such as comparison matrices and recommendation agents can also be easily implemented on the platform. These features should appeal to its customers who seek search goods. On the other hand, if many customers of the offline business require haptic information to judge a product before making a purchase order, then benefits of the online communication channels that feature information exchange in the O2O model may be largely reduced. The online channel also facilitates precise targeting of customer segments. Precise targeting is particularly useful if the offline business aims at a niche market, given that information of customers can be more easily collected via online communication channels. On the other hand, if the offline business focuses on mass markets, precise targeting may not be too useful.

The online payment channel is conducive if the offline business handles a large volume of transaction orders. The volume of transaction orders is usually positively correlated with the total costs of handling the orders at stores. The positive effects of online ordering may be much smaller, if the target customers have large concerns with security issues of online payments. Thus, the choice of a secure payment gateway for customer payments is critical.

4.3.3 Multi-/omni-channel models vs O2O: directional integration from online to offline channels. In an O2O model, the integration is directional from online communication and payment channels to offline delivery channels. The directional integration designates each channel to focus on specific stages in a customer journey. Adverse inter-channel competition for sales within the same firm, a problem that commonly occurs in multi-channel models, can be mitigated, since an O2O adopter shall expect most customers to make their sales order on its online channels.

Businesses of which customers do not have strong preference to choices of channels shall benefit most from the O2O model. Discounts and coupons have been commonly used by O2O businesses to attract customers to follow the designated customer pathway (i.e. from online communication and payment to offline delivery) (Kang and Namkung, 2019). Some customers, however, may have strong preference to the flexibility to use various channels at different time, and therefore they may appreciate the omni-channel model more.

The omni-channel model involves full integration of widespread, numerous channels. The extent of integration is much larger than that in the O2O model. Integration of channels requires extensive coordination work and tacit process knowledge (Zhang *et al.*, 2010). Thus, full integration involved in the omni-channel model is complex and challenging. Because of

limited resources, in the O2O model, the less emphasized pathway of a firm, namely from offline communication to online payments, may not be available. Even if the pathway is available, resources and efforts to be spent on that pathway will be of low priority in O2O. Customers using those non-emphasized pathways may be poorly served. Thus, a business may benefit more from O2O, if its customers have lower inertia with their customer pathways across channels. The adaptability of the customers to the designated pathway, namely from online communication and payments to offline delivery for product/service consumption, is important for the successful adoption of O2O.

Table 2 shows the evaluation considerations of adoption of O2O on the basis of the five *differentiae specifica*. They are generated based on previous discussion in this section from

<i>Differentiae specifica</i>	Evaluation considerations
Information exchange	<ul style="list-style-type: none"> From cost perspective Establishment costs of online communication platforms for information exchange at the pre-purchase stage Ease of collecting customer information from the platforms From benefit perspective Customer preference to detailed information of products/services for comparison
Online ordering	<ul style="list-style-type: none"> Ease to target niche markets From cost perspective Transaction fees of payment gateways Costs of establishing secure connections between online shopping platforms and payment gateways From benefit perspective Saved costs of handling transaction orders at stores Customer preference to online payments
Locality	<ul style="list-style-type: none"> From cost perspective Costs of establishing adequate density of stores to compete against local competitors for post-purchase delivery Ease of collecting customers' real-time geospatial data at the pre-purchase stage From benefit perspective Customer preference to convenience of reaching offline stores (e.g. travel time and cost to stores) Flexibility to choose specific local markets
Offline experience	<ul style="list-style-type: none"> From cost perspective Costs of human resources of delivery of products and provision of services at stores Rental and operating costs of delivering intense in-store five-sense customer experiences From benefit perspective Customer preference to social experience with store employees Customer preference to sensory experience with in-store environments
Directional integration from online to offline channels	<ul style="list-style-type: none"> From cost perspective Costs of operational and organizational management for implementation of directional channel integration Loss of customers' flexibility of using various channels at different time From benefit perspective Reduction of loss due to inter-channel competition (given that there is overlap of customer segment between online and offline channels) Saved costs of operating widespread channels fully

Table 2.
Evaluation consideration based on the five *differentiae specifica*

two perspectives, namely cost and benefit. The list of consideration items is not exhaustive. Nevertheless, it shows the usefulness of the *differentiae specifica* in generating considerations for senior management making decision of adoption of O2O.

