國立政治大學企業管理學系

博士論文

正當性訊號和旁觀者效應對獎酬回饋式群眾募資案之影響

How do legitimate signals and bystander effect affect the results of reward-based crowdfunding projects?

指導教授：于卓民 博士

黃國峯 博士

研究生： 周文卿 撰

中華民國一一〇年七月

DOI:10.6814/NCCU202101456

DOI:10.6814/NCCU202101456

誌謝

自入學政大企管系博士班開始，隨著時間的巨輪轉動，十餘年過去了，除了更精進自身的研究和學習的能力，同時也經歷了職場升遷轉換、增產報國之人生變化。這份博士論文的完成，首先要感謝我的兩位指導教授， 于卓民老師和 黃國峯老師。在博士班求學過程中，于老師對我的殷切期許及細心指導，讓我受益良多。老師常常主動提供我許多參考資料，關心我的生活狀況，而且每次的討論都讓我豁然開朗、醍醐灌頂，老師深厚的學術素養和嚴謹的治學態度，讓我在研究的道路上脫胎換骨。寬宏大量的老師甚至也能體諒我必須照顧家庭，恩准讓我帶孩子到課堂上一起上課，師恩浩蕩，學生永銘於心。

黃老師則對創業研究具備濃厚的興趣，除了曾邀請我一同創業之外，亦邀請我參與及撰寫科技部計畫，讓我能在第一時間拿到研究經費以收集到相關資料，以及支援我領取助學金，之後帶領我投稿學術期刊，邁開在學術研究道路上的第一步，並提點我許多投稿時必須注意的稿件管理與時間管理訣竅，就像是引水人一般，帶著我一步步進入學術殿堂，讓我理解何謂學術研究與學術對話。同時我也要感謝諸位口試委員，給予我許多精闢且實質的修正方向與建議，使得這份博論更完整且周延。

接著，我要感謝政大企管系的眾多教導過我的老師們。首先要感謝司徒老師，在他領導商研院時，邀請我加入策略國企組。而在我回到政大復學後，修習他的個案教學和討論課程，讓我的聽、說、讀、想的能力進步許多，並奠定了互動式個案教學和個案研究撰寫的基礎。再來要感謝策略國企組的諸位老師們，其中要特別感謝傅浚映老師，他對我的博論提供了許多重要的理論建議，並且樂於分享他在創業領域的研究經驗，使我猶如在茫茫大海中看到了一盞明燈。另外，巫立宇老師每次給我的組內意見，都非常寶貴且實際，展現了老師在業界的顧問實力；而在修習彭老師的管理專題研究課程時，可以清楚的了解到管理研究領域的主要學術脈絡，使我開始構建自己的學術研究架構，而在組內討論時，彭老師

DOI:10.6814/NCCU202101456

也常協助我重新歸納整理自己的研究論述，讓我可以審視有哪些矛盾和不足之處。郭曉玲老師在組內提供的意見也十分重要，老師清楚的邏輯分析促使我重新檢視自己的論述與研究架構；謝凱宇老師則提供我許多關於數據分析的建議，常讓我十分汗顏，知道自己在統計分析上的不足。

除了策略國企組的老師們，我還要感謝洪順慶老師、別蓮蒂老師和林月雲老師，在修習他們的行銷管理、消費者行為管理、人力資源管理課程時，讓我更理解了企業管理的博大精深，也讓我在教授管理學時更有信心。還有在商研院擔任副研究員時，台大陳厚銘老師和陳忠仁老師，他們放手讓我輔導許多新創團隊，為我開啟了一扇窗，也啟發我之後繼續進行創業領域的研究之路。

此外，我還要感謝兩位重要的博士班啟蒙老師，資策會產業情報研究所前所長詹文男博士，和國立台北教育大學張朝清教授，當年若沒有他們的鼓勵和督促，我不會有勇氣報考政大企管系博士班，也不會開啟了這一條珍貴的求學之路。

另外，我還要感謝許多業界先進，在我就讀博士班的期間，他們願意無償提供資源與時間，協助我收集資料，使得我的博士論文能夠成功地起頭，順利完成，並且更加完整。首先要感謝時任新橋聯合創業投資股份有限公司的戴逸之董事長和卓裕民副總經理，雖然我只是個兼職的投資專員，他們仍全力支持我的博論研究，並引薦我認識國內群眾募資業界內幾位重要的產業領航者，包括 flyingV 的兩位負責人小光與 Tim，和貝殼放大股份有限公司的林大涵執行長。尤其是林大涵執行長，每當我在資料分析或研究論述上有問題時，他都能在第一時間回答我，使得這份博論實證研究能夠與時俱進，更臻完美。

