Should Firms Invest in Social Commerce? An Integrative Perspective

Hugo K. S. Lam (corresponding author)

Management School, University of Liverpool

Liverpool, United Kingdom

hugolam@liverpool.ac.uk

Andy C. L. Yeung

Faculty of Business, The Hong Kong Polytechnic University

Hung Hom, Kowloon, Hong Kong

andy.yeung@polyu.edu.hk

Chris K. Y. Lo

Institute of Textiles and Clothing, The Hong Kong Polytechnic University

Hung Hom, Kowloon, Hong Kong

kwan.yu.lo@polyu.edu.hk

T. C. E. Cheng

Faculty of Business, The Hong Kong Polytechnic University

Hung Hom, Kowloon, Hong Kong

edwin.cheng@polyu.edu.hk

Should Firms Invest in Social Commerce? An Integrative Perspective

Abstract

Integrating resource-based view and opportunity–motivation–ability framework, we theorize that social commerce represents firms' opportunity to access valuable social media resources and gain a competitive advantage. We further argue that product uncertainty and firm reputation indicate firms' motivation and ability, respectively, to use the social media resources, affecting the extent to which the competitive advantage can be realized. An event study of 275 social commerce initiatives announced between 2006 and 2011 supports our arguments, showing that social commerce increases firms' stock returns, but such increases are more significant for firms selling products with high uncertainty and having high reputation.

Keywords: social commerce; stock return; event study; resource-based view; opportunity–motivation–ability framework

1. Introduction

With its growing popularity and influence, online social media, such as Facebook and Twitter, is transforming politics, social norms, and the way business is conducted [63]. In view of this emerging trend, firms have started to integrate social media technologies into their sales and marketing processes. This new phenomenon is commonly known as social commerce [71,83]. For instance, firms can use various social media platforms to interact with both existing and potential customers, while customers are also able to interact with one another on these platforms. In fact, firms are actively leveraging social media to support different phases of their sales and marketing processes. For example, Rosetta Stone, a language-learning solutions provider, added rating and review features to its website, enabling potential customers to view the comments and experiences shared by existing customers and identify solutions that are applicable to their interest and skill levels (presales phase) [19]. Aeropostale, a casual apparel retailer, launched an e-commerce store on Facebook, allowing customers to purchase its entire online inventory without leaving the popular social networking site (sales phase) [89]. Qwest, a telecommunications service provider, relied on its "Talk to Qwest" on Twitter to monitor customer service-related tweets and respond to and resolve customers' problems in a timely manner (postsales phase) [18]. Some social commerce examples extracted from our sample are shown in Table 1.

--- Table 1 about here ---

Although social commerce has been regarded by Mark Zuckerberg, a co-founder of Facebook, as "the next area to really blow up" [96], anecdotal evidence about the business value of social commerce is mixed [44,73]. For instance, although Dell was able to generate $6.5 million in revenue in two years with the help of social commerce [44], some retailers such as Gap Inc. and J.C. Penney terminated their social commerce initiatives as they failed to see the expected benefits [73]. Such mixed results may be because social commerce is not a "one size fits all" solution [38]. In particular, firms selling products with varying levels of uncertainty may possess different needs to rely on the user-generated content on social media to reduce the uncertainty faced by customers. For example, for a firm selling products with high uncertainty such as cosmetics [70], there is a greater need for the firm to reduce the uncertainty faced by potential customers with regard to its products. Social commerce helps reduce this uncertainty by facilitating social interactions and user contributions on social media, thus benefiting, for example, the cosmetics manufacturer. Therefore, it is interesting to study how firms selling products with varying levels of uncertainty benefit differently from social commerce.

On the other hand, as social media shifts power from firms to customers [45], firms with varying reputations may receive different contributions from customers on social media. For instance, a cosmetics manufacturer with high reputation could attract more potential customers to interact with the company on social media, and its existing customers could also be more willing to share their experiences through social media [12,112], leading to a more effective uncertainty reduction. Therefore, it is worth examining how firms with varying levels of reputation benefit differently from social commerce.

The emerging phenomenon of social commerce has attracted researchers' attention in recent years [3,6,27,71,83,104,122,124,125], but much of the extant literature has focused on the effects of individual social media users' actions (see [123] for a recent review). For instance, Oh et al. [85] examined how consumer activities on social media platforms such as Facebook and YouTube are related to movies' box office performance, and Luo et al. [72] studied how firms' equity value can be predicted by consumers' online ratings and blog posts. Although some researchers have started to address social commerce directly [6,42,71,124], they concentrate on the drivers or consequences of social commerce adoption at the individual user level rather than the impact at the firm level. For instance, Ng [83] investigated how social interactions and trust affect individual users' intention to adopt social commerce, and Gu and Ye [42] examined the impact of management responses through social media on the satisfaction of individual customers. Stephen and Toubia even made it explicit that their social commerce research is focused on "individuals instead of firms" ([104], p. 216). In fact, a recent structured review conducted by Baethge et al. [6] could only identify five studies (or 4% of all the social commerce papers reviewed) concerning the firm performance impact of social commerce, although all the five studies focus on the impact of individual social media users' actions, rather than firms' social commerce initiatives, on firm performance. Therefore, there is a lack of relevant research investigating the impact of firms' social commerce initiatives at the firm level. Our research addresses this important gap by documenting the impact in terms of stock returns, which are a proxy for overall firm value [33,39,107].

In addition to the direct impact of social commerce initiatives on stock returns, we further investigate how such impact varies across different levels of product uncertainty and firm reputation. Revealing such variations can provide important implications for firms to reap more benefits from their social commerce initiatives. Finally, as social commerce is still in an early adoption stage [6,27], it is

not well understood why firms might benefit from social commerce in terms of stock returns. Liang and Turban [71] also urged researchers to develop new theoretical perspectives to better understand the emerging social commerce phenomenon. As a result, our research provides a theoretical explanation of why firms might realize different levels of stock returns from social commerce.

Conducting an event study of 275 social commerce initiatives announced between 2006 and 2011, we find that social commerce indeed increases firms' stock returns, but such increases are more significant for firms selling products with high uncertainty and having high reputation. Our analysis further reveals that not all firms can benefit from social commerce. Although firms selling products with high uncertainty and having high reputation gain significantly higher returns from their social commerce initiatives, firms selling products with low uncertainty and having low reputation suffer losses from their social commerce investments. These findings are consistent with our theoretical perspective that integrates the resource-based view (RBV) [8,111] and opportunity–motivation–ability (OMA) framework [61,62], as discussed below.

2. Theoretical background

2.1. Social commerce

Consistent with prior studies [e.g., 50,71,83,85,98,122,125], we define social commerce as an integration of social media with e-commerce, in which firms make use of social media technologies to support different phases (e.g., presales, sales, and postsales) of their commercial transactions and activities, whether it involves adding social media features to firms' conventional e-commerce sites or plugging firms' e-commerce activities into popular social media sites. Although social media—a relatively recent technological innovation—represents a wide range of Web 2.0 applications such as social networking sites, microblogs, online communities, and user forums [59], a common attribute among these applications is their ability to facilitate social interactions and user contributions [71,122]. In particular, social media enables interactions not only between firms and customers but also among customers. Moreover, in addition to the official information provided by firms, customers are free to contribute their knowledge and share their experiences on social media. Importantly, the social interactions and user contributions facilitated on social media are visible to any social media user, including the firms concerned [68].

Such social interactions and user contributions make it possible for firms to implement different

sales and marketing strategies on social media. For instance, firms can implement personal selling and direct marketing strategies on social media through direct two-way interactions with existing and potential customers [31]. Social media is also suitable for word-of-mouth marketing because it enables firms to encourage customers to share their experiences in their social networks [64]. In addition, firms can leverage social media for market research by monitoring and analyzing social interactions and user contributions on social media to inform their future marketing decisions [47]. Although these sales and marketing strategies can be implemented through other channels, such as personal selling by face-to-face communication, direct marketing by text messaging, word-of-mouth marketing by email, and market research by focus groups, none of these channels has the same capacity as social media to enable firms to implement different sales and marketing strategies together. Therefore, social commerce should not be treated as a specific type of sales or marketing strategy (e.g., word-of-mouth marketing) but as a new way for firms to implement a wide range of sales and marketing strategies on social media.

This new way of sales and marketing distinguishes social commerce from other one-off sales promotions and marketing campaigns through traditional media and transforms the social interactions and user contributions facilitated on social media into useful resources. However, not all types of resources can help firms to gain an advantage over their competitors without such resources [9]. Prior research has even suggested that some types of resources such as political ties can be a liability rather than an asset for firms under certain conditions [115]. Therefore, we need to provide a theoretical explanation of whether the social media resources facilitated by firms' social commerce initiatives can enable the firms to gain a competitive advantage. The RBV [8,111] fits our research purpose as it helps explain why some resources but not others can be a source of competitive advantage. In particular, it emphasizes that competitive advantage arises from those resources that are valuable, rare, inimitable, and nonsubstitutable (VRIN). We, thus, rely on the RBV to explain whether the social interactions and user contributions facilitated on social media can be viewed as VRIN resources and, hence, a source of competitive advantage for the firms concerned. Moreover, the RBV conceptualizes competitive advantage as "above normal economic performance" ([8], p. 104), which is consistent with our empirical approach that investigates the impact of social commerce in terms of "above normal" or "abnormal" stock returns. Therefore, the RBV acts as a useful theoretical lens for us to explain whether social commerce enables firms to access VRIN resources to gain a competitive advantage, resulting in abnormal stock returns.

However, even if the social interactions and user contributions facilitated on social media can be viewed as VRIN resources, these resources are different from other information systems (IS) resources investigated in prior RBV research [111]. In particular, prior RBV research has been focused on internal IS resources that are "controlled by a firm" ([8], p. 117) and "within the firm" ([111], p. 132), but external social media resources are "not controlled or bought by the marketer" ([46], p. 268). Such a difference suggests that having the opportunity to access social media resources may be a necessary but insufficient condition for firms to gain a competitive advantage because these resources are neither controlled by the firms nor within the firms. We, thus, need to adopt an additional theoretical lens to complement the RBV by taking account of other conditions that enable firms to realize the competitive advantage arising from the more external and less controllable social media resources. The OMA framework [61,62] suits our research purpose because it takes account of not only firms' opportunity to access social media resources but also their motivation and ability to make use of these resources. Consistent with the RBV's focus on competitive advantage, the OMA framework is concerned with the determinants of performance in terms of opportunity, motivation, and ability. In particular, the OMA framework emphasizes that an actor's performance depends on its motivation and ability in addition to its opportunity to perform. In our research context, it suggests that the extent to which a competitive advantage can be realized may depend on firms' motivation and ability to make use of the social media resources, in addition to their opportunity to get access to these resources. Following the OMA framework and considering the special nature of social media, we view social commerce initiatives as firms' opportunity to get access to social media resources and rely on product uncertainty and firm reputation to indicate their motivation and ability, respectively, to make use of these resources. Therefore, the OMA framework complements the RBV, together providing a more comprehensive view on the competitive advantage resulting from firms' social commerce initiatives.

2.2. The RBV

The RBV seeks to explain why some resources but not others can create a competitive advantage for firms [9]. RBV researchers have agreed that only VRIN resources can enable a firm to gain a real advantage over its competitors [8,111]. First, resources are valuable in the RBV context if they enable a firm to lower its net costs and/or increase its net revenues beyond what would have been the case without these resources [65]. Social media resources are valuable because they enable firms to increase

revenues and/or reduce costs, as suggested by some anecdotal evidence [e.g., 44,52].

However, valuable resources cannot be a source of competitive advantage if they are in plentiful supply and other competing firms can also possess them. Valuable resources thus have to be rare such that they are only available to a small number of competing firms [111]. Although the user-generated content on social media is certainly not rare [58], social media resources could be rare in the sense that only a small number of firms can successfully facilitate social interactions and user contributions on social media [37,118].

Even resources that are valuable and rare cannot lead to a competitive advantage if it is easy for other firms to obtain or develop them through direct duplication or imitation. Advantage-creating resources thus need to be imperfectly imitable such that competing firms without these resources should find it substantially costly to acquire or develop them [11]. Although firms can learn from one another and adopt similar social commerce initiatives, the resulting social interactions and user contributions on social media should be different across firms and thus imperfectly imitable. This could be due to their unique historical conditions (i.e., firms develop social commerce based on their own historical backgrounds and through unique pathways), causal ambiguity (their linkages to the resulting competitive advantage are ambiguous and poorly understood and thus difficult to copy), and/or social complexity (they are embedded in complex social networks that are unique to each firm) [8,10,65,111].

The final attribute of VRIN resources is nonsubstitutability, implying that these resources cannot be simply replaced or substituted by any other strategically equivalent resources [8,111]. Social media resources are nonsubstitutable because the social interactions and user contributions facilitated on social media, being complex and different across firms, cannot be simply replaced by other online (e.g., email) or physical channels (e.g., focus group) [68,105].