5. Directions for future research

In the previous section, we identify the five *differentiae specifica* of O2O. The set of *differentiae specifica* are important conceptual aspects of O2O which can be used to make the decision of business adoption of O2O. In this section, to further demonstrate the usefulness of our proposed approach of definition development, we compare differences in *differentiae specifica* between O2O and each relevant business models, and identify and discuss research directions that are attributed to the differences. Relevant *differentiae specifica* in each proposed research direction are italicized. The *differentiae specifica* are the focal concepts that each research direction aims to address and demonstrate their importance along the customer journey.

5.1 Traditional e-commerce and O2O

In comparison to traditional e-commerce, O2O features offline experience, locality as well as integration from online to offline channels. The recent prevalence of O2O has implied that some face-to-face interaction between salespeople/store environments and customers cannot be satisfactorily virtualized. Studies suggested that physical experience has strong impacts on O2O sales (Yang *et al.*, 2020). Prior evidence also showed that first-time customers' loyalty can be strengthened if the O2O customers have pleasant store environments and shopping experiences offline (Hsieh, 2017). Nonetheless, the recent development of VR or AR applications has been astonishing. Thus, we propose two research directions:

- RD1. What are the critical interactions of *offline experience* at the post-purchase stage that cannot be possibly virtualized (at least in the recent future)?
- RD2. How do different types of product/service delivery for consumption and usage affect the relationship between different critical interactions of *offline experience* and future purchase intention?

From a practical point of view, the difficulty of virtualization of critical offline in-store experience indicates the values of O2O. The difficulty suggests how long-lasting the competitiveness of offline delivery channels against online channels of which delivery is handled by logistics companies is. The more difficult the virtualization of the critical in-store experience is, the more valuable O2O is. For those businesses of which customers highly value sensory and social experience at physical stores, offline delivery channels remain essential for the success of the businesses.

Locality should also be seriously considered when an online business decides to adopt O2O. Existing studies of business transformation from traditional e-commerce to O2O have mainly focused on benefits provided by offline experience. Comparatively less attention has been paid to the concept of locality. Customers are conscious of travel expenses to collect their orders at stores. Physical proximity to competitors is also a concern to O2O adopters (Li *et al.*, 2018). With the use of mobile technologies, O2O businesses can easily collect customers' real-time geographical data to predict their purchase intention and willingness to visit nearby stores. It is noteworthy that other sources of real-time geographical data can create synergy with the customers' real-time data. Examples are real-time traffic data and real-time crowdedness of areas near stores. We propose:

- RD3. How can we use real-time data of *locality* at the pre-purchase stage to develop a better predictive model of O2O customer purchase intention?

5.2 Mobile commerce and O2O

The major difference between mobile commerce and traditional e-commerce is the devices through which customers exchange information and make orders. Future researchers may focus on the interaction between mobile devices for pre-purchase communication and offline touch points for product/service delivery. Specifically, mobile devices are portable and therefore many customers should have their mobile devices with them when they come to brick-and-mortar stores. We propose:

- RD4. Do mobile devices used for online communication and payment being brought to offline touch points influence post-purchase *offline experience* at stores? If so, how do the devices influence the *offline experience*?

Prior evidence showed that trust in intermediary mobile apps was one critical factor for continuous ordering from vendors (Cho *et al.*, 2019). Responsiveness, reliability, privacy, and efficiency of intermediary mobile instant messaging service providers were also some quality attributes that affect consumers' loyalty and satisfaction (Hwang and Kim, 2018). Some relevant research directions are:

- RD5. How does customer attitude to mobile devices/mobile applications influence the *directional integration* from online communication and payment channels to offline delivery channels? Does the customer attitude influence bi-directional integration similarly?
- RD6. How does the spillover effect between mobile devices/mobile applications and channels of an O2O business influence the carryover effect from online communication and payment channels to offline delivery channels of the business, provided that both effects exist in the *directionally integrated O2O*?

5.3 Multi-channel model and O2O

The key difference in *differentiae specifica* between multi-channel model and O2O is directional integration between online communication and payment channels and offline delivery channels. Provided that a multi-channel business adopts O2O and continuously preserves its longstanding online channels at the post-purchase stage and offline channels at the pre-purchase and purchase stage, it is interesting to observe the spillover effect between online and offline channels (that has already existed in the multi-channel model) in the midst of implementing directional integration (e.g. providing customers with financial incentives to encourage them to follow the designated customer pathway from online to offline). We wonder:

- RD7. How does the implementation of *directional integration* influence the spillover effect between online and offline channels? More generally, how does the implementation of *directional integration* influence the interaction between the two channels?