而在 Appworks 任職的政大學妹曾意晴小姐，則引薦我認識了許多重要的群募計畫成功的提案者，讓我有機會訪談這些提案者，了解他們的成功經驗。Accenture 老同事，時任方略顧問公司執行長林志垚先生，提供我許多輔導新創團隊的心法，並一起飛到羅馬尼亞的 Impact Hub Bucharest，和 Business Models Inc. 的 CEO & Founder - Patrick Van Der Pijl 先生一同進行新創團隊的輔導，使我更進

DOI:10.6814/NCCU202101456

一步體認到新創公司的艱辛，及群眾募資可能對他們帶來的幫助。核桃運算執行長薛文蔚博士，早已在國內外創辦過無數公司，他啟發並鼓勵我進行早期創業者的研究，並協助我找回老同事，可更快速的寫程式收集網路上的資料，且扮演我的心靈導師(mentor)，不定時關心我的進度，以自身在紐約哥倫比亞大學讀博士班的求學坎坷經驗鼓勵我不要輕易放棄。

此外，我還要感謝一群在政大企管系博士班共同奮鬥的好同伴們，在實幼研究室的信宏、孟賢、昇翰、芝樺、智偉、力庚、飛帆、浩邁，除了一起上課寫作業和互相講笑話洩壓外，也常分享他們許多在研究、教學和行政工作上的經驗與建議；在商院 711 研究室的佩純、威智、恬妤，在最後的這幾年，我們找尋時間的縫隙相互支援研究和教學工作，彼此鼓勵增進信心，建立了深厚的革命情感。

特別要感謝兩位系上的博士班助教，第一位是燕子助教，當年在我第一次復學時，給予我最大的幫助，甚至幫我找尋哺乳室，雖然後來我必須暫時放棄學業，但她給予我的溫暖，讓我堅定了第二次復學的決心。另一位是雯華助教，在我第二次復學後，無論在修課、行政工作、教學或甚至生活上發生任何問題，她都能有條不紊的提供協助，讓我終於能夠順利地站上學術研究的軌道，若沒有以上兩位博士班助教，我不可能同時兼顧學業、工作與家庭。當然還有系辦公室的維芬、思穎、英維、益元、春玲等諸位助教，也為我在教學和行政工作上提供許多幫助，可以順利地完成學位，非常感謝諸位助教的熱心幫忙與陪伴。

最後，我要感謝我的家人。在博士班求學的這十幾年來，我的父母常常扮演我的救火隊，在我必須完成工作或研究進度時，他們總能幫我看護兩個尚年幼的孩子，使我能兼顧工作、家庭和學業。父親原本就是政大財管系保送生和政大 EMBA 校友，當年他極力推薦我報考政大企管系博士班，而我有幸考上並順利畢業，相信他一定十分欣慰。再來我也要感謝我的兩個孩子，鏡芸和品晏，他們從小就體諒媽媽要兼顧工作、家庭和學業的辛苦，十分貼心和乖巧。鏡芸在讀幼稚園大班時，晚上就曾隨我到政大和碩班學弟妹們討論作業；品晏這位政大寶寶，有幾次隨我到實幼研究室，不巧我在忙時，孟賢主動幫忙看顧，之後也就順其自

DOI:10.6814/NCCU202101456

然的把孟賢內部化，成為姻親。

這一路走來，還要感謝我的另一半，邱宏治醫師，當年他帶著我在簡章報名日期截止日前兩天，奔波於影印店和文具店，準備好所有報考資料。雖然在他回頭念醫學院的日子，我必須先暫停博士班學業，扛起家計，而在他終於醫學院畢業且開始當住院醫師後，他便鼓勵我重拾學業，並在我遇上每個重大關卡時，把時間排開，換他看護孩子，讓我能專心衝刺過關。若說我們是夫妻，不如說我們是彼此的好友和戰友，一路上相挺相伴，共度難關。

最後的最後，我要感謝我自己，一路走來，我沒有放棄，且把我所有的餘裕，都貢獻給了這個學位。從在學校自強十舍租房以爭取善用課間零碎時間，到下班或下課後，做完所有家事，晚上 10 點到敦南誠品二樓的咖啡店，獨自寫論文、個案或備課到凌晨一兩點，店裡沒有其他人了才離開，直到店員都認識我。我已盡我所能，把我所能做的、會做的、該做的，都盡全力完成，亦問心無愧。再次感謝這一路上所有指導和幫助我的貴人，沒有各位的鼎力相助，這個學位不可能完成。俗話說天道酬勤，未來我將繼續維持這樣的人生態度，勤懇認真地往下一階段邁進，以回報大家對我的愛護。