Taken together, social media resources can be viewed as VRIN resources and thus a source of competitive advantage. In the hypothesis building section, we provide a more detailed explanation of the VRIN characteristics of social media resources and hypothesize how social commerce enables firms to access these VRIN resources, resulting in positive stock returns.

2.3. The OMA framework

The OMA framework has been well established as a theoretical explanation of the underlying determinants of individual work performance [15]. In particular, it suggests that individuals' work

performance depends on their opportunity, motivation, and ability to perform. Although the OMA framework was originally developed to explain individual performance, recent research has started to adopt it to study performance at the firm level [e.g., 25,61,62,99] because the OMA framework can be regarded as a meta-theoretical perspective that explains the underlying determinants of performance across a wide range of contexts and settings and is thus applicable to the firm level of analysis [1,62]. We, therefore, see the merit of adopting the OMA framework to study the external, less controllable social media resources because it enables us to account for firms' motivation and ability, and not only their opportunity to access these resources. For instance, if a firm does not believe that it has to rely on social interactions and user contributions to assist in the sale of its products, the firm is less motivated to make use of these external social media resources. On the other hand, because the social interactions and user contributions on social media are less controllable and more uncertain [45,59], if a firm is not capable of leveraging these social media resources, it might incur a competitive disadvantage rather than a competitive advantage from its social commerce initiatives. Therefore, although social commerce initiatives provide an opportunity for firms to gain access to social media resources, the extent to which the competitive advantage can be realized may also depend on the firms' motivation and ability to make use of these resources.

However, compared to the individual level of analysis, it is relatively difficult for us to measure motivation and ability directly at the firm level. Prior OMA studies overcome this difficulty by using some observable firms' characteristics and actions to represent their underlying motivation and ability [61,62,99]. For instance, Schijven and Hitt's [99] research on firm acquisitions used acquiring firms' debt-to-equity ratio and prior acquisition experience to represent their motivation and ability, respectively, to realize the synergy from acquisitions. Consistent with these prior studies and taking the special nature of social media into account, we rely on product uncertainty and firm reputation to indicate firms' motivation and ability, respectively, to capitalize on social media resources. In the hypothesis building section, we provide a more detailed explanation of why product uncertainty and firm reputation can indicate firms' motivation and ability, respectively, and thus affect the levels of stock returns due to firms' social commerce initiatives.

2.4. Research model

Our research model based on the RBV and OMA framework is presented in Figure 1. First, it views

social commerce initiatives as firms' opportunity to access VRIN social media resources, which are a source of competitive advantage and quantified in terms of stock returns. It further views product uncertainty and firm reputation as firms' motivation and ability, respectively, to make use of the VRIN social media resources, affecting the extent to which the firms benefit from social commerce initiatives in terms of stock returns. This research model serves as the theoretical framework for our research and guides our hypothesis building, as discussed below.

--- Figure 1 about here ---

3. Hypothesis building

3.1. The impact of firms' social commerce initiatives on stock returns

To hypothesize the impact of firms' social commerce initiatives on stock returns, we first theorize why the social interactions and user contributions facilitated by social commerce can be viewed as VRIN resources and thus a source of competitive advantage and then explain why the resultant competitive advantage can be quantified in terms of stock returns. First, there are a number of ways for social commerce to create value for firms in terms of increased revenues and/or reduced costs. For instance, social media empowers firms' customers to comment on the firms' products and services and share their own experiences, which are visible to other social media users, thus reducing their uncertainty about the firms' products and services and increasing their purchase intentions [5,49,119]. In fact, prior studies [e.g., 29,35,43,97,121] have documented how user-generated content on social media helps firms improve the sales of products and services. Social media can also enable firms to interact and engage with customers, build customer communities, and resolve customers' problems in a timely manner, resulting in closer customer relationships and improved customer satisfaction and loyalty, ultimately leading to more sales [2,63,71,83,85]. Moreover, by interacting with customers as well as monitoring the interactions among customers on social media, firms can learn more about customer demands and preferences, reducing supply–demand mismatch and inventory costs [2,23]. Customers' contributions and involvement on social media can also help firms reduce the costs of marketing, customer service, and general administration [52,63]. Some anecdotal evidence confirms the value creation potential of social media resources. For instance, Dell used social media to increase revenue by $6.5 million in two years [44], while BT relied on social media to reduce the cost of customer service operations by £2 million a year [52].

Second, only a small number of firms can successfully facilitate social interactions and user contributions on social media [37,118], making social media resources rare. For instance, a recent report released by Forrester Research showed that, on average, only 0.073% and 0.035% of firms' fans or followers on Facebook and Twitter, respectively, interact with the firms' posts [37], while Windels [118] found that 96% of the conversations on social media are not related to brands. Our research data also show similar results. Specifically, we randomly selected 40 firms from our sample that deployed social commerce on Facebook and downloaded the data from the Facebook pages of these firms. For each of these 40 firms, we calculated the interaction rate as the average number of fans interacting per post divided by the total number of fans. Our results show that the average interaction rate is 0.068% and only one of these 40 firms has an interaction rate higher than 1%. Therefore, although user-generated content on social media is abundant [58], this is not necessarily the case for the social interactions and user contributions facilitated by firms' social commerce initiatives.

Third, the inimitability of social interactions and user contributions on social media is a result of their unique historical conditions, causal ambiguity, or social complexity [8,10,65,111]. First, no customer is equal. Customers' willingness to interact with a firm and contribute their information and knowledge through social media depends on their past experiences and interactions with the focal firm concerned. Moreover, because social media shifts power from firms to customers [45], the social interactions and user contributions on social media tend to be informal, unstructured, and less controllable, making their linkage to firms' superior performance more ambiguous and less understandable. Finally, firms' relationships with customers as well as the relationships among their customers are complex and socially embedded, leading to different firm–customer and customer–customer interactions on social media. Therefore, it is unlikely that the social interactions and user contributions on social media can be easily imitated by competing firms.

Finally, no other online or physical channels adopted by firms are able to completely substitute the social interactions and user contributions facilitated on social media. For instance, although firms can use other online communication technologies such as email or instant messaging to interact with customers and ask them to provide feedback about the firms' products and services, such interactions are usually between a dyad and different from the social interactions among various parties on social media [68]. Similarly, firms can invite customers to join focus groups in-person to speak with other customers and contribute their knowledge and ideas, but such discussions are often among only a few

group members [105]. More importantly, the interactions through those channels, whether online or offline, are not visible to customers' social networks and other social media users, making social media resources nonsubstitutable.

Taken together, social media resources can be regarded as VRIN resources and thus a source of competitive advantage [8,111]. Competitive advantage, as argued in Barney's seminal work on the RBV, "will be reflected in above normal economic performance" ([8], p. 104). Other RBV researchers have also commonly agreed that competitive advantage enables a firm to create "above average returns" ([90], p. 29) or generate "abnormal rents" ([78], p. 961). Although prior studies have measured competitive advantage in terms of various performance indicators such as costs, profits, and innovations [14,102,111], our research is focused on stock returns for two reasons. First, stock returns represent overall firm value [33,39,107], taking both tangible and intangible components into account [56,93], which is consistent with the tangible and intangible values of VRIN resources emphasized in the RBV literature [14,65,101,111]. Moreover, we employ the event study methodology to quantify the stock returns due to social commerce in terms of "abnormal" stock returns [36,74,77], which are the differences between the actual stock returns with the adoption of social commerce and the expected stock returns had there been no such adoption. We adopt Fama–French–Carhart's four-factor model [22,40] to control for firm size, book-to-market ratio, and prior stock return when estimating the expected stock returns[1]. The abnormal stock returns calculated based on this methodology, thus, are more in line with the "above average returns" or "abnormal rents" agreed on by RBV researchers [78,90]. As a result, we expect that the competitive advantage resulting from the VRIN social media resources can be reflected in positive investor reactions to firms' social commerce initiatives and thus increased stock returns for the firms. Therefore, we propose the following:

H1. Firms' social commerce initiatives have a positive impact on their stock returns, even when firm characteristics are controlled for.

3.2. The roles of product uncertainty and firm reputation

In addition to the direct impact of social commerce on stock returns, we further hypothesize how the impact might vary across firms with different levels of product uncertainty and firm reputation. In

[1] As a sensitivity test, we also adopt propensity score matching [79,100] to further control for other firm characteristics such as employee productivity, financial leverage, and capital resource slack.

particular, we adopt the OMA framework to theorize that product uncertainty and firm reputation indicate firms' motivation and ability, respectively, to make use of social media resources, affecting the extent to which a competitive advantage can be realized, thus leading to a variation in stock returns. We first consider how product uncertainty indicates firms' motivation in the social media context. For firms selling products with low uncertainty such as toothbrushes [41], potential customers do not have to rely on other customers' comments or interactions with the firms on social media to judge the quality of the firms' products [5,49]. As a result, these firms might perceive that social media resources have little influence on their customers' purchasing behaviors and, thus, are less motivated to make use of them.

Conversely, firms selling products with high uncertainty—such as cosmetics [70], as mentioned in our example in the Induction section—are more dependent on social interactions and user contributions on social media to reduce potential customers' uncertainty about their products [5,49]. This is because they cannot rely on traditional e-commerce that mainly focuses on maximizing the efficiency of online transactions through sophisticated searches, one-click buying, and specification-driven virtual catalogues [50,91,113], which has long been criticized for its inability to reduce the uncertainty faced by customers [60,86]. In other words, these firms have a higher need and thus are more motivated to make use of social media resources. Therefore, the uncertainty of a firm's products indicates whether the firm needs to rely on social interactions and user contributions to assist in the sale of its products and thus is motivated to make use of social media resources. As a result, we propose the following:

H2. The impact of social commerce initiatives on stock returns is more positive for firms selling products with high uncertainty.

While product uncertainty indicates firms' motivation, firm reputation, on the other hand, can be viewed as a cue of firms' ability in the social media context, which is also expected to affect stock returns. For instance, if firms are low on reputation (i.e., unknown), it is more difficult for them to get social media users to interact with or be involved in their initiatives on social media. Social media users may avoid interacting with these low-reputation firms due to the visibility of social media activities to their social networks and other social media users [68]. Moreover, even though some customers of these firms may still take advantage of the user contribution nature of social media to share their experiences and provide advice, these experiences and advice tend to be negative rather than positive [24,112]. Therefore, firms with low reputation are less capable of capitalizing on the social interactions and user

contributions on social media.

Conversely, customers are more likely to interact and engage with firms with high reputation through social media because high reputation helps attract customers [20,67]. This could be reflected in the large number of fans or followers of some reputable firms on social media [76]. For instance, Starbucks, one of the most reputable firms based on *Fortune* magazine's surveys [108], was the first firm to attract 10 million likes on its Facebook page [20]. Moreover, prior studies [e.g., 12,24,110,112] have suggested that customers are more satisfied with and loyal to firms with high reputation and are more willing to engage in positive word-of-mouth activities and customer citizenship behaviors to help these firms. As a result, these firms' customers may not only share their positive experiences on social media but also make use of social media to help the firms disseminate information, recommend the firms' products and services, and resolve other customers' inquiries and problems, which, in turn, increase the firms' sales and reduce their marketing and customer service costs. Therefore, we view a firm's reputation as an indication of whether its social commerce initiatives are capable of facilitating positive social interactions and user contributions on social media, leading to a competitive advantage. We thus propose the following:

H3. The impact of social commerce initiatives on stock returns is more positive for firms with high reputation.

4. Methods

4.1. Data collection

We collected social commerce announcements from Factiva, which contains news and information articles from top media outlets such as *The Wall Street Journal*, *The New York Times*, and hundreds of other sources [4]. Similar to prior event studies on e-commerce [e.g., 34,106], we searched social commerce announcements with a combination of the following keywords: (announce or launch) and (NASDAQ or NYSE or AMEX) and (social commerce or social shopping or social media or social network or other relevant keywords such as Facebook and Twitter). We included the keywords "announce or launch" to ensure that our search results are related to firms' announcements or initiatives. The keywords "NASDAQ or NYSE or AMEX" helped us limit our search to firms listed on the US stock markets. Finally, in addition to the term "social commerce," we included other relevant keywords such as "social shopping" and "social media" as well as the names of some popular social media websites

such as Facebook and Twitter. The inclusion of a broad set of relevant keywords helped reduce the possibility of filtering out some suitable articles that did not mention the term "social commerce" directly in their texts. As the term "social commerce" was first introduced by Yahoo! in November 2005 [13], we searched social commerce initiatives announced between 2006 and 2011. Our initial search yielded thousands of news articles.

Identifying relevant social commerce announcements from this large number of news articles is a labor-intensive task. We thus recruited and trained 12 student assistants to accomplish this task. We conducted a data collection workshop for all the student assistants recruited. To ensure the quality and validity of the announcements collected, the student assistants were required to undertake a test in which they needed to identify the same set of social commerce announcements for a given sample of firms. Moreover, our research team further verified all the social commerce announcements identified by the student assistants.