The O2O model may involve some third parties. Some examples include mobile network providers, mobile payment providers and price comparison platform providers. The spillover effect between two different business entities has been rarely examined. One example is Chang *et al.* (2018) which found no significant spillover effect between online travel agencies and hotels. More should be explored in contexts other than tourism. We propose:

- RD8. Are there any differences in spillover effects between channels (that belong to different business entities) in a *directionally integrated* model (e.g. O2O) and in a relatively non-integrated channel model (e.g. multi-channel models)?

5.4 Omni-channel model and O2O

In addition to the pre-purchase and purchase stages, O2O can further extend and integrate online post-consumption services into the cycle of customer experience. Instead of going to

physical stores, consumers can provide post-consumption feedback, acquire support, or lodge complaints more conveniently through online platforms (Du and Tang, 2014; Hou *et al.*, 2015). Also, when one channel fails, consumers can still seek help from another channel after purchase (Reis *et al.*, 2019). This helps businesses further improve their customers' experience along the entire customer journey across different channels. The integration of online post-consumption communication into the cycle of customer experience serves as an extension of O2O. Furthermore, store employees can proactively engage customers in exploring and experiencing new products at stores, and invite customers to make their orders online. This results in a directional integration from offline communication channels at stores to online payment channels. The integration serves as another extension of O2O. It is worthwhile for us to explore:

RD9. What are the benefits and challenges of various forms of O2O extensions that involve channel integration beyond *directional integration* from online communication and payment channels to offline delivery channels?

Further integration between online and offline channels deemphasizes the directional relationship from online communication and payment channels to offline delivery channels and results in transformation from O2O to an omni-channel model with online and offline channels. Whereas customers may enjoy the seamless experience across channels, the full integration of omni-channel models involves much coordination work in management and operation (Zhang *et al.*, 2010). We encourage future researchers to explore:

RD10. Under what conditions should a *directional integration* be extended to bi-directional integration?

RD11. Are there any differences between transformation from *directional integration* to bi-directional integration and that from bi-directional integration to *directional integration*?

6. Limitations and conclusion

6.1 Limitations

The study involved several limitations. Unfortunately, only a few papers that mentioned definitions of O2O published in the top journals of information systems (e.g. Li *et al.*, 2018). In our paper collection processes, we used peer-reviewed journals to ensure the quality of papers included for our review. Given that O2O is an emerging concept, few top papers being found may be a reasonable result. Nevertheless, the small number of top papers may limit the overall quality of excerpted definitions. We hope that the distinctive definition proposed in this paper paves the way for more sophisticated studies of O2O in top journals. Second, there may be papers exploring concepts similar to O2O, but they were not included for our review due to the absence of phrases "O2O" and "online to offline". The beauty of our proposed approach lies in the fact that we do not specify the concept O2O in advance of the definition development processes. Our proposed approach is systematic, and it is the advantage of the approach. The definition is created on the basis of existing, inconsistent definitions of O2O proposed by different scholars. We assumed that if a paper is insightful for the development of O2O definition and it is omitted even after forward and backward review, the essence of the paper has been absorbed in definitions mentioned in later published papers of O2O. Thus, we were inclined towards that the exclusion of those papers would not significantly affect our results. Nonetheless, we cannot rule out the possibility that we missed out some important articles. Third, only English articles are included in the literature collection. Yet, O2O has been prevailing in China in recent years (iResearch, 2018). There may be some insightful papers in Chinese that were not systematically included in our review.

6.2 Conclusion

In this paper, we combine the approaches of Tatarkiewicz (1980) and Nickerson *et al.* (2013) to develop a definition of O2O. A distinctive definition is essential for researchers to confine the scope of one knowledge entity (Estellés-Arolas and González-Ladrón-De-Guevara, 2012). With the distinctive definition, we not only show the differences among O2O and other models and initiatives but also demonstrate a variety of research directions that are largely associated with the *differentiae specifica*. Future exploration of these research directions will enrich our understanding of the interaction between online and offline channels. On practical contribution, the *differentiae specifica* serve as critical evaluative dimensions to determine whether a business should adopt O2O. Lastly, from a methodological perspective, our proposed approach enables future researchers to systematically define a new business model or an emerging business concept. O2O is not the only emerging concept that has inconsistent definitions in the fast-changing world with a rapid development of information technologies. Some other new concepts in real businesses such as “sharing economy” have faced similar issues (Schlagwein *et al.*, 2020). The output definitions generated by our approach would be distinctive from other relevant concepts in the same field. The performance of the emerging concepts can also be multi-dimensionally evaluated.