周文卿 謹識於台北

DOI:10.6814/NCCU202101456

DOI:10.6814/NCCU202101456

正當性訊號和旁觀者效應對獎酬回饋式群眾募資案之影響

摘要

由群眾外包模式而來，群眾募資為近來方興未艾之新興小額網路募款模式，許多學者紛紛開始探討影響群眾募資成功之因素。群眾募資其中的一種樣態為獎酬回饋，在獎酬回饋式的群眾募資平台上，專案的支持者，甚或提案者，都是較沒有經驗或專業知識的小額出資者。因此，雙方之間存在的資訊不對稱，比其他樣態的群眾募資平台更為嚴重。在群眾募資期間，專案支持者必須接受到多樣的具正當性的訊號，以利他們做更好的判斷，提高專案成功的可能性。另外，一群對專案有興趣但卻還沒實際出資的旁觀者們，也需要時間去評估其他人的作為，因此，專案提案者必須思考如何降低旁觀者效應對群眾募資案的不良影響。因此，本論文基於此，進行三個研究試圖探討專案提案者可提出那些具正當性且適時的訊號，降低資訊不對稱和旁觀者效應，使群募專案較容易成功。

本論文第二章說明第一個研究，研究發現來自於專案內容、專案提案者特色、第三方之多重的正當性訊號有助於群募專案成功，例如提出多樣的專案贊助選項、與社群平台建立連結以強化網絡外部性效果、強調提案者本身來自於新創團體、提案者本身已有群眾募資的成功經驗、專案於群募網站首頁輪播、或在首頁的編輯精選中出現等具正當性的訊號。第三章呈現第二個研究，研究分析後發現，旁觀者效應減少專案的每日募資金額。然而，機構單位提出的群眾募資專案，因其正當性，可降低旁觀者效應對每日募資金額的負面影響。另外，當專案設定的募款天數愈多時，也可以降低

DOI:10.6814/NCCU202101456

旁觀者效應對每日募資金額的負面影響。第四章呈現第三個研究，分析結果發現專案提案者應注意每日旁觀者比例的變化幅度，變化幅度太大不利於提案成功。專案提案者或平台管理者應適時發送專案進度報告或運用社群媒體轉發專案相關訊息，而且在整個募資期間需做好社會性影響的管理機制。

本論文提出正當性訊號和旁觀者效應對獎酬式群眾募資計畫的影響，尤其是在一個對大眾公開的更吵雜的環境裡。本研究並提供此一新興現象未來跨領域於社會心理學與策略創業之研究方向與可能性。本論文對募資者也有參考價值，募資者可思考如何以合理的成本增進群眾對社群的參與度。未來研究者可進一步分析發送那些具社會性影響力的正當性訊號，以降低旁觀者效應。

關鍵字: 訊號理論、正當性、旁觀者效應、社會影響、獎酬回饋式群眾募資

DOI:10.6814/NCCU202101456

How do legitimate signals and bystander effect affect the results of reward-based crowdfunding projects?

ABSTRACT

Rooted in crowdsourcing, crowdfunding is a new and developing phenomenon and scholars have demonstrated the impacts of different success factors on crowdfunding project success. In reward-based crowdfunding context, potential backers are less sophisticated and they tend to contribute much smaller amount in comparison with other types of crowdfunding. Potential project backers are troubled by the problem of information asymmetry and need more time to evaluate whether to make pledges by receiving multiple legitimate signals and observing the behavior of the "crowds." The purpose of this dissertation is to investigate the impacts of multiple legitimate signals and bystander effect to reward-based crowdfunding projects in a high-noise environment.

In chapter two, I find multiple legitimate signals sent from project itself, project creators, and third-party could increase the propensity of a project's success. Multiple legitimate signals include providing more reward options, establishing social network connections, showing creator's past funding success, project creator being a start-up team, and project being displayed on the banner slider or editor's select section on the crowding platform frontpage. In chapter three, co-authors and I show that the bystander effect harms the daily pledge amount. To mitigate such a negative impact, crowdfunding project creators may signal

DOI:10.6814/NCCU202101456

project legitimacy and use a longer project-funding period to escalate the conversion from bystanders to backers, which in turn enhances the fundraising performance.