We only retained news articles with explicit mention of the use of social media for sales and marketing purposes and thus excluded such announcements as the mergers and acquisitions of social media firms and the appointments of new social media executives. As our target was publicly listed firms in the US, we excluded social commerce announcements made by private or non-US firms and deleted repeated announcements from different sources. After elimination, we obtained 348 social commerce initiatives announced by 241 firms. Some examples of these 348 social commerce initiatives are shown in Table 1. We also present the descriptive statistics of our sample in Table 2. It shows that the number of social commerce initiatives increased from 13 (or 3.7%) in 2006 to 93 (or 26.7%) in 2011. A total of 186 (or 77.2%) out of the 241 firms adopted only one social commerce initiative in this period, whereas 12 (or 4.9%) firms had more than three social commerce initiatives. We include the second, third, and even later social commerce initiatives of the same firm in our research because these initiatives are not repeated announcements of the same initiatives but different initiatives that can be regarded as independent events from the event study perspective. Firm characteristics in terms of sales, total assets, number of employees, operating income, return on assets, and return on sales are shown in Panel C of Table 2.

--- Table 2 about here ---

To investigate the impact of social commerce initiatives on firms' stock returns, we obtained daily stock return data and Fama–French–Carhart's four-factor [22,40] information from the Center for

Research in Security Prices (CRSP) database and the Kenneth French Data Library, respectively. We collected product information from social commerce announcements, firms' annual reports, and Hoover's company profiles to determine product uncertainty. We obtained the annual Most Admired Companies (MAC) lists from *Fortune* magazine to measure firm reputation [48,117]. Table 3 summarizes all the variables used in this research.

--- Table 3 about here ---

4.2. Event study methodology

We employ the event study methodology to quantify the impact of firms' social commerce initiatives in terms of abnormal stock returns (H1). The abnormal return is defined as the difference between the actual return with the occurrence of an event and the expected return had there been no event [36,74,77]. We adopt Fama–French–Carhart's four-factor model [22,40] to estimate the firms' expected returns because it captures the risk-adjusted returns and has higher explanatory power for stock market movements [107]. According to this model, the daily return of firm i at time t, R_{it}, is related to four different factors as follows:

$$R_{it} = \alpha_i + \beta_i RM_t + \gamma_i SMB_t + \delta_i HML_t + \sigma_i UMD_t + \varepsilon_{it} , \quad (1)$$

where RM_t is the return of the market portfolio and SMB_t, HML_t, and UMD_t represent the differences in returns between small and big market capitalization stocks, between high and low book-to-market ratio stocks, and between high and low prior-return stocks, respectively. Following prior event studies [e.g., 51,120], we use the equally weighted index from CRSP for RM_t due to its superior ability to detect abnormal stock returns [30].

We choose 120 trading days prior to a social commerce announcement as the estimation period and regress Equation (1) over this period to obtain the firm-specific parameters, namely $\hat{\alpha}_i$, $\hat{\beta}_i$, $\hat{\gamma}_i$, $\hat{\delta}_i$, and $\hat{\sigma}_i$. We use these parameter estimates to construct the expected return $E(R_{it})$ had there been no event:

$$E(R_{it}) = \hat{\alpha}_i + \hat{\beta}_i RM_t + \hat{\gamma}_i SMB_t + \hat{\delta}_i HML_t + \hat{\sigma}_i UMD_t . \quad (2)$$

We compute the abnormal return AR_{it} as the difference between the actual return R_{it} and the expected return $E(R_{it})$:

$$AR_{it} = R_{it} - E(R_{it}) = R_{it} - \left(\hat{\alpha}_i + \hat{\beta}_i RM_t + \hat{\gamma}_i SMB_t + \hat{\delta}_i HML_t + \hat{\sigma}_i UMD_t\right) . \quad (3)$$

We choose three trading days around the event (i.e., days -1 to +1) as the event window [54,103]. We include the day before the event to account for possible information leakages before the

announcement and the day after the event to capture the effect of the announcement made after the closure of the stock market [74]. Therefore, we compute the cumulative abnormal return (CAR) of firm i as follows:

$$CAR_i = \sum_{t=-1}^{+1} AR_{it}. \quad (4)$$

Following McWilliams and Siegel [77], we remove social commerce initiatives with confounding events such as mergers and acquisitions, major contract awards, and key executive changes. We eliminated 47 social commerce initiatives with confounding events in the three-day event window in Factiva. We removed 17 social commerce announcements because the corresponding firms' stock return data were unavailable in the 120-day estimation period or the three-day event window. We further discarded nine firms whose average daily stock prices were less than $1 or whose trading volumes were less than 50,000 shares [34,106], leaving a final sample size of 275. We calculate the cumulative average abnormal return (CAAR) across these 275 samples as follows:

$$CAAR = \frac{1}{275}\sum_{i=1}^{275} CAR_i. \quad (5)$$

We apply nonparametric tests, including the binomial sign test, Corrado rank test, and Wilcoxon signed rank test to determine the significance of the CAAR [36,74,77]. We also perform additional parametric tests and use alternative estimation period, return model, market portfolio, and matching technique to ensure the robustness of the results (please refer to Section 6 for details).

4.3. Cross-sectional regression model

We construct a cross-sectional regression model to analyze the roles of product uncertainty (H2) and firm reputation (H3) as follows:

$$\begin{aligned} CAR_i = {} & \beta_0 + \beta_1 Product\ Uncertainty_i + \beta_2 Firm\ Reputation_i + \beta_3 Platform\ Ownership_i \\ & + \beta_4 Firm\ Size_i + \beta_5 Firm\ Profitability_i + \beta_6 Firm\ Age_i \\ & + Year\ Dummies + Industry\ Dummies + \varepsilon_i\ . \end{aligned} \quad (6)$$

We mainly rely on the products mentioned in the social commerce announcements to determine product uncertainty. For instance, as mentioned in the social commerce announcements shown in Table 1, Rosetta Stone provides technology-based language-learning solutions, while Aeropostale sells casual apparel. If product information is not provided in the announcements, we search for the related product

information through firms' annual reports and Hoover's company profiles. As a firm may sell different types of products, we focus on the main type of products that contribute the largest percentage of revenue to the firm.

After identifying the specific products, we measure product uncertainty based on Nelson's [81,82] classification of search and experience products. For search products such as toothbrushes [41], it is relatively easy for customers to obtain relevant information such as a mere description of the products to determine their quality before purchasing the products. Conversely, for experience products such as movies [5], it is relatively difficult for customers to evaluate the quality of the products without interacting with them. In other words, customers may have to purchase and experience these products to determine their quality. Therefore, an important distinction between search and experience products is the level of uncertainty that customers face with product quality before consumption. Such a difference between search and experience products has been validated by Nelson [81,82] using various sets of secondary data. Since Nelson's seminal work, the concept of search vs. experience products has been widely adopted in various disciplines including marketing [e.g., 49,75] and information systems [e.g., 26,80]. In line with these studies, we regard search products as products with low uncertainty (coded 0) and experience products as products with high uncertainty (coded 1). Our final sample includes 88 (32%) products with low uncertainty and 187 (68%) products with high uncertainty.

We measure firm reputation based on the MAC list published by *Fortune* magazine annually. Each year, *Fortune* magazine compiles the MAC list by surveying executives, directors, and analysts to identify firms that enjoy the strongest reputations within their industries. The MAC list has been widely used by researchers to measure firm reputation [e.g., 21,48,107,117]. However, because *Fortune* magazine only includes "firms with the highest reputation scores within their industries" ([107], p. 59) in the MAC list, it does not cover all the sample firms in many past studies. For instance, only 107 out of 208 (or 51%) sample firms in Houston and Johnson's [48] research are included in the MAC lists. Similarly, the MAC lists cover only 58% of our sample firms. To address this coverage limitation and avoid the possible bias arising from only focusing on firms included in the MAC lists, past studies have adopted various strategies to measure firm reputation by transforming the MAC list into a dummy variable. Some common approaches include (1) considering firms included in the MAC list with above industry average ranks as having high reputation and others as having low reputation [48,117]; (2) considering the top 100 firms included in the MAC list as having high reputation and others as having

low reputation [107]; and (3) considering all firms included in the MAC list as having high reputation and others as having low reputation [21]. We employ approach (1) to measure firm reputation in this research. Among the 275 social commerce initiatives, 97 (or 35%) are adopted by firms with high reputation and 178 (or 65%) are adopted by firms with low reputation. We also employ approaches (2) and (3) to check the sensitivity of our test results, as shown in Section 6.

We control for other firm and platform characteristics, including firm size, firm profitability, firm age, and platform ownership in the model. The detailed measurements and corresponding data sources of these control variables are presented in Table 3. Moreover, we include year (2006–2011) and industry (two-digit SIC code) dummies to account for unobserved time and industry effects.

We estimate Equation (6) using ordinary least squares (OLS). As robustness checks, we derive a heteroskedasticity-consistent estimation using White's [116] approach and employ alternative measures of hypothesized and control variables (please also refer to Section 6 for details).

5. Test results

5.1. The impact of firms' social commerce initiatives

The event study test results are presented in Table 4. As shown in Panel A, the average abnormal returns (AAR) on days -1, 0, and +1 are all positive and significant for the three nonparametric tests ($p < 0.05$). In Panel B of Table 4, the CAAR over the three-day event window (i.e., days -1 to +1) is positive and significant for the three nonparametric tests, providing strong support for H1 (CAAR = 0.86%, $p < 0.01$). We also estimate the CAARs over the two-day event windows (i.e., days -1 to 0 and days 0 to +1) as shown in Panel B of Table 4, but their values (0.53% and 0.68%) are less than those in the three-day event window (0.86%), showing that it is more appropriate to use a three-day event window to capture the full impact of social commerce announcements. Moreover, as shown in Panel B of Table 4, the CAARs over both the pre-event and post-event window periods (i.e., days -30 to -2 and days +2 to +30) are not significant ($p > 0.1$) for all three nonparametric tests, suggesting that a three-day event window is "long enough to capture the significant effect of the event" ([77], p. 636).

--- Table 4 about here ---

5.2. Cross-sectional regression results

The correlations among all the variables included in our regression analysis are presented in Table

5. It shows that the two hypothesized variables (i.e., product uncertainty and firm reputation) strongly correlate ($p < 0.05$) with the dependent variable, *CAR*. The cross-sectional regression results are shown in Table 6. Model 1 is the basic model including all the control variables, year dummies, and industry dummies. Models 2 and 3 add the two hypothesized variables to Model 1 sequentially. All the three models are significant ($F \geq 1.395$, $p < 0.1$) with adjusted *R*-squares ranging from 0.066 to 0.188. The number of observations (*N*) is reduced to 256 for all three models because of missing data for some control variables such as firm age.

--- Tables 5 and 6 about here ---

Product uncertainty remains positive and significant ($p < 0.01$) across Models 2 and 3, suggesting that the impact of social commerce initiatives is more positive for firms selling products with high uncertainty. Therefore, H2 is supported. Figure 2 shows the partial regression plot of CAR and product uncertainty, in which the y-axis represents the residuals of regressing CAR on all independent variables included in Equation (6) except product uncertainty while the x-axis represents the residuals of regressing product uncertainty on all other independent variables included in Equation (6). It shows a linear relationship between CAR and product uncertainty with a slope equal to 2.49, suggesting that on average the stock returns of products with high uncertainty are 2.49% higher than those of products with low uncertainty.

--- Figures 2 and 3 about here ---

Firm reputation is also positive and significant ($p < 0.05$) in Model 3 of Table 6, indicating that firms with high reputation benefit more from their social commerce initiatives. Therefore, H3 is also supported. Furthermore, the partial regression plot of CAR and firm reputation shown in Figure 3 suggests a linear relationship between CAR and firm reputation with a slope equal to 1.03, suggesting that, on average, the stock returns of firms with high reputation are 1.03% higher than those of firms with low reputation. The results of hypothesis testing based on both the event study and cross-sectional regression are summarized in Table 7.

--- Table 7 about here ---

6. Sensitivity tests

We perform various sensitivity tests to analyze the robustness of our findings. First, we re-examine CAAR over the three-day event window (i.e., days -1 to +1) by revising the estimation period from 120

days to 240 days, changing the estimation model from Fama–French–Carhart's four-factor model to Fama–French's three-factor model, and modifying the market portfolio from the equally weighted index to the value-weighted index, resulting in Models 1 to 3, respectively. As shown in Table 8 (Panel A), the CAARs remain positive and significant for all nonparametric tests across the three models ($p < 0.01$).

Following recent event studies [e.g., 79,100], we adopt propensity score matching (PSM) to control for other possible factors and to match each sample firm with a control firm. Specifically, we first perform a logit regression with social commerce adoption in year *t* as the dependent variable, while the independent variables include firm size (natural log of total assets), firm profitability (return on assets), Tobin's *q* (market value plus total assets minus common equity, all divided by total assets), employee productivity (sales per employee), financial leverage (sum of long-term debt and current liabilities divided by market value), capital resource slack (sales divided by property, plant and equipment), and market-to-book ratio (market value divided by common shareholders' equity), all measured in year *t-1*. We also include year and industry (two-digit SIC code) fixed effects in this model. After running the logit regression, we match each sample firm with a control firm that did not adopt social commerce in year *t* but had the nearest adoption probability (i.e., propensity score) to the sample firm. We then calculate the CAR as the difference in stock returns between the sample firms and its control firms over the three-day event window. The resultant CAAR shown in Model 4 (Panel A) remains positive and significant across the three nonparametric tests ($p < 0.05$).