Note

1. <https://www.starbucks.com/coffeehouse/mobile-apps>

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Table A1.
Sentences with O2O
definitions from
reviewed papers

Literature	Page	Content	Papers that directly adopted the definitions	<i>Differentia Specifad</i> Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Agrawal (2016)	N/A	"Jon Carder: O2O is an abbreviation for Online to Offline commerce. Stated simply it means a consumer who is online using a website or app is driven to make a purchase at an offline business or merchant, like a restaurant, gas station, plumber, dentist, etc."		Y				
Cao and Liu (2015)	167	"It is the combination between the offline business opportunities and the Internet. It makes the Internet become the offline trading desk. The online group buying is a typical form of O2O"		Y		Y		
Carsten (2014)	N/A	"Online-to-offline, or O2O, involves people using their smartphones to find and purchase goods and services, often physically close to them"	Kang and Namkung (2019)	Y			Y	
Chang <i>et al.</i> (2018)	927	"By incorporating online sales channels, traditional offline enterprises can also supply diverse types of services (Cassab and MacLachlan, 2006). Customers can browse catalogs, check the price information and availability of products online and even place orders before visiting offline stores. Therefore, online channels can increase the sales of offline channels. This successful mode is known as online to offline (O2O) commerce"		Y	Y	Y		
Chen <i>et al.</i> (2015)	N/A	"O2O application refers to one kind of mobile device application platform, which purpose is to bridge the online and offline environments and in order to generate a seamless and integrated service delivery process for users"		Y				
Chen <i>et al.</i> (2019a)	184	"O2O attracts potential consumers by establishing a bridge between physical businesses and e-commerce, allowing consumers to experience physical merchandise in brick-and-mortar stores and then purchase and pay for the product online"		Y		Y		Y

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Literature	Page	Content	Papers that directly adopted the definitions	Differentia Specifica ^a Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
	184	"The concept of 'localization' allows OZO business to provide products and services that target specific consumers. OZO stimulates consumer purchases in stores through online advertising and experiences, thus bringing Internet 'traffic' offline. OZO bridges the online and offline worlds, and presents specific advantages, including a clear profit model, precise targeting of consumer groups, traceable transaction processes, reduced logistics costs, and promotion of localized development. OZO seeks to develop sustainable revenue growth through increasing foot traffic and attracting long-term customers by providing value-added services"			Y		Y	
Chen et al. (2019b)	466	"Online-to-offline commerce is a business strategy that draws potential customers from online channels to physical stores. Using E-banking and mobile devices, customers can select or pay for services online and subsequently consume them offline. Then, comments related to the quality of the services are shared by customers on the platforms"		Y	Y	Y		Y
Chi et al. (2015)	45	"Shortly after social commerce grew in popularity by supporting creation of relationships among users, communication, and information sharing, a new form of shopping called OZO (Online to Offline) commerce, having both customer experience of offline shops and cost competitiveness of online shops, emerged and is attracting great growing interests"	Kim et al. (2016b)	Y				Y

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Literature	Page	Content	Papers that directly adopted the definitions	Differentia Specifica ^a Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Ding and Jiang (2015)	296	"O2O, online to offline, means enterprises provide discount, information and services through internet to attract consumers' attention, and make them effect payment online and enjoy services offline, which could enhance consumer satisfaction and meet personalized requirements. Compared with Internet, O2O mobile marketing tends to provide diversified services for specific consumers by mobile Internet which is more flexible and region-oriented, and can market products to consumers' palms directly. This model based on huge mobile phone users can supply more favorable price and convenient purchasing channels for consumers, and optimize marketing procedure for enterprises"	Govindan and Malomiifalean (2019)	Y	Y	Y	Y	Y
Du and Tang (2014)	308	"This mode connects the offline business opportunities with the Internet, makes the Internet be the front counter of offline trade. Offline services can attract customers online and the customers also can screen the services online"		Y		Y		
Duggan (2015)	N/A	"The gist of O2O is that, while a large part of traditional brick-and-mortar retail sales can be replaced by e-commerce, there are elements to physical shopping that cannot (or should not) be replicated digitally However, just because all retailing can't take place online does not mean that there can't be online elements to shopping, and the potential for integration between e-commerce and physical retail shopping is the core of the O2O movement"	Hwang and Kim (2018)	Y				
Fitzgerald (2012)	N/A	"Online-to-Offline (O2O) Commerce is the use of online and mobile to drive offline local sales or redemption. More simply put, it is offline purchasing propelled by the web"	Chang <i>et al.</i> (2019), Huang <i>et al.</i> (2020), Xiao <i>et al.</i> (2018), Xiao <i>et al.</i> (2019b), Xiao <i>et al.</i> (2019c)	Y				