Finally, I further examine the bystander effect during the entire fundraising cycle in chapter four. The results show that a smaller fluctuation of the bystander effect changes during the entire fundraising cycle is positively related to the propensity of the project success. Adaptable legitimate signals such as project updates or information cascades could alleviate the social inhibition of helping in the middle of the fundraising cycle. Project creators shall pay close attention in managing social influence tactics along the entire project campaign.

This dissertation suggests that legitimate signals and bystander effect affect reward-based crowdfunding project success, especially when problems linger out in the open to everyone's noisy online and offline fundraising environment. Future studies should continue focusing on discovering the interaction of social psychology and strategic entrepreneurship contexts and on what legitimate signals of social influences could alleviate bystander effect of this emerging and promising phenomenon.

Keywords: signaling theory, legitimacy; bystander effect; social influence; reward-based crowdfunding

DOI:10.6814/NCCU202101456

TABLE OF CONTENTS

DOI:10.6814/NCCU202101456

LIST OF TABLES

DOI:10.6814/NCCU202101456

LIST OF FIGURES

DOI:10.6814/NCCU202101456

Chapter 1: Introduction

Ever since the concept of Web 2.0 was introduced to the world (O'Reilly, 2007), web as a platform has changed modern business world tremendously. With the popular usage of handheld devices, people are getting used to share their opinions on social network platforms and make purchases online anytime, anywhere. Recently, savvy web users around the world welcomed a revolutionary way of directly seeking financial help on the internet platform. The widespread adoption of crowdfunding phenomenon creates a huge impact on small entrepreneurship and new ventures (Massolution, 2013). Instead of asking help from traditional financial investors such as banks, venture capitalists or business angles (Cassar, 2004), crowdfunding encourages an average-joe like you and me who has business ambition or philanthropic purpose, but has very limited resources, to collect small amount of money from the public on the internet (Schwienbacher and Larralde, 2012; Mollick, 2014).

The concept of crowdfunding was emerged from the concept of crowdsourcing (Hong, Hu, and Burtch, 2018; Estellés-Arolas and González-Ladrón-de-Guevara, 2012). Kleemann, Gunter Voss, and Rieder (2008) defined Crowdsourcing as, "Crowdsourcing takes place when a profit oriented firm outsources specific tasks essential for the marking or sale of its product to the general public (the crowd) in the form of an open call over the internet, with the intention of animating individuals to make a voluntary contribution to the firm's production process for free or for significantly less than that contribution is worth to the firm." The

DOI:10.6814/NCCU202101456

general public who make a voluntary contribution is called “the working customer” by Kleemann et al. (2008). The working customers or online communities participate in the new product or service process and create values for both company and themselves (Kozinets, Robert, and Hemetsberger, 2008). Later, scholars proposed that crowdfunding concept can be seen as part of the broader concept of crowdsourcing, or even a subset of crowdsourcing, that uses the “crowds” to obtain ideas, feedback and solutions in order to develop corporate activities (Belleflamme, Lambert, and Schwienbacher, 2014; Schwienbacher and Larralde, 2012).

Schwienbacher and Larralde (2012) first introduced crowdfunding as, “an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes.” Mollick (2014) further provided a narrower definition of crowdfunding, “Crowdfunding refers to the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit to fund their ventures by drawing on the relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries.” It means that, on the crowdfunding platform, two main groups of key players participate in the fundraising activities, i.e., project creators and the project backers. Project creators can raise initial money required to start their new ventures from the backers (Mollick, 2014, Evans and Leighton, 1989).

DOI:10.6814/NCCU202101456

There are four types of crowdfunding platforms: equity-based, donation-based, reward-based, and peer-to-peer lending (Ahlers, Cumming, Günther, and Schweizer, 2015; Kuppuswamy and Bayus, 2017; Mollick, 2014; Lin, Prabhala, and Viswanathan, 2013). Donation-based and reward-based crowdfunding are mostly operated in product/service pre-ordering or patronage perk mechanism, while equity-based and peer-to-peer lending are interested in a share of future profit (Mollick, 2014; Belleflamme et al., 2014). There are two models offered to project creators setting their fundraising goals on the crowdfunding platforms, the "Keep-it-All (KIA)" model and the "All-or-Nothing (AON) model". When project creators choose to use the KIA model, they can set up a fundraising goal and would be able to keep any amount raised regardless of whether they meet their goal when the campaign duration ends. On the other hand, when project creators choose to operate under the AON model, they would be possible keeping the pledges only if the funding goal is achieved at the end of the project duration.