Moreover, by conducting two parametric tests commonly used in prior event studies, including the crude dependence adjustment test [17] and the calendar time test [53], we find positive and significant results ($p < 0.01$) as shown in Model 5 (Panel A).

Finally, although the event study methodology has been widely adopted across different disciplines [36,74,77], there is still a concern about possible stock market overreactions to corporate events, especially involving technological innovations such as social commerce initiatives. To address this concern, we follow Barber and Lyon [7] to compute the abnormal profitability change due to social commerce initiatives. Specifically, we calculate the abnormal profitability change as the difference in ROA change between a sample firm and its control firms from year *t-1* to *t*, where *t* is the year of the social commerce initiative. Control firms are defined as nonsocial commerce adopters with similar ROA, size, and industry as the sample firm in year *t-1* (please refer to [7] for the detailed procedures). We find that the average abnormal profitability change is positive and significant ($p < 0.1$ for both

parametric and nonparametric tests), as shown in Model 6 (Panel A). This suggests that social commerce initiatives improve the profitability of adopting firms, ruling out the explanation of stock market overreactions. Overall, these sensitivity tests provide further support for our findings regarding the positive impact of social commerce initiatives.

--- Table 8 about here ---

To check the sensitivity of the cross-sectional regression results, we re-run Equation (6) with the new CARs obtained from Models 1 to 4 in Panel A. The corresponding regression results are presented as Models 1 to 4 in Panel B. Product uncertainty and firm reputation remain positive and significant across all four models ($p < 0.1$). We also re-run Equation (6) with the abnormal profitability change as the dependent variable and obtain consistent results, as shown in Model 5 (Panel B).

We have argued that firms selling products with high uncertainty are more motivated to use social media resources, leading to higher stock returns, but other dimensions of product characteristics such as complexity may also affect firms' motivation to rely on social media resources, resulting in different stock returns. For instance, firms selling complex products such as technology-intensive products may rely more on social interactions and user contributions on social media to educate customers about the usage of these products [55] and are more motivated to use social media. We thus re-run Equation (6) by replacing product uncertainty with product complexity. Consistent with Deason and Ferrantino [32], we regard products that are included in the Advanced Technology Products list released by the US Census Bureau as having high complexity (coded 1) and others as having low complexity (coded 0). The regression results shown in Model 6 (Panel B) suggest that the abnormal returns are more positive for products with high complexity, consistent with our integrative perspective, which suggests that firms with higher motivation to make use of social media resources reap more benefits.

We adopt two alternative approaches to measure firm reputation: one is based on whether a firm is one of the top 100 firms in the MAC list (coded 1 for the top 100 firms and 0 for others) [107], and another is based on whether a firm is included in the MAC list (coded 1 for firms in the MAC list and 0 for others) [21]. The corresponding regression results with these two alternative measures remain consistent, as shown in Models 7 and 8, respectively, in Panel B.

We also adopt alternative measures of firm characteristics in the regression model. Specifically, we compute firm size as the natural logarithm of the number of employees [92], firm profitability as the return on sales [4], and firm age as the natural logarithm of the number of years between firms' social

commerce announcements and IPO listing [69]. The corresponding regression results of these alternative measures are presented in Models 9 to 11 in Panel B. All the coefficients remain positive and significant ($p < 0.1$) across all three models.

We add two new variables to Equation (6) to control for the characteristics of social commerce initiatives. The first variable represents the type of social commerce adopted by a firm, which is coded 1 for relational social commerce that focuses on presales promotions or postsales customer support and 0 for transactional social commerce that focuses on direct sales and transactions [98]. The second variable indicates whether a specific social commerce initiative is a firm's first social commerce initiative (coded 1 for the first initiative and 0 for others). The regression results remain consistent after adding these two control variables, as shown in Model 12 (Panel B), but the coefficients of the two control variables are not statistically significant ($p > 0.1$; not tabulated).

Finally, by performing the heteroskedasticity-consistent estimation of Equation (6), we obtain qualitatively similar results, as shown in Model 13 (Panel B). The results of these sensitivity tests confirm the robustness of our cross-sectional regression model.

7. Discussion and conclusion

Our research has made several points about the stock returns of firms' social commerce investments. First, we find that firms' social commerce initiatives have a positive impact on their stock returns. Specifically, the average abnormal stock return in a three-day event window around a social commerce announcement is positive (0.86%) and significant ($p < 0.01$). Second, our research reveals that the impact of social commerce varies across firms. In particular, firms selling products with high uncertainty and having high reputation gain higher returns from their social commerce investments. Third, these findings are consistent with our theoretical perspective that integrates the RBV and OMA framework. Finally, in line with our event study results, our additional analysis suggests that social commerce initiatives also increase firm profitability. The implications of these findings are worth further discussion.

7.1. Practical implications

Because of the mixed anecdotal evidence presented about the business value of social commerce [44, 73], firms become conflicted about whether they should invest in social commerce. The situation

becomes even more complicated because most firms encounter difficulty in measuring the returns of their social commerce investments [63]. Our research helps resolve this controversy by empirically demonstrating that firms' social commerce initiatives indeed lead to positive abnormal stock returns. However, a reasonable concern about our finding is that investors may overreact to technological innovations such as social commerce, as is the case of the Internet bubble occurring in the early 2000s [84]. To address this concern, we conduct an additional analysis to show that social commerce also makes firms more profitable, ruling out the explanation of stock market overreactions to social commerce investments. Taken together, the increased stock returns and improved firm profitability documented in our research provide strong empirical support for firms to invest in social commerce.

However, even when firms decide to invest in social commerce, there are no best practices or guidance available for them to follow because social commerce is still in an early stage [6,27]. Given this circumstance, firms may have to rely on their experience or knowledge gained from conventional e-commerce investments. For instance, firms have long been informed that e-commerce is more suitable for the sale of products with low uncertainty [60,86]. Firms may follow this e-commerce wisdom to sell products with low uncertainty using social commerce. However, our research shows that firms selling products with high uncertainty benefit more from social commerce because of its ability to facilitate social interactions and user contributions through social media [71,122], thereby reducing the uncertainty faced by customers. This may also explain why some retailers such as Gap Inc. and J.C. Penney failed to see the expected benefits from the sale of their low-uncertainty products in social commerce [73]. Therefore, firms should not treat social commerce as a simple extension of conventional e-commerce and apply their e-commerce experience or knowledge in the context of social commerce. In particular, firms should realize the nature of social interactions and user contributions in social commerce and thus adopt social commerce to sell products with high uncertainty.

On the other hand, firms have realized the importance of building a good reputation because firm reputation is directly related to various performance indicators such as price premiums, return on assets, and long-term survival [67,94,95]. However, firms may be less aware of the important role that firm reputation plays in the context of social commerce: affecting customers' willingness to interact with firms and engage in positive customer citizenship behaviors on social media. This is because firm reputation is related to customers' attitudes toward firms such as satisfaction, trust, and loyalty [12,24,110,112] and thus affects their behaviors on social media. In fact, some practitioners have warned

that firms with low reputation should stay out of social commerce [109]. Our research also suggests that firms with high reputation gain higher returns from their social commerce investments. Therefore, firms should realize not only the direct performance implications of firm reputation but also its indirect moderating role in the social commerce context.

To better demonstrate the practical implications of our findings, we compare the stock returns of social commerce initiatives between two groups of firms. The first group (N = 64) consists of firms that sell products with high uncertainty and have high reputation, and the second group (N = 55) includes firms that sell products with low uncertainty and have low reputation. We find that there is a significant difference ($p < 0.01$) in the stock returns between these two groups of firms, as shown in Table 9. In particular, whereas the first group of firms gains significantly higher abnormal returns (CAAR = 1.59% [*cf.* CAAR = 0.86% in general]; $p < 0.01$), the second group suffers losses from their social commerce investments (CAAR = -0.72%; $p < 0.1$). Such a sharp difference suggests that social commerce indeed is not a "one size fits all" solution because firms may not benefit at all from their social commerce efforts under certain conditions (e.g., selling products with low uncertainty and having low reputation). Therefore, while we encourage firms to invest in social commerce, we also urge them to take their product types and firm characteristics into account to gain higher returns from their investments.

--- Table 9 about here ---

--- Figures 4 and 5 about here ---

We also present the AAR and CAAR over time for these two groups of firms and all sample firms in Figures 4 and 5. Figure 4 indicates that, for all sample firms, the impact of social commerce initiatives remains positive two days after their announcements (0.06%), although it is not statistically significant ($p > 0.1$). Figure 5 also suggests that the CAAR for all sample firms reaches its peak on day +2. On the other hand, for firms with high product uncertainty and high firm reputation, the CAAR reaches its peak on day +1, suggesting that it takes a relatively shorter period for the stock markets to react to social commerce initiatives announced by these firms, which may be because these firms' motivation and ability to make use of social media resources are so clear that the markets can react quickly to their social commerce initiatives. For firms with low product uncertainty and low firm reputation, the stock returns are negative as expected, but it takes longer for the markets to react as the negative effects reach their peak on day +3. This may be because of the conflicting signals sent by these firms: on the one hand, social commerce represents an opportunity for these firms to access valuable social media

resources; on the other hand, the markets doubt the motivation and ability of these firms to capitalize on the social media resources because of their low product uncertainty and low firm reputation. These conflicting signals may lead to the slower market reactions found in our research.

7.2. *Theoretical implications*

Integrating the RBV and OMA framework, this research advances our understanding of the stock returns of firms' social commerce initiatives. First, we adopt the RBV to theorize that social media resources, in terms of social interactions and user contributions on social media, can be viewed as VRIN resources and thus a source of competitive advantage. Such a theorization provides a solid foundation for future research to study the performance implications of social media. Moreover, we realize that these resources are external to and less controllable by firms, making access to them per se insufficient to create a competitive advantage. We rely on the OMA framework to emphasize that the value creation of social media resources depends on not only firms' opportunity but also their motivation and ability to make use of these resources. Our research thus provides a more comprehensive view on the underlying determinants of the competitive advantage arising from social media resources. However, it is difficult to observe and measure motivation and ability at the firm level. Consistent with prior OMA research, we overcome this difficulty by theorizing how some observable firm characteristics such as product uncertainty and firm reputation can indicate firms' motivation and ability, respectively, to capitalize on social media resources. Taken together, our research offers an integrative perspective suggesting that firms' social commerce initiatives, product uncertainty, and reputation represent their opportunity, motivation, and ability, respectively, to make use of VRIN social media resources to gain a competitive advantage, resulting in increased stock returns.

Our integrative perspective offers a fertile theoretical foundation for future social commerce research. For instance, researchers can adopt this integrative perspective to explore other observable cues of firms' opportunity, motivation, and ability in the social commerce context. A possible example is product complexity, which could indicate firms' motivation and thus affect stock returns due to social commerce, as discussed in Section 6. Prior OMA studies have investigated the roles of other observable firm characteristics and actions in different research contexts such as supplier development, firm acquisition, and international management [61,62,99], which might inspire researchers to explore the applicability of these cues in the social commerce context. On the other hand, while our research is

focused on external social media resources, future studies can examine the possible interactions of these external resources with firms' internal resources. This research direction is in line with the IS tradition, which emphasizes the complementarity and synergy between IS resources and other firm resources [101,111], but it further extends this notion by considering external social media resources.

Our research contributes to the RBV literature by extending and revising the RBV in the social media context. Prior RBV studies are usually focused on firms' internal resources and emphasize the importance of internalizing, owning, and controlling VRIN resources to gain a competitive advantage [8,111]. For instance, Barney emphasized in his seminal work that "advantages must be found in the rare, imperfectly imitable, and nonsubstitutable resources *already controlled by a firm*" ([8], p. 117; emphasis added). Wade and Hulland's review on the adoption of RBV in IS also suggested that "RBV provides a way for IS researchers to understand the role of information systems *within the firm*" ([111], p. 132; emphasis added). Unlike these studies, our research is focused on external social media resources that are "not controlled or bought by the marketer" ([46], p. 268). The value of these resources lies in the social interactions and user contributions through social media, which tend to be more informal, unstructured, and uncertain. Therefore, instead of assuming that owning or controlling these social media resources can lead to a competitive advantage, we argue that competitive advantage is created through firms' opportunity, motivation, and ability to access and use these resources. Our research thus revises the owning or controlling assumption of the RBV and extends its applicability to external, less controllable resources, which might inspire researchers to adopt the RBV to study other external resources that are not owned and controlled by firms directly, such as crowdsourcing and open innovation resources [16,28].