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Literature	Page	Content	Papers that directly adopted the definitions	Differentia Specifica ^a Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Hayes (2020)	N/A	"Online-to-offline (O2O) commerce is a business strategy that draws potential customers from online channels to make purchases in physical stores. Online-to-offline (O2O) commerce identifies customers in the online space, such as through emails and Internet advertising, and then uses a variety of tools and approaches to entice the customers to leave the online space. This type of strategy incorporates techniques used in online marketing with those used in brick-and-mortar marketing."	Xia (2020)	Y	Y			
He et al. (2018)	278	"When the retailer sells the products through both online and offline stores, we say that it uses an O2O mode"						
Hou et al. (2015)	55	"O2O refers to any kinds of activities that initiate online somehow finally results in a consumer going to a physical store"		Y				
Hsieh (2017)	867	"The O2O business model integrates the online experience with the consumption experience in a brick-and-mortar store. Brick-and-mortar stores offer a more complete service experience than online shopping websites do. This service experience includes face-to-face personal service and the sensory experience of touching products. The O2O model focuses on sending online customers to brick-and-mortar stores to enjoy offline services. Rather than establishing competitive relationships between online and offline channels, the O2O approach integrates these channels and creates a link between the virtual economy and the real economy (Mao et al., 2015; Phang et al., 2014)"		Y			Y	
Ji et al. (2014)	2017	"Online to Offline, that is, combining the opportunity of offline business with Internet. In this way, Internet has become the front of offline transactions. Such online services can be used to attract more consumers, and consumers in turn can use online to filter services, as well as online transactions"	Lee et al. (2019)	Y	Y	Y		

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Literature	Page	Content	Papers that directly adopted the definitions	<i>Differentia Specifica</i> ^a Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Li and Mo (2015)	246	"O2O made want to create a 'consumer experience' model. Consumer is online payment, goods or services to buy the offline, and various forms of credentials to the store to pick up or enjoy the service."	Cho <i>et al.</i> (2019)	Y		Y		Y
Li <i>et al.</i> (2018)	1860	"Our research also sheds light on platforms operating in O2O commerce, which integrates online consumer acquisition and offline businesses"	Pan <i>et al.</i> (2019)	Y				
Lian <i>et al.</i> (2019)	28	"The Internet enables bricks-and-mortar retailers to find online users and bring them to offline stores. As people spend time online using personal computers (PCs) and mobile devices, retailers can obtain information such as their location, time, and browsing history to target an ad at those who are likely to visit an offline store. This marketing practice is known as the online-to-offline (O2O) commerce, which has been demonstrated to be an effective way to improve the sales of an offline store."		Y	Y		Y	
Liu <i>et al.</i> (2019)	410	"They operate in a business mode called 'online-to-offline (O2O), in which demanders and providers can efficiently achieve business cooperation online by taking advantage of a platform's network infrastructure, payment technology and management service and then completing the actual services offline."		Y		Y		
Lu and Liu (2016)	16	"In a sense, O2O business model is a kind of business model that put the information and capital flow online and logistics and commercial activity offline along with development of Internet and web technology. The perfect combination of offline business and Internet has helped traditional industry integrate with Internet and boom. Therefore, it is of theoretical and practical importance to study O2O Business Model for the understanding of the development, features and the future of business model"	Long and Shi (2017)	Y	Y	Y		

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Literature	Page	Content	Papers that directly adopted the definitions	Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Mao <i>et al.</i> (2015)	642	<p>"The O2O business model is the organic combination of online shop and the offline consumption, which performs more prominent advantages in the mobile network, it can gather strong consumption capacity of mobile terminals in the short time, and it can solve the real-time problem of the purchase of goods, it has met the demand for the personal needs. Especially the widely popular smart phone terminal is not affected by the geographical position, the consumer can choose at any time and alternative payment, they can also to further online browsing in the store consumption, they can buy consumption again, and then this can increase the potential consumption behavior"</p>		Y	Y	Y		
Noori-daryan <i>et al.</i> (2020)	6739	<p>"Consequently, the concept of online to offline/offline to online (O2O) commerce is emerged. In this kind of commerce, business can flow in both real (offline) and virtual (online) spaces"</p>		Y				
Pan and Wu (2020)	563	<p>"The emerging O2O business model, which directs customers acquired online to offline stores, is becoming increasingly popular in the world. In contrast to electronic commerce (e-commerce) platforms such as Tmall and Amazon which focus on shifting customer shopping behaviors from the offline to the online environment, O2O platforms, such as Daapping, are closely tied to brick-and-mortar stores"</p>		Y				
Pan <i>et al.</i> (2017)	1	<p>"O2O commerce is a kind of business approach that attracts potential customers from online to offline physical stores. Customers can be classified by online channels (for instance email or website advertisement). These customers might be induced to leave the online space through different mechanisms. This business approach organically combines experience and techniques in online marketing and brick-and-mortar marketing"</p>		Y				