Many scholars studied how venture capitalists and business angels make investment decisions on start-ups (Maxwell, Jeffrey, and Lévesque, 2011; Gompers, Gornall, Kaplan, and Strebulaev, 2020). However, most entrepreneurs fail to raise venture capital since they cannot scale fast enough and fall into the "valley of death" (Auerswald and Branscomb, 2003; Tomczak and Brem, 2013) and there are too few potential investors versus the numerous numbers of entrepreneurs who need money in the noisy environment (Connelly, Certo,

DOI:10.6814/NCCU202101456

Ireland, and Reutzel, 2011). Recently, scholars suggested crowdfunding may be a potential bridge to seed-stage and later-stage development by raising pre-seed or seed capital from the general public (Scholz, 2015; Tomczak and Brem, 2013).

The global crowdfunding volume reached $16.2 billion in 2014, reflecting an annual percentage growth rate of 167%. And reward-based crowdfunding has the largest number of online platforms and is one of the fastest growing forms of crowdfunding (Massolution, 2015). In Taiwan, reward-based crowdfunding platforms are also the leading players. Industry researcher shows the market volume is more than NTD 1.6 billion in 2019 and expects steadily growth (Backer-Funder, 2020).

On the crowdfunding platform, project creators establish a project webpage to convince strangers (“crowds”) to support their campaign within a short period, usually 30-60 days, and then project creators will be able to collect the pledges if the target goal is reached at the end of fundraising day. Among four types of crowdfunding platforms, project backers are less experienced and lack of professional knowledge to evaluate the reward-based project campaigns.

Scholars states that establishing legitimacy is crucial for the survival and growth for early-stage new ventures (Zimmerman and Zeitz, 2002; Delmar and Shane, 2004; Zott and Huy, 2007). Überbacher (2014) first introduced an extensive review of new venture legitimacy. Throughout different stages of new venture life cycle, entrepreneurs must establish and attain

DOI:10.6814/NCCU202101456

different legitimacy to influence different resource providers to gain resources they need (Certo, 2003; Fisher, Kotha, and Lahiri, 2016; Fisher, Kuratko, Bloodgood, and Hornsby, 2017).

In higher-noise environment such as reward-based crowdfunding (even noisier than in IPO environment), scholars have proven many firms bundling multiple signals into portfolios (Steignberger and Whilhem, 2019; Courtney, Dutta, and Li, 2017; Plummer, Allison, and Connelly, 2016; Colombo, 2021). That means, inexperienced project backers on reward-based crowdfunding platform may receive multiple signals from different sources, such as project itself, project creators, crowdfunding platforms, and other social network influences.

Emerging researches on crowdfunding have focused on the factors of crowdfunding success based on different theoretical and empirical approaches (Short, Ketchen Jr., McKenny, Allison, and Ireland, 2017; McKenny, Allison, Ketchen Jr., Short, and Ireland, 2017; Colombo, 2021). Mollick (2014) found that the crowdfunding project success is driven by project creator's personal networks, project quality, and geography proximity. Other scholars found that project sponsors' word-of-mouth, "like" counts, and interactions between project sponsors and project creators are effective project signals of project quality, which would predict project success (Bi, Liu, and Uzman, 2017; Zheng, Hung, Qi, and Hu, 2016). Several researchers believe the media contents (including text, video, audio, and images) and narrative storytelling (Manning and Bajarano, 2017) influence crowdfunding performance

DOI:10.6814/NCCU202101456

(Allison, McKenny and Short, 2013; Herzenstein, Dholakia, and Andrews, 2011; Mollick, 2014).

Crowdfunding project is created and displayed in virtual environment by the project creators, thus, it is difficult for project backers to validate the true quality of the project. Potential backers are totally strangers who may lack of related experiences and they do not own as much information as project creator does. Spence (1973) first utilized the labor market to model the signaling function of education. The job candidate signals their quality by obtaining higher education and reduce information asymmetry (Akerlof, 1970). Quality refers to the unobservable capability of the job applicant, which is signaled by completion of the education necessary for the graduation (Connelly et al., 2011).