Finally, the OMA framework used in our research could provide important theoretical implications for future research on firm performance. Consistent with recent studies [e.g., 25,61,62,99], we extend the OMA framework to explain the underlying determinants of firm performance. Although the OMA framework was originally developed to study individual work performance [15], we see the merit of adopting this framework at the firm level of analysis. In particular, the OMA framework allows us to provide a more comprehensive explanation of firm performance by considering not only firms' opportunity but also their motivation and ability. However, compared with the individual level of analysis, it is relatively difficult to observe and measure opportunity, motivation, and ability at the firm level. Nevertheless, the OMA literature [25,61,62,99] suggests that researchers can rely on firms'

observable characteristics and actions to interpret their corresponding opportunity, motivation, and ability, which, in turn, are related to firm performance. Therefore, the OMA framework provides a useful theoretical lens for researchers not only to explain the underlying determinants of firm performance but also to identify the observable cues of these determinants.

7.3. Limitations and summary

Our research, like any other studies using archival data, cannot be perfect in its measurements. For instance, because of the limited coverage of *Fortune* magazine's MAC lists, we measure a firm's reputation based on whether its reputation rank is above the industry average, which is a discrete rather than continuous variable. Admitting the limitation of our measurements, we have employed alternative approaches to measure our variables, including dependent, hypothesized, and control variables. For instance, we measure a firm's reputation with two alternative approaches: one is based on whether it is one of the top 100 firms included in the MAC list [107] and another is based on whether it is included in the MAC list [21]. Our results are robust with these alternative measures, providing confidence in the reliability of our findings.

On the other hand, we investigate the impact of firms' social commerce initiatives in terms of abnormal stock returns, which represent investors' overall assessment of how social commerce initiatives will affect firm performance. Although this approach has been well adopted in the IS literature [e.g., 51,54,92,106,120], it is still possible that such an assessment is systematically biased and unrelated to firms' future performance [84]. Realizing this limitation, we conduct an additional test to show that social commerce also improves firm profitability, consistent with our findings regarding abnormal stock returns. Nevertheless, because this is one of the earliest studies investigating the impact of social commerce initiatives at the firm level, we encourage researchers to examine other performance outcomes of firms' social commerce initiatives such as sales, costs, and operational efficiency [43,52,66,97] and verify the conclusion made in our research.

Another limitation of our research is that we are only focused on the stock returns due to firms' social commerce efforts, ignoring the social media activities initiated by individual consumers directly without firms' involvement or moderation. Indeed, prior research has shown that consumer-initiated social media activities such as blog posts and consumer ratings are related to firms' stock returns and other performance outcomes such as product sales [e.g., 29,35,72]. Therefore, it will be interesting for

researchers to investigate the dynamics between firm-initiated and consumer-initiated social media activities and their effects on stock returns and other performance outcomes.

Finally, some business activities such as new product releases may affect firms' decisions to implement social commerce and stock returns simultaneously, inflating the relationship between firms' social commerce initiatives and stock returns. Our research adopts two approaches to mitigate this endogeneity concern. First, when selecting social commerce initiatives for this research, we follow prior event studies [e.g., 74,77] by removing those social commerce initiatives with confounding events such as mergers and acquisitions, major contract awards, and key executive changes. Moreover, consistent with recent event studies [e.g., 79,100], we adopt PSM to match each sample firm with a control firm based on a list of variables concerned with firm characteristics, which helps address self-selection bias. Although those research designs mitigate the endogeneity concern, they cannot completely rule out the possibility of endogeneity as some firm characteristics and activities are unobservable. We thus encourage future research to further improve the research designs to address the endogeneity concern.

To conclude, our research provides a novel and comprehensive explanation of the stock returns due to firms' social commerce initiatives. Our integrative perspective emphasizes that firms' competitive advantage arises from not only their opportunity but also their motivation and ability to make use of social media resources. We view firms' social commerce initiatives, product uncertainty, and firm reputation as indications of their opportunity, motivation, and ability, respectively, to capitalize on the social media resources, affecting the extent to which the competitive advantage can be realized. We employ the event study methodology to quantify the resultant competitive advantage in terms of stock returns. Consistent with our arguments, we find that social commerce increases firms' stock returns, but such increases are more significant for firms selling products with high uncertainty and having high reputation. We provide practical guidance on investing in social commerce and offer theoretical implications for studying external resources in general and social media resources in particular.

References

[1] Aguinis, H., O'Boyle, E., Gonzalez-Mulé, E., & Joo, H. (2016). Cumulative advantage: Conductors and insulators of heavy-tailed productivity distributions and productivity stars. *Personnel Psychology, 69*(1), 3-66.

[2] Anderson, M., Sims, J., Price, J., & Brusa, J. (2011). *Turning "like" to "buy": Social media emerges as a commerce channel*. New York City, NY: Booz & Company.

[3] Aral, S., Dellarocas, C., & Godes, D. (2013). Introduction to the special issue—social media and business transformation: A framework for research. *Information Systems Research*, *24*(1), 3-13.

[4] Ba, S., Lisic, L. L., Liu, Q., & Stallaert, J. (2013). Stock market reaction to green vehicle innovation. *Production and Operations Management*, *22*(4), 976-990.

[5] Bae, S., & Lee, T. (2011). Product type and consumers' perception of online consumer reviews. *Electronic Markets*, *21*(4), 255-266.

[6] Baethge, C., Klier, J., & Klier, M. (2016). Social commerce—State-of-the-art and future research directions. *Electronic Markets, 26*(3), 269-290.

[7] Barber, B. M., & Lyon, J. D. (1996). Detecting abnormal operating performance: The empirical power and specification of test statistics. *Journal of Financial Economics*, *41*(3), 359-399.

[8] Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.

[9] Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, *27*(6), 643-650.

[10] Barney, J., & Clark, D. (2007). *Resource-based theory: Creating and sustaining competitive advantage*. New York: Oxford University Press.

[11] Barney, J., & Hesterly, W. (2012). *Strategic management and competitive advantage: Concepts and cases*. New Jersey: Pearson.

[12] Bartikowski, B., & Walsh, G. (2011). Investigating mediators between corporate reputation and customer citizenship behaviors. *Journal of Business Research, 64*(1), 39-44.

[13] Beach, D., & Gupta, V. (2005). *Social commerce via the shoposphere & pick lists*. Retrieved April 24, 2016, from http://www.ysearchblog.com/2005/11/14/social-commerce-via-the-shoposphere-pick-lists/.

[14] Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and

firm performance: An empirical investigation. *MIS Quarterly, 24*(1), 169-196.

[15] Blumberg, M., & Pringle, C. D. (1982). The missing opportunity in organizational research: Some implications for a theory of work performance. *Academy of management Review, 7*(4), 560-569.

[16] Brabham, D. C. (2013). *Crowdsourcing*. Cambridge, MA: MIT Press.

[17] Brown, S. J., & Warner, J. B. (1985). Using daily stock returns: The case of event studies. *Journal of Financial Economics, 14*(1), 3-31.

[18] Business Wire. (2009a). *Qwest launches "Talk To Qwest" on Twitter*. Retrieved June 28, 2017, from http://news.centurylink.com/news/qwest-launches-talk-to-qwest-on-twitter.

[19] Business Wire. (2009b). *Rosetta Stone launches Ratings & Reviews from Bazaarvoice*. Retrieved June 28, 2017, from http://cloudcomputing.sys-con.com/node/1012330.

[20] Calderón, S. I. (2010). *Starbucks is the first brand to reach 10 million Facebook Likes*. Retrieved June 28, 2017, from http://www.adweek.com/digital/starbucks-is-the-first-brand-to-reach-10-million-facebook-likes/.

[21] Cao, Y., Myers, L. A., & Omer, T. C. (2012). Does company reputation matter for financial reporting quality? Evidence from restatements. *Contemporary Accounting Research, 29*(3), 956-990.

[22] Carhart, M. M. (1997). On persistence in mutual fund performance. *Journal of Finance, 52*(1), 57-82.

[23] Cecere, L. (2010). *Rise of social commerce: A trail guide for the social commerce pioneer*. San Mateo, CA: Altimeter Group.

[24] Chang, K. C. (2013). How reputation creates loyalty in the restaurant sector. *International Journal of Contemporary Hospitality Management, 25*(4), 536-557.

[25] Chang, Y. Y., Gong, Y., & Peng, M. W. (2012). Expatriate knowledge transfer, subsidiary absorptive capacity, and subsidiary performance. *Academy of Management Journal, 55*(4), 927-948.

[26] Chellappa, R. K., & Shivendu, S. (2005). Managing piracy: Pricing and sampling strategies for digital experience goods in vertically segmented markets. *Information Systems Research, 16*(4), 400-417.

[27] Chen, J., & Shen, X. L. (2015). Consumers' decisions in social commerce context: An empirical investigation. *Decision Support Systems, 79*, 55-64.

[28] Chesbrough, H., Vanhaverbeke, W., & West, J. (2006). *Open innovation: Researching a new paradigm*. Oxford: Oxford University Press.

[29] Chevalier, J. A., & Mayzlin, D. (2006). The effect of word of mouth on sales: Online book reviews. *Journal of Marketing Research, 43*(3), 345-354.

[30] Claycomb, C., & Frankwick, G. L. (2010). Buyers' perspectives of buyer-seller relationship development. *Industrial Marketing Management*, *39*(2), 252-263.

[31] Constantinides, E. (2014). Foundations of social media marketing. *Procedia-Social and Behavioral Sciences*, *148*, 40-57.

[32] Deason, L., & Ferrantino, M. J. (2009*). Determinants of diffusion and downstreaming of technology intensive products in international trade*. Working Paper No. 2009-10-B, U.S. International Trade Commission.

[33] Dehning, B., Richardson, V. J., Urbaczewski, A., & Wells, J. D. (2004). Reexamining the value relevance of e-commerce initiatives. *Journal of Management Information Systems*, *21*(1), 55-82.

[34] Dewan, S., & Ren, F. (2007). Risk and return of information technology initiatives: Evidence from electronic commerce announcements. *Information Systems Research*, *18*(4), 370-394.

[35] Dhar, V., & Chang, E. A. (2009). Does chatter matter? The impact of user-generated content on music sales. *Journal of Interactive Marketing, 23*(4), 300-307.

[36] Ding, L., Lam, H. K. S., Cheng, T. C. E., & Zhou, H. (2018). A review of short-term event studies in operations and supply chain management. *International Journal of Production Economics*, *200*, 329-342.

[37] Elliott, N. (2014). *Social relationship strategies that work*. Cambridge, MA: Forrester Research.

[38] Falls, J. (2012). *One size fits all social media–Is there such a thing?* Retrieved September 28, 2016, from http://www.socialmediaexplorer.com/social-media-marketing/one-size-fits-all-social-media-%E2%80%93-is-there-such-a-thing/.

[39] Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance, 25*(2), 383-417.

[40] Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, *33*(1), 3-56.

[41] Gao, J., Zhang, C., Wang, K., & Ba, S. (2012). Understanding online purchase decision making: The effects of unconscious thought, information quality, and information quantity. *Decision*

Support Systems, 53(4), 772-781.

[42] Gu, B., & Ye, Q. (2014). First step in social media: Measuring the influence of online management responses on customer satisfaction. *Production and Operations Management, 23*(4), 570-582.

[43] Gu, B., Park, J., & Konana, P. (2012). The impact of external word-of-mouth sources on retailer sales of high-involvement products. *Information Systems Research, 23*(1), 182-196.

[44] Guglielmo, C. (2009). *Dell rings up $6.5 million in sales using Twitter*. Retrieved September 28, 2016, from http://www.bloomberg.com/apps/news?pid=newsarchive&sid=akXzD_6YNHCk.

[45] Hajli, N., & Sims, J. (2015). Social commerce: The transfer of power from sellers to buyers. *Technological Forecasting and Social Change, 94*, 350-358.

[46] Hanna, R., Rohm, A., & Crittenden, V. L. (2011). We're all connected: The power of the social media ecosystem. *Business Horizons, 54*(3), 265-273.

[47] Hoffman, D. L., & Fodor, M. (2010). Can you measure the ROI of your social media marketing?. *MIT Sloan Management Review, 52*(1), 41-49.

[48] Houston, M. B., & Johnson, S. A. (2000). Buyer-supplier contracts versus joint ventures: Determinants and consequences of transaction structure. *Journal of Marketing Research, 37*(1), 1-15.

[49] Huang, P., Lurie, N. H., & Mitra, S. (2009). Searching for experience on the web: An empirical examination of consumer behavior for search and experience goods. *Journal of Marketing, 73*(2), 55-69.

[50] Huang, Z., & Benyoucef, M. (2013). From e-commerce to social commerce: A close look at design features. *Electronic Commerce Research and Applications, 12*(4), 246-259.

[51] Im, K. S., Dow, K. E., & Grover, V. (2001). A reexamination of IT investment and the market value of the firm: An event study methodology. *Information Systems Research, 12*(1), 103-117.

[52] IPA. (2014). *Social media helped BT cut costs and improve service*. Retrieved June 28, 2017, from http://www.ipa.co.uk/document/social-media-helped-bt-cut-costs-and-improve-service-an-ipa-social-works-case-study.