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Table A1.

Literature	Page	Content	Papers that directly adopted the definitions	Differentia Specifica ^a Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Pan and Wu (2019)	1599	"O2O commerce is a business approach that guides potential customers online toward physical stores offline"		Y				
Pan et al. (2019)	180	"Online-to-offline (O2O) commerce is a new business model integrating online and offline markets. It motivates online customers to buy in brick-and-mortar stores, aiming to promote offline sales and redemption (Li et al. 2018; Phang et al., 2014; Xiao and Dong, 2015). In O2O commerce, customers can seek and order products or services online first, and then consume them in the corresponding physical stores (Xiao and Dong, 2015). After consumption, the coupons are redeemed by offline stores who offer the deals (Li et al., 2018). And customers can share their experiences and express their feelings online, such as rating and commenting. As a new service experience integrating online consumers and offline businesses, O2O commerce has become popular since proposed by Alex Rampell. He pointed out that "key to O2O commerce is that it finds consumers online and brings them into real-world stores. It is a combination of payment model and foot traffic generator for merchants that creates offline purchase (Rampell, 2010)"	Pan et al. (2019), Ruan et al. (2020), Shen et al. (2019), Xiao et al. (2018), Xiao et al. (2019b), Zhang (2020)	Y	Y	Y		
Phang et al. (2014)	623	"O2O commerce refers to the use of online channel to drive offline sales and redemption, or "offline purchasing propelled by the web"						
Rampell (2010)	N/A	"The key to O2O is that it finds consumers online and brings them into real-world stores. It is a combination of payment model and foot traffic generator for merchants (as well as a 'discovery' mechanism for consumers) that creates offline purchases. It is inherently measurable, since every transaction (or reservation, for things like OpenTable) happens online"	He et al. (2019), He et al. (2016), Kang et al. (2015), Kim et al. (2016a), Kim et al. (2019), Pan et al. (2019), Wei et al. (2019), Xiao et al. (2019c), Yang and Tang, (2019), Yang et al. (2020)	Y	Y	Y		Y

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Literature	Page	Content	Papers that directly adopted the definitions	Differentia Specifica ^a Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Sarkar <i>et al.</i> (2019)	5	"Traditional enterprises can deliver diverse types of products and services by the incorporation of online sales channels in their businesses. The number of companies taking advantage of this opportunity is growing rapidly. This enables potential customers to browse the product catalogs, price information, availability of the product, and even order the products prior to visiting the physical stores. Therefore, online sales channels can positively improve the sales of physical (offline) stores. This effective mode of sales is titled as online to offline (O2O) commerce (Cassab and MacLachlan, 2006)"		Y	Y			
Selvaraj <i>et al.</i> (2020)	378	"On-line-to-offline or offline-to-online (O2O) is an electronic commerce (e-commerce) model used to interconnect the offline business opportunities by utilizing the Internet"		Y				
Sett <i>et al.</i> (2020)	1744	"In the O2O strategy, the buyer orders products online and a vendor delivers the products to their doorstep"		Y		Y		
Shi <i>et al.</i> (2019)	121	"In a typical Online-to-Offline (O2O) business, customers purchase some service online (e.g. order a meal, book a hotel room or a trip through APPs using their cell phones), and consume the service offline through a third party"		Y		Y		
Shin <i>et al.</i> (2015)	41	"(A) transaction format in which purchasing activities, such as purchasing products, deciding to buy, and making payments, were conducted online, while consumption activities, such as the delivery of actual products, were done offline"	Oh (2016)	Y		Y		
Wan <i>et al.</i> (2020b)	3,236	"Due to the popularization of the concept of 'new retailing', we study a new commercial model named O2O (online-to-offline), which is a good combination model of a direct channel and a traditional retail channel"		Y				

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Defining an emerging business model

Table A1.