[53] Jaffe, J. F. (1974). Special information and insider trading. *Journal of Business, 47*(3), 410-428.

[54] Jeong, B. K., & Stylianou, A. C. (2010). Market reaction to application service provider (ASP) adoption: An empirical investigation. *Information & Management, 47*(3), 176-187.

[55] John, G., Weiss, A. M., & Dutta, S. (1999). Marketing in technology-intensive markets: Toward a conceptual framework. *Journal of Marketing, 63*, 78-91.

[56] Joshi, A., & Hanssens, D. M. (2010). The direct and indirect effects of advertising spending on firm value. *Journal of Marketing, 74*(1), 20-33.

[57] Kalaignanam, K., Shankar, V., & Varadarajan, R. (2007). Asymmetric new product development alliances: Win-win or win-lose partnerships?. *Management Science, 53*(3), 357-374.

[58] Kapko, M. (2015). *7 staggering social media use by-the-minute stats*. Retrieved June 28, 2017, from http://www.cio.com/article/2915592/social-media/7-staggering-social-media-use-by-the-minute-stats.html.

[59] Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons, 53*(1), 59-68.

[60] Kiang, M. Y., Raghu, T. S., & Shang, K. H. M. (2000). Marketing on the Internet—Who can benefit from an online marketing approach?. *Decision Support Systems, 27*(4), 383-393.

[61] Kim, H., Hur, D., & Schoenherr, T. (2015). When buyer-driven knowledge transfer activities really work: A motivation-opportunity-ability perspective. *Journal of Supply Chain Management, 51*(3), 33-60.

[62] Kim, K. Y., Pathak, S., & Werner, S. (2015). When do international human capital enhancing practices benefit the bottom line? An ability, motivation, and opportunity perspective. *Journal of International Business Studies, 46*(7), 784-805.

[63] Kiron, D., Palmer, D., Phillips, A. N., & Kruschwitz, N. (2012). *Social business: What are companies really doing?*. North Hollywood, CA: MIT Sloan Management Review.

[64] Kozinets, R. V., De Valck, K., Wojnicki, A. C., & Wilner, S. J. (2010). Networked narratives: Understanding word-of-mouth marketing in online communities. *Journal of Marketing, 74*(2), 71-89.

[65] Kozlenkova, I. V., Samaha, S. A., & Palmatier, R. W. (2014). Resource-based theory in marketing. *Journal of the Academy of Marketing Science, 42*(1), 1-21.

[66] Lam, H. K. S., Yeung, A. C. L., & Cheng, T. C. E. (2016). The impact of firms' social media initiatives on operational efficiency and innovativeness. *Journal of Operations Management, 47-48*, 28-43.

[67] Lange, D., Lee, P. M., & Dai, Y. (2011). Organizational reputation: A review. *Journal of*

Management, *37*(1), 153-184.

[68] Leonardi, P. M. (2014). Social media, knowledge sharing, and innovation: Toward a theory of communication visibility. *Information Systems Research*, *25*(4), 796-816.

[69] Li, S., Shang, J., & Slaughter, S. A. (2010). Why do software firms fail? Capabilities, competitive actions, and firm survival in the software industry from 1995 to 2007. *Information Systems Research*, *21*(3), 631-654.

[70] Lian, J. W., & Yen, D. C. (2013). To buy or not to buy experience goods online: Perspective of innovation adoption barriers. *Computers in Human Behavior*, *29*(3), 665-672.

[71] Liang, T. P., & Turban, E. (2012). Introduction to the special issue social commerce: A research framework for social commerce. *International Journal of Electronic Commerce*, *16*(2), 5-13.

[72] Luo, X., Zhang, J., & Duan, W. (2013). Social media and firm equity value. *Information Systems Research*, *24*(1), 146-163.

[73] Lutz, A. (2012). *Facebook is not driving e-commerce as much as some retailers hoped*. Retrieved April 24, 2016, from http://www.washingtonpost.com/business/facebook-is-not-driving-e-commerce-as-much-as-some-retailers-hoped/2011/04/07/gIQADPYgJR_print.html.

[74] MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature*, *35*(1), 13-39.

[75] Mahajan, V., Srinivasan, R., & Wind, J. (2002). The dot.com retail failures of 2000: Were there any winners?. *Journal of the Academy of Marketing Science*, *30*(4), 474-486.

[76] Mavrck. (2016). *Here are the most influential brands on Facebook in 2016*. Retrieved June 28, 2017, from http://www.mavrck.co/the-most-influential-brands-on-facebook-in-2016/.

[77] McWilliams, A., & Siegel, D. (1997). Event studies in management research: Theoretical and empirical issues. *Academy of Management Journal*, *40*(3), 626-657.

[78] Miller, D. (2003). An asymmetry-based view of advantage: towards an attainable sustainability. *Strategic Management Journal*, *24*(10), 961-976.

[79] Modi, S. B., Wiles, M. A., & Mishra, S. (2015). Shareholder value implications of service failures in triads: The case of customer information security breaches. *Journal of Operations Management*, *35*, 21-39.

[80] Mudambi, S. M., & Schuff, D. (2010). What makes a helpful review? A study of customer reviews on Amazon.com. *MIS Quarterly*, *34*(1), 185-200.

[81] Nelson, P. (1970). Information and consumer behavior. *Journal of Political Economy*, *78*(2), 311-329.

[82] Nelson, P. (1974). Advertising as information. *Journal of Political Economy*, *82*(4), 729-754.

[83] Ng, C. S. P. (2013). Intention to purchase on social commerce websites across cultures: A cross-regional study. *Information & Management*, *50*(8), 609-620.

[84] Ofek, E., & Richardson, M. (2003). Dotcom mania: The rise and fall of internet stock prices. *Journal of Finance*, *58*(3), 1113-1137.

[85] Oh, C., Roumani, Y., Nwankpa, J. K., & Hu, H. F. (2017). Beyond likes and tweets: Consumer engagement behavior and movie box office in social media. *Information & Management, 54*(1), 25-37.

[86] Overby, E., & Jap, S. (2009). Electronic and physical market channels: A multiyear investigation in a market for products of uncertain quality. *Management Science*, *55*(6), 940-957.

[87] Oxelheim, L., & Randøy, T. (2003). The impact of foreign board membership on firm value. *Journal of Banking & Finance*, *27*(12), 2369-2392.

[88] Park, J., Gu, B., & Konana, P. (2009). *Impact of multiple word-of-mouth sources on retail sales*. Paper presented at the 30th International Conference on Information Systems, Phoenix.

[89] PR Newswire. (2011). *Aeropostale launches store for Facebook fans*. Retrieved June 28, 2017, from http://www.prnewswire.com/news-releases/aeropostale-launches-store-for-facebook-fans-126527988.html.

[90] Priem, R. L., & Butler, J. E. (2001). Is the resource-based "view" a useful perspective for strategic management research?. *Academy of Management Review*, *26*(1), 22-40.

[91] Rabinovich, E., & Bailey, J. P. (2004). Physical distribution service quality in Internet retailing: service pricing, transaction attributes, and firm attributes. *Journal of Operations Management*, *21*(6), 651-672.

[92] Ranganathan, C., & Brown, C. V. (2006). ERP investments and the market value of firms: Toward an understanding of influential ERP project variables. *Information Systems Research*, *17*(2), 145-161.

[93] Rao, V. R., Agarwal, M. K., & Dahlhoff, D. (2004). How is manifest branding strategy related to the intangible value of a corporation?. *Journal of Marketing*, *68*(4), 126-141.

[94] Rindova, V. P., Williamson, I. O., Petkova, A. P., & Sever, J. M. (2005). Being good or being

known: An empirical examination of the dimensions, antecedents, and consequences of organizational reputation. *Academy of Management Journal*, *48*(6), 1033-1049.

[95] Roberts, P. W., & Dowling, G. R. (2002). Corporate reputation and sustained superior financial performance. *Strategic Management Journal*, *23*(12), 1077-1093.

[96] Rowan, D., & Cheshire, T. (2011). *Commerce gets social: How networks are driving what you buy*. Retrieved April 24, 2016, from http://www.wired.co.uk/magazine/archive/2011/02/features/social-networks-drive-commerce.

[97] Rui, H., Liu, Y., & Whinston, A. (2013). Whose and what chatter matters? The effect of tweets on movie sales. *Decision Support Systems*, *55*(4), 863-870.

[98] Saundage, D., & Lee, C. Y. (2011). *Social commerce activities–A taxonomy*. Paper presented at the 22nd Australasian Conference on Information Systems, Sydney, Australia.

[99] Schijven, M., & Hitt, M. A. (2012). The vicarious wisdom of crowds: Toward a behavioral perspective on investor reactions to acquisition announcements. *Strategic Management Journal*, *33*(11), 1247-1268.

[100] Schuler, D. A., Shi, W., Hoskisson, R. E., & Chen, T. (2017). Windfalls of emperors' sojourns: Stock market reactions to Chinese firms hosting high-ranking government officials. *Strategic Management Journal*, *38*(8), 1668-1687.

[101] Seddon, P. B. (2014). Implications for strategic IS research of the resource-based theory of the firm: A reflection. *The Journal of Strategic Information Systems*, *23*(4), 257-269.

[102] Sedera, D., Lokuge, S., Grover, V., Sarker, S., & Sarker, S. (2016). Innovating with enterprise systems and digital platforms: A contingent resource-based theory view. *Information & Management*, *53*(3), 366-379.

[103] Son, I., Lee, D., Lee, J. N., & Chang, Y. B. (2014). Market perception on cloud computing initiatives in organizations: An extended resource-based view. *Information & Management*, *51*(6), 653-669.

[104] Stephen, A. T., & Toubia, O. (2010). Deriving value from social commerce networks. *Journal of Marketing Research*, *47*(2), 215-228.

[105] Stewart, D. W., & Shamdasani, P. N. (2014). *Focus groups: Theory and practice*., Thousand Oaks, CA: Sage Publications.

[106] Subramani, M., & Walden, E. (2001). The impact of e-commerce announcements on the market

value of firms. *Information Systems Research, 12*(2), 135-154.

[107] Swaminathan, V., & Moorman, C. (2009). Marketing alliances, firm networks, and firm value creation. *Journal of Marketing, 73*(5), 52-69.

[108] Tkoczyk, C. (2016). The World's Most Admired Companies. *Fortune, 173*(3), 109-116.

[109] Tobin, J., & Braziel, L. (2008). *Social media is a cocktail party: Why you already know the rules of social media marketing*. USA: CreateSpace.

[110] Van Doorn, J., Lemon, K. N., Mittal, V., Nass, S., Pick, D., Pirner, P., & Verhoef, P. C. (2010). Customer engagement behavior: Theoretical foundations and research directions. *Journal of Service Research, 13*(3), 253-266.

[111] Wade, M., & Hulland, J. (2004). The resource-based view and information systems research: Review, extension, and suggestions for future research. *MIS Quarterly, 28*(1), 107-142.

[112] Walsh, G., Mitchell, V. W., Jackson, P. R., & Beatty, S. E. (2009). Examining the antecedents and consequences of corporate reputation: A customer perspective. *British Journal of Management, 20*(2), 187-203.

[113] Wang, C., & Zhang, P. (2012). The evolution of social commerce: The people, management, technology, and information dimensions. *Communications of the Association for Information Systems, 31*(5), 1-23.

[114] Weill, P. (1992). The relationship between investment in information technology and firm performance: A study of the valve manufacturing sector. *Information Systems Research, 3*(4), 307-333.

[115] Werner, T. (2017). Investor reaction to covert corporate political activity. *Strategic Management Journal, 38*(12), 2424-2443.

[116] White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrics, 48*, 817-838.

[117] Wiles, M. A., Jain, S. P., Mishra, S., & Lindsey, C. (2010). Stock market response to regulatory reports of deceptive advertising: The moderating effect of omission bias and firm reputation. *Marketing Science, 29*(5), 828-845.

[118] Windels, J. (2015). *Marketing: Dark matter, social media, and the number 96*. Retrieved June 28, 2017, from http://www.brandwatch.com/blog/marketing-dark-matter-social-media-and-the-number-96/.

[119] Wu, J., Wu, Y., Sun, J., & Yang, Z. (2013). User reviews and uncertainty assessment: A two stage model of consumers' willingness-to-pay in online markets. *Decision Support Systems, 55*(1), 175-185.

[120] Yang, S. B., Lim, J. H., Oh, W., Animesh, A., & Pinsonneault, A. (2012). Using real options to investigate the market value of virtual world businesses. *Information Systems Research, 23*(3-part-2), 1011-1029.

[121] Ye, Q., Law, R., & Gu, B. (2009). The impact of online user reviews on hotel room sales. *International Journal of Hospitality Management, 28*(1), 180-182.

[122] Zhang, H., Lu, Y., Gupta, S., & Zhao, L. (2014). What motivates customers to participate in social commerce? The impact of technological environments and virtual customer experiences. *Information & Management, 51*(8), 1017-1030.

[123] Zhang, K. Z., & Benyoucef, M. (2016). Consumer behavior in social commerce: A literature review. *Decision Support Systems, 86*, 95-108.