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Literature	Page	Content	Papers that directly adopted the definitions	Differentia Specifica ^d Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Wang (2020)	16	"One is short-distance transportation, which means that a consumer place orders to a local marine product enterprise through the Internet, the enterprise or a third-party distribution company will be responsible for the delivery of the marine products, and this e-commerce mode is called the O2O mode (Online to Offline)"		Y		Y	Y	
Wang and Scholten (2016)	396-397	"O2O (To Offline Online), that is, the combination of the Internet and the line of business, refers to the online consumer to the reality of the store to buy goods and services online payment of one consumers, and then go to the line to enjoy services (Wellman <i>et al.</i> , 2002; Yan <i>et al.</i> , 2012). O2O electronic business model is the traditional development of the electricity supplier, this kind of consumer behavior has greatly satisfied the consumer's personalized needs, to provide users with a more perfect service. And businesses can through the Internet information dissemination speed, distance, wide range of features, in the shortest possible time to gather strong consumption capacity, to meet the needs of both businesses and consumers. In the development of electricity suppliers to promote the business of the O2O to bring unlimited potential, strengthen the competitiveness of the line businesses, and O2O is not just a simple online consumer to lead the line store, it can do online and offline seamless connection, the maximum convenience of users (Berendt <i>et al.</i> , 2005; Devaraj <i>et al.</i> , 2002)"		Y	Y	Y		
Wang <i>et al.</i> (2019)	131	"O2O refers to an integration of offline commercial opportunities into online operation and services"		Y				
Weng and Zhang (2015)	51	"O2O is an electronic commerce mode based on online effective interactivity. This efficient integration mode between virtual world and real world gets support and recognition from all walks of life. O2O aims to maximize the use of offline and online resource; they promote each other and depend on each other to achieve a win-win situation"	Leung <i>et al.</i> (2019), Ryu <i>et al.</i> (2020)	Y	Y			

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Literature	Page	Content	Papers that directly adopted the definitions	Differentia Specifica ^a Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Wu et al. (2015)	771	"O2O refers to a business model generally having the Internet as the connection platform from which consumers could purchase goods, consuming and enjoying services online. As the upgrade of past e-commerce models, it expands the products varieties of past e-commerce and better connects businesses and consumers, combines traditional business opportunities and mobile webs, and allows the Internet being the front stage for offline transaction and enjoying services"		Y		Y		
Xiao and Dong (2015)	87	"The rapid development of information technology enables increasing numbers of consumers to seek and book products/services online first and then consume them in brick-and-mortar stores. This emerging trend is called 'online-to-offline (O2O) e-commerce' and can be exemplified by services such as Groupon, Yelp and Dampin in the restaurant business"	Hsieh (2017) , Mao et al. (2019) , Pan et al. (2019) , Ram et al. (2019) , Roh and Park (2019) , Wan and Chen (2019) , Wan et al. (2020a) , Wan et al. (2020c)	Y		Y		
Xiao et al. (2018)	732	"Similar to other intermediary platform-based e-business models, O2O commerce involves two parties who act to serve customers: intermediary O2O platforms and offline merchants. Payments are made online to O2O platforms, while the consumption of the service takes place offline in the merchants' physical stores"		Y		Y		

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Table A1.

Literature	Page	Content	Papers that directly adopted the definitions	<i>Differentia Specifica</i> ^a Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Xiao <i>et al.</i> (2019a)	413	<p>"O2O commerce operation is simple. O2O platforms contact retailers whose products/services are consumed at their physical stores (e.g. restaurants and hotels) and put their information online, including retailer locations, product/service details, operating time, discount, customer ratings, and customer reviews. Customers access the O2O platforms via PCs, mobile phones, or tablets and browse information on products or services. If they are interested in, they make payments online to the O2O platforms, obtain electronic coupons and retrieve the products or services offline in the retailers' physical stores. After consumption, consumers can post comments about the product/service they received from the retailers. Due to the wide adoption of mobile technologies, many O2O platforms have developed mobile applications that consumers can access through mobile phones or tablets anytime and anywhere. The location-based service imbedded in mobile devices enables consumers to easily acquire retailers' information, to compare retailers providing homogenous services, and to select the retailer that meets their needs. In return, local brick-and-mortar retailers gain a deeper understanding of their customer behavior and preferences from customer data stored in the O2O platforms, ultimately increasing their opportunity to survive in the e-marketplace"</p>	<p>Papers that directly adopted the definitions Xiao <i>et al.</i> (2019b)</p>	Y	Y	Y	Y	Y