[124] Zhang, P., Zhou, L., & Zimmermann, H. D. (2013). Advances in social commerce research: Guest editors' introduction. *Electronic Commerce Research and Applications, 12*(4), 221-223.

[125] Zhou, L., Zhang, P., & Zimmermann, H. D. (2013). Social commerce research: An integrated view. *Electronic Commerce Research and Applications, 12*(2), 61-68.

Table 1

Examples of social commerce initiatives extracted from Factiva.

Social Commerce Example	Text Extracted from Factiva	Company Name	Type of Social Commerce	Type of Product	Ownership of Social Media Platform
Rosetta Stone Launches Ratings & Reviews from Bazaarvoice	Bazaarvoice, the market and technology leader in hosted social commerce applications that drive sales, today announced that Rosetta Stone Inc. (NYSE:RST), a leading provider of technology-based language-learning solutions, has launched the Bazaarvoice social commerce platform with Ratings & Reviews™ at www.RosettaStone.com. New customers can easily browse customer-generated reviews at the category level (Learn Dutch) or product level (Dutch Level 1, 2, and 3 Set with Audio Companion™) and learn which solution is applicable to their interest and skill level.	Rosetta Stone Inc. (NYSE: RST)	Relational social commerce (presales phase)	Experience product (language-learning solutions)	Own social media platform (RosettaStone.com)
Aeropostale Launches Store for Facebook Fans	Aeropostale, Inc. (NYSE: ARO), a mall-based specialty retailer of casual apparel for young women and men, has launched a fully integrated Facebook Store, powered by Usablenet's technology platform, that combines shopping and social media and extends full e-commerce functionality to the Aeropostale Facebook community. In addition to being able to purchase from Aeropostale's entire online inventory, the integrated Facebook e-commerce store allows users to easily "Like" and share items and purchases with their Facebook network – leveraging the viral nature of Facebook's news feed.	Aeropostale, Inc. (NYSE: ARO)	Transactional social commerce (sales phase)	Search product (casual apparel)	Third-party social media platform (Facebook)
Qwest Launches "Talk to Qwest" on Twitter	The microblogging site Twitter is fast becoming a new way for companies to interact with customers, and Qwest (NYSE: Q) [a telecommunications service provider] today launched its own presence on Twitter, called "Talk to Qwest." The Talk to Qwest team will monitor for customer service-related "tweets" and respond to and resolve customers' problems in a whole new way. A team of Qwest representatives in Boise and Idaho Falls, Idaho, as well as Sioux Falls, S.D., are the "faces" of Talk to Qwest and proactively engage customers who may be having service problems and respond to customers who contact them.	Qwest (NYSE: Q)	Relational social commerce (postsales phase)	Experience product (telecom service)	Third-party social media platform (Twitter)
Wet Seal Announces Launch of New Online Fashion Community	The Wet Seal, Inc. (Nasdaq:WTSLA), a leading specialty retailer to young women, today announced the launch of a new "fashion community" on the Company's website, www.wetseal.com. The fashion community offers customers an enhanced shopping experience through a social networking platform using the latest Web 2.0 Technology. Customers can now not only shop but can also create original Wet Seal styles by building outfits using the entire online assortment. Key features of the fashion community include the ability to build, tag, share and purchase outfits through a personalized boutique, build a fashion network by chatting with other stylists in the message center, and rate and purchase other stylists' outfits in "The Runway."	The Wet Seal, Inc. (Nasdaq: WTSLA)	Transactional social commerce (sales phase)	Search product (outfits)	Own social media platform (wetseal.com)

Table 2

Descriptive statistics.

Panel A: Number of Social Commerce Initiatives by Year

Year	Number of Social Commerce Initiatives	Percent
2006	13	3.7
2007	56	16.1
2008	36	10.3
2009	55	15.8
2010	95	27.3
2011	93	26.7
Total	348	100.0

Panel B: Number of Social Commerce Initiatives by Firm

Number of Social Commerce Initiatives	Number of Firms	Percent
1	186	77.2
2	32	13.3
3	11	4.6
4	4	1.7
5	3	1.2
6	3	1.2
7	1	0.4
9	1	0.4
Total	241	100.0

Panel C: Firm Characteristics

Variable	Unit	Mean	Std. deviation	Minimum	Maximum
Sales	Millions of dollars	19288.958	40936.519	0.314	420016.000
Total assets	Millions of dollars	42790.493	177704.545	3.458	2237344.179
Number of employees	Thousands	64.517	154.658	0.014	2100.000
Operating income	Millions of dollars	2938.982	5883.198	-797.368	44319.000
Return on assets	Ratio	0.101	0.183	-1.642	0.576
Return on sales	Ratio	0.091	0.729	-11.283	0.598

Table 3

Variable descriptions.

Variable	Definition	Measurement	Data Source	Reference
Social Commerce Initiative	A firm's initiative to integrate social media into its sales and marketing process	Identify a firm's social commerce initiatives based on its announcements in Factiva and code each initiative as an event	Factiva	[4,106]
Abnormal Return	Difference between the actual return with the occurrence\e of an event and the expected return had there been no event	Abnormal Return = Actual Return - Expected Return	CRSP, Kenneth French Data Library	[22,40]
Cumulative Abnormal Return	Sum of abnormal returns over an event window	Cumulative Abnormal Return = ∑Abnormal Returns	CRSP, Kenneth French Data Library	[22,40]
Product Uncertainty	Uncertainty of the products offered by a firm	High Product Uncertainty = Experience product (N = 187), Low Product Uncertainty = Search product (N = 88)	Factiva, Hoover's company profiles\, annual reports\	[81,82]
Firm Reputation	Reputation of a firm prior to the social commerce initiative	High Firm Reputation = Rank on or above the industry average (N = 97), Low Firm Reputation = Rank below the industry average (N = 178)	*Fortune* magazine	[48,117]
Platform Ownership	Ownership of the social media platform deployed by a firm	Third-party platform = 1 (N = 173), Own platform = 0 (N = 102)	Factiva	[43,88]
Firm Profitability	Profitability of a firm prior to the social commerce initiative	Return on Assets (ROA)	Compustat	[72,114]
Firm Size	Size of a firm prior to the social commerce initiative	Ln(Total Assets)	Compustat	[51,103]
Firm Age	Age of a firm prior to the social commerce initiative	Ln(Announcement Year - Founding Year)	Hoover's company profiles	[57,87]

Table 4

Test results of abnormal returns.

Panel A: Average Abnormal Return (AAR)						
Day	*N*	*AAR*	Positive: Negative	Binomial Sign Test	Corrado Rank Test	Wilcoxon Signed Rank Test
-1	275	0.17%	150:125	2.174**	2.272**	2465.000**
0	275	0.36%	152:123	2.415***	2.236**	3192.000***
+1	275	0.32%	156:119	2.898***	2.966***	3352.000***
Panel B: Cumulative Average Abnormal Return (CAAR)						
Days	*N*	*CAAR*	Positive: Negative	Binomial Sign Test	Corrado Rank Test	Wilcoxon Signed Rank Test
-30, -2	275	0.43%	131:144	-0.120	-0.101	-97.000
-1, 0	275	0.53%	156:119	2.898***	3.188***	3686.000***
0, +1	275	0.68%	160:115	3.381***	3.678***	4570.000***
-1, +1	275	0.86%	175:100	5.191***	4.315***	5720.000***
+2, +30	268	-0.16%	128:140	-0.080	-0.451	-619.00

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (one-tailed tests).

Table 5

Correlation matrix.

Variable	Mean	Std. dev.	1.	2.	3.	4.	5.	6.	7.
1. *CAR* (%)	0.858	3.494	1						
2. Product Uncertainty	0.672	0.470	0.280***	1					
3. Firm Reputation	0.379	0.486	0.150**	-0.020	1				
4. Platform Ownership	0.633	0.483	0.138**	0.089	0.194***	1			
5. Firm Size	8.491	2.395	0.072	0.048	0.587***	0.182***	1		
6. Firm Profitability	0.106	0.181	0.076	-0.058	0.089	-0.045	0.222***	1	
7. Firm Age	3.542	1.027	-0.017	0.027	0.296***	0.068	0.483***	0.214***	1

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed tests).

Table 6

Cross-sectional regression results.

Variable	Model 1	Model 2	Model 3
Intercept	-1.181 (-1.235)	-2.129** (-2.317)	-1.395 (-1.444)
Firm Size	0.114 (0.979)	0.089 (0.814)	-0.060 (-0.475)
Firm Profitability	0.278 (0.224)	0.144 (0.123)	0.446 (0.383)
Firm Age	-0.219 (-0.903)	-0.209 (-0.913)	-0.199 (-0.878)
Platform Ownership	1.173*** (2.785)	0.869** (2.167)	0.811** (2.038)
Product Uncertainty		2.467*** (5.259)	2.492*** (5.361)
Firm Reputation			1.025** (2.246)
Year Dummies	Included	Included	Included
Industry Dummies	Included	Included	Included
Number of Observations (*N*)	256	256	256
R-square	0.235	0.325	0.341
Adjusted *R*-square	0.066	0.172	0.188
F-value	1.395*	2.128***	2.229***

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed tests for control variables and one-tailed tests for hypothesized variables); *t*-statistics are in parentheses.

Table 7

Results of hypothesis testing.

Hypothesis	Method	Finding	Is the hypothesis supported?
H1. Firms' social commerce initiatives have a positive impact on their stock returns, even when firm characteristics are controlled for.	Event study	Significant positive stock returns	Yes
H2. The impact of social commerce initiatives on stock returns is more positive for firms selling products with high uncertainty.	Cross-sectional regression	Significant positive coefficient for product uncertainty	Yes
H3. The impact of social commerce initiatives on stock returns is more positive for firms with high reputation.	Cross-sectional regression	Significant positive coefficient for firm reputation	Yes

Table 8

Sensitivity test results.

Panel A: Cumulative Average Abnormal Return (CAAR)

Model	*N*	*CAAR*	Positive: Negative	Binomial Sign Test	Corrado Rank Test	Wilcoxon Signed Rank Test
1. 240-day estimation period	269	0.78%	161:108	3.900***	4.283***	4748.500***
2. Fama–French's three-factor model	275	0.77%	173:102	4.970***	4.267***	5428.000***
3. Value-weighted index	275	0.82%	160:115	3.365***	4.255***	4791.000***
4. Propensity score matching	221	0.59%	121:100	1.839**	1.961**	1668.500**
				Crude Dependence Adjustment Test		Calendar-Time Test
5. Parametric test	275	0.86%	175:100	3.726***		3.959***
				Binomial Sign Test	Parametric T-Test	Wilcoxon Signed Rank Test
6. Abnormal profitability change	166	0.79%	94:72	1.630*	2.034**	1134.500**

Panel B: Cross-Sectional Regression Model

Model	Product Uncertainty	Firm Reputation	*N*	Adjusted R-square	*F*-value
1. 240-day estimation period	2.084*** (4.429)	0.741* (1.616)	250	0.158	1.976***
2. Fama–French's three-factor model	2.330*** (5.112)	0.862** (1.927)	256	0.167	2.062***
3. Value-weighted index	2.336*** (5.105)	1.020** (2.270)	256	0.178	2.151***
4. Propensity score matching	2.243*** (2.990)	1.347** (1.771)	211	0.215	1.781***
5. Abnormal profitability change	1.500* (1.420)	1.536* (1.533)	163	0.171	1.780***
6. Replace Product Uncertainty with Product Complexity	1.844*** (3.221)	0.906** (1.905)	256	0.119	1.719***
7. Measure Firm Reputation based on whether firms are top 100 firms in the MAC list	2.510*** (5.358)	0.778* (1.548)	256	0.178	2.147***
8. Measure Firm Reputation based on whether firms are included in the MAC list	2.476*** (5.341)	1.334*** (2.472)	256	0.192	2.262***
9. Measure Firm Size as Ln(Employees)	2.508*** (5.332)	0.871** (1.930)	253	0.181	2.160***
10. Measure Firm Profitability as ROS	2.382*** (5.151)	1.071*** (2.383)	256	0.206	2.378***
11. Measure Firm Age as Ln(announcing year - IPO year)	2.477*** (5.231)	1.083** (2.297)	252	0.187	2.199***
12. Include additional control variables	2.471*** (5.315)	1.171** (2.523)	256	0.191	2.201***
13. Heteroskedasticity-consistent estimation	2.492*** (5.527)	1.025** (2.214)	256	0.188	2.229***

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (one-tailed tests).

Table 9

Intergroup comparison results.

Group	*N*	*CAAR*	Positive: Negative	Wilcoxon Signed Rank Test	Mann-Whitney *U* Test
High product uncertainty and high firm reputation	64	1.59%	47:17	1720.000***	2554.000***
Low product uncertainty and low firm reputation	55	-0.72%	19:36	-543.000*	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed tests).

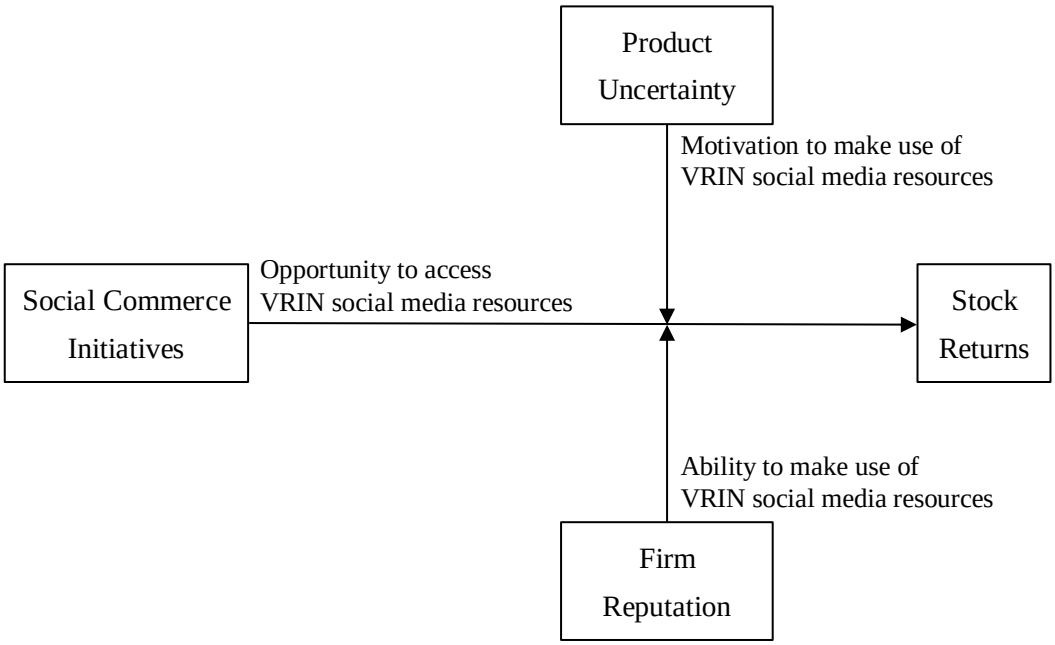

Figure 1. Research model.

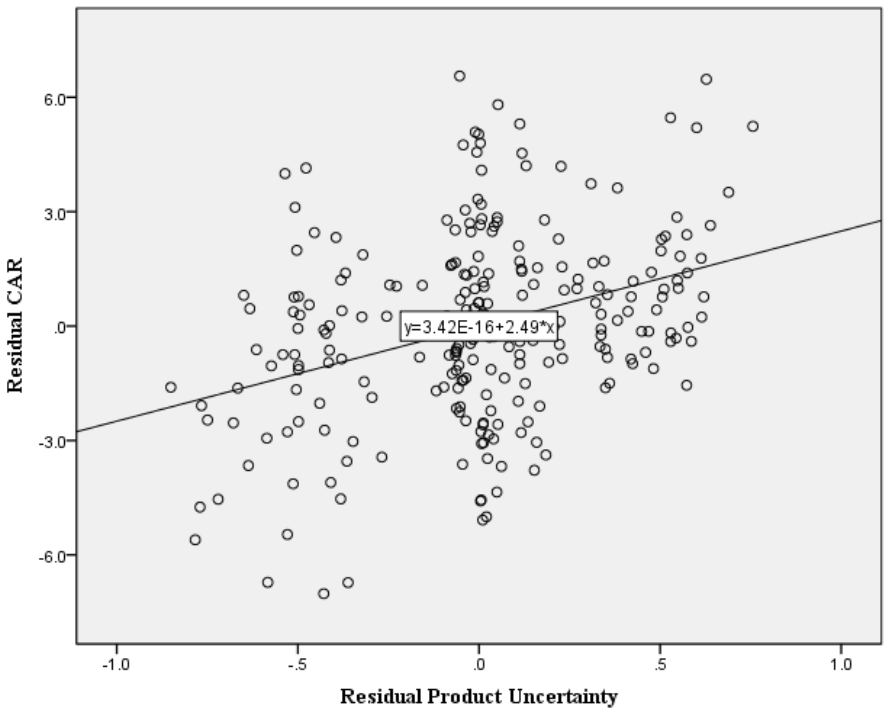

Figure 2. Partial regression plot of CAR and product uncertainty.

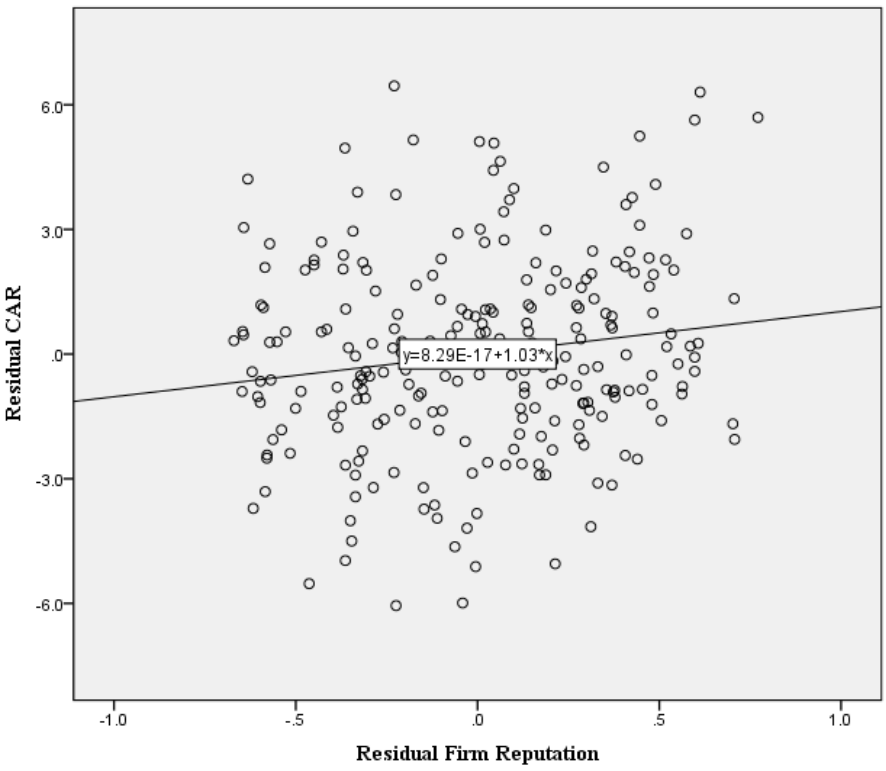

Figure 3. Partial regression plot of CAR and firm reputation.

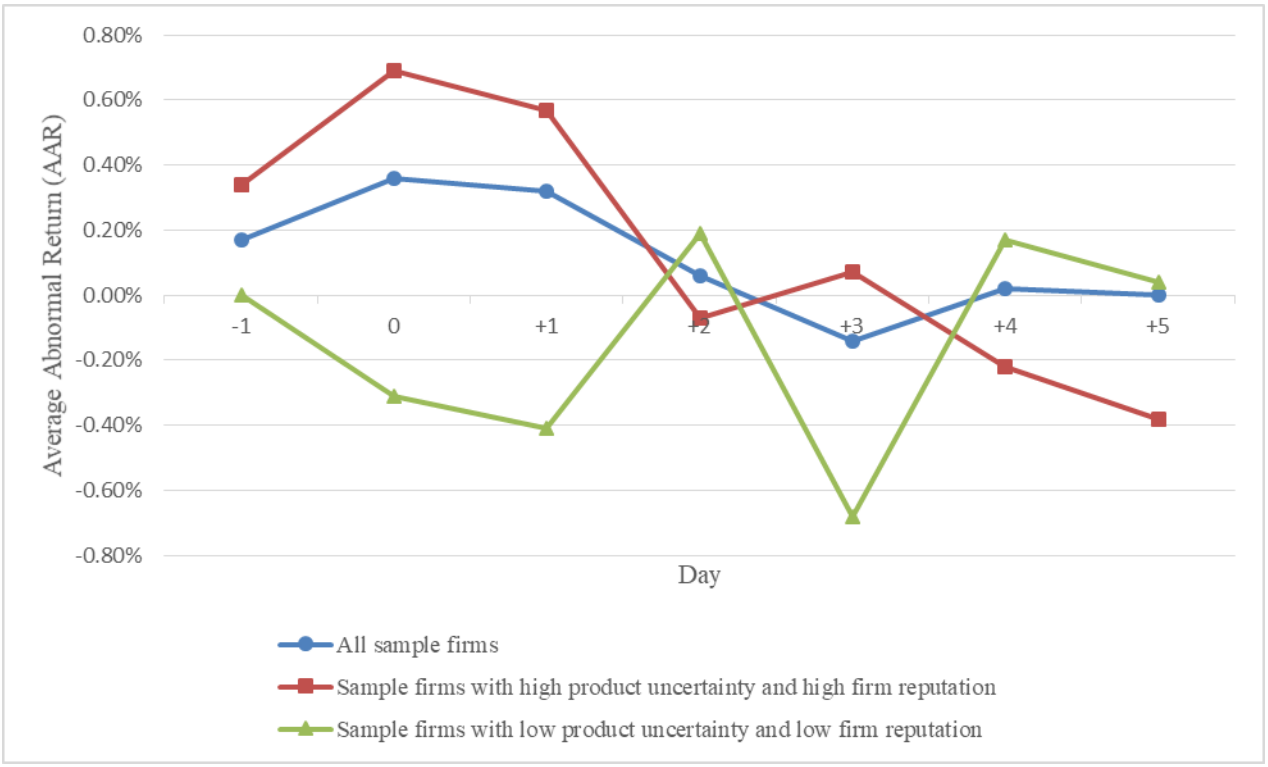

Figure 4. Average abnormal return (AAR) from day -1 to day +5.

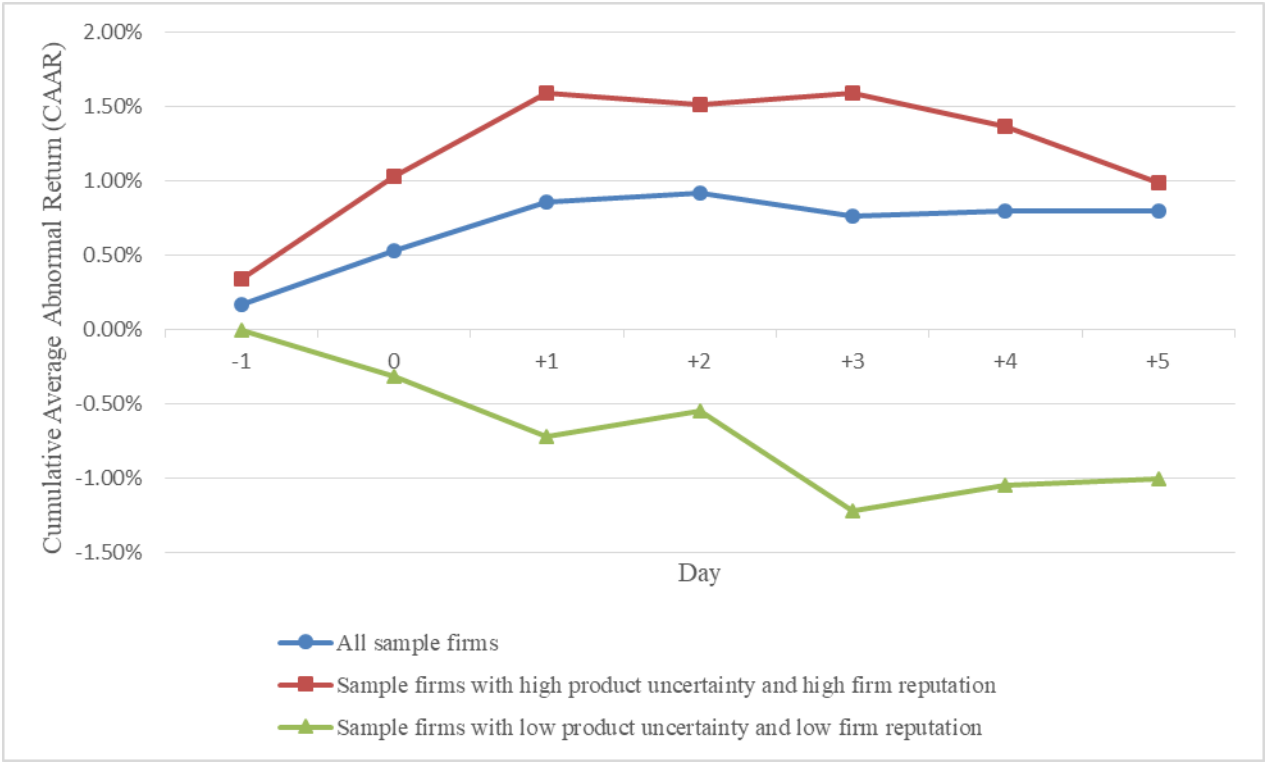

Figure 5. Cumulative average abnormal return (CAAR) from day -1 to day +5.