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Literature	Page	Content	Papers that directly adopted the definitions	Differentia Specifica ^a Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Xiao <i>et al.</i> (2019c)	215	<p>"In essence, online-to-offline commerce brings offline business activities to Internet platforms and uses these platforms to promote traditional offline businesses</p> <p>In online-to-offline commerce, three parties are involved in the transaction process: intermediary platforms, merchants providing offline services, and consumers (Hwang and Kim, 2018; iResearch, 2018). The merchants' information—including location, product/service details, operating time, and other consumers' reviews—is provided on the intermediary platform. If consumers are interested in a particular merchant, they can enjoy the services/products in the merchants' physical stores but make payments online through the intermediary platform (Pan <i>et al.</i>, 2017)"</p>		Y	Y	Y	Y	Y
Xu <i>et al.</i> (2020)	659	<p>"An emerging business strategy, Online-to-Offline (O2O), is gaining significant popularity in the retail market. The corresponding O2O supply chain provides the opportunity for online buyers to search for and purchase products online and then pick them up in their preferred brick-and-mortar stores (Cao and Su, 2016)"</p>		Y	Y			
Xue <i>et al.</i> (2014)	13	<p>"O2O model is proposed by foreign scholar Alex Rampell and is a model which combines 'online shop' and 'physical store' together, which can seize a number of potential impulse consumers, utilizing features such as the portability of mobile means, the uniqueness of user identity and the traceability of user position."</p>	Shi and Hu (2020)	Y	Y		Y	
Xue <i>et al.</i> (2016)	910	<p>"By O2O business model, enterprises can quickly publish promotional information online to attract customers; customers can dig and purchase services online, and then enjoy services in offline stores"</p>		Y		Y		
Yang <i>et al.</i> (2016)	175	<p>"O2O refers to an integration of offline commercial opportunities into online operation and services"</p>		Y				

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Table A1.

Literature	Page	Content	Papers that directly adopted the definitions	<i>Differentia Specifica^d</i>			
				Directional integration from online to offline channels	Information exchange	Online ordering	Offline experience
Yu (2018)	786	"To this end, an O2O (Online To Offline) sports community, in which the online communications and offline activity experiences are integrated tightly to help exercisers participate in the whole procedures (planning, organization, experience and discussion) of various kinds of sports activities, are proposed under the background of Internet plus"		Y			Y
Yu and Deng (2017)	774	"With the rapid development of e-commerce, a growing number of brick-and-mortar stores, such as Apple, Walmart, Hewlett-Packard, and Philips, are now marketing their products through the conventional brick-and-mortar channel (offline channel) and through an online channel (Xiao and Shi, 2016). This business model is known as an offline-to-online (O2O) or offline-and-online (OAO) business model"					
Yu and Ren (2018)	N/A	"The O2O mode refers to the combination of an online channel and an offline channel"		Y			
Zhang (2014)	164	"Online to Offline refers to a combination of offline business and online commerce. O2O mode is characterized by its information flow and cash flow on the line, and logistics and commerce flow on the offline which greatly expanded the scope of business of e-commerce. The core of the model is that by providing information, services, offers discounts and other ways to store offline messages through O2O platform pushed to online users which will bring them to the reality of the store—that is the process of consumers buy goods and services online and then go to store to enjoy service"	Kang and Namkung (2019), Oh (2016)	Y	Y		

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Literature	Page	Content	Papers that directly adopted the definitions	Differential Specifica ^a Directional integration from online to offline channels	Information exchange	Online ordering	Locality	Offline experience
Zhang and Lee (2015)	1,180	“As the development of group-purchasing, Online to Offline (O2O), a new model of e-commerce, has been gradually recognized and accepted by consumers. O2O is to allow consumers online to buy goods and services which are not online and then get the goods and services offline. As a new business model, O2O promotes the development of e-business of traditional manufacturing enterprise and service firm, enhances the competitiveness of e-commerce platform and extends the traditional e-commerce platform”	Reis <i>et al.</i> (2019)	Y		Y		
Zhang <i>et al.</i> (2020)	N/A	“Online-to-offline (O2O) commerce is a new type of e-commerce that has emerged in recent years. It involves in an organic combination of online channels and offline channels for selling various products in the marketplace. O2O commerce makes the connection between online and offline more closely”		Y				

Note(s): ^a“Y” indicates the presence of the *differential specifica*

Table A1.