Some scholars have just started to discuss signals showing the legitimacy or quality of the crowdfunding projects (Kuppuswamy and Bayus, 2017; Agrawal, Catalini, and Goldfarb, 2015; Mollick, 2014; Belleflamme et al., 2014). Fisher et al. (2017) identified crowdfunding backers operating with a community logic and the source of legitimacy is from the unity of will and belief in trust and reciprocity. Courtney et al. (2017) introduced the use of media, founder's past success, and the intensity of positive sentiment in backer comments can enhance the possibility to attain crowdfunding project success. Frydrych, Bock, Kinder, and Koeck (2014) found high funding goal implies that more effort is required by the project creator or entrepreneur to legitimate the requested amount of funding. Chu and Lin (2016)

DOI:10.6814/NCCU202101456

stated that user participation, medium of reward choice, and project popularity positively influence project success. Kunz, Bretschmeider, Erler, and Leimeister (2017) showed that social ties, investment preparation and presentation, the multiple reward supplies, and interaction with the crowd positively influence the propensity of reward-crowdfunding success. Anglin, Short, Drover, Stevenson, McKenny, and Allison (2018) discovered that costless signals such as positive psychological language usages enhance crowdfunding performance, where costly signals, which is human capital, enhance the influence of costless signals.

In reward-based crowdfunding context, potential backers (crowds) are less sophisticated and he/she tends to contribute much smaller amount in comparison with equity-based crowdfunding (Belleflamme et al., 2014). Potential backers suffer from the problem of information asymmetry and uncertainty because project creators may know more about the project quality (Stiglitz, 2002). Since most projects are proposed by first-time project creators, who previously did not have much access to financial support and do not have much experience in raise funds from the public; potential backers also do not have enough expertise and experience to evaluate the project, the problem of information asymmetry is more severe in reward-based crowdfunding (Vismara, 2018). Project backers may need more hints or signals to better observe project creators and project campaign page. Recent literatures mostly focus on discovering the success factors or quality signals influencing crowdfunding success,

DOI:10.6814/NCCU202101456

but rarely talk about how to alleviate the problem of information asymmetry by examining legitimate signals from the crowdfunding project, especially in reward-based context. Therefore, I believe the legitimacy signals of the reward-based crowdfunding project deserved for further investigation.

In addition, through the social influence across social media and crowdfunding platforms project creators may attract more and more potential backers who are interested in participating in the crowdfunding community to share and their ideas and feedback (Mollick, 2014; Colombo, Franzoni, Rossi-Lamastr, 2015; Thies, Wessel, and Benlian, 2016). Project creators on reward-based crowdfunding platform invite "crowds" to pre-order or co-create the product or service. It means project creators not only obtains small amount of financial help, but also acquire non-financial help such as social capital, early customer, innovation of the product/service, and on-going business (Jung, Susarla, and Sambamurphy, 2015).

Consequently, another group of potential backers may play somewhat important roles on the reward-based crowdfunding platform. These potential backers are called "bystanders", who are interested in the projects but they are hesitant to put money in (Kuppuswamy and Bayus, 2018). They are great source of social capital for project creators (Zheng, Li, Wu, and Xu, 2014), but not necessarily a good signal to project success. Voelpel, Robert, Eckhoff, and Förster (2008) showed bystander effect is indeed present in virtual environment based on their research on Yahoo!Groups Online Forums. Yechiam and Barron (2003) found the group size

DOI:10.6814/NCCU202101456

has a negative correlation to the help request of completing an online survey. Scholars suggest that bystander effect prevents potential backers from contributing to a project because they believe this project has already received enough pledges. However, the impact of bystander effect on the reward-based crowdfunding project success hasn't been empirically studied (Mollick, 2014; Kuppuswamy and Bayus, 2018; Chan, Parhankangas, Sahaym, and Oo, 2020).

To answer the request for cross-disciplinary investigation on crowdfunding research (Mckenny et al., 2017), this dissertation intends to discover what legitimate signals are helpful to achieve crowdfunding success and explore how bystander effect could impact the fundraising cycle. And I hope to answer three questions: What legitimate signals can project creators send to project backers to increase the propensity of reward-based crowdfunding project success? What is the impact of bystander effect to the reward-based crowdfunding project performances? And how daily changes of bystander effect along the fundraising cycle influence project success?

The dissertation is organized in five chapters. This chapter introduces the research background and the structure of three studies. Chapter two answers the first research question regarding what legitimate signals can increase the propensity of crowdfunding success. Chapter three answers the second research question on what impact of bystander effect on reward-based project performances. Chapter four answers the last research question by

DOI:10.6814/NCCU202101456

exploring the influence of daily changes of bystander effect along the fundraising cycle on project success. The final chapter concludes the thesis and discusses the key issues emerging from the studies. The structure of the dissertation is depicted in Figure 1-1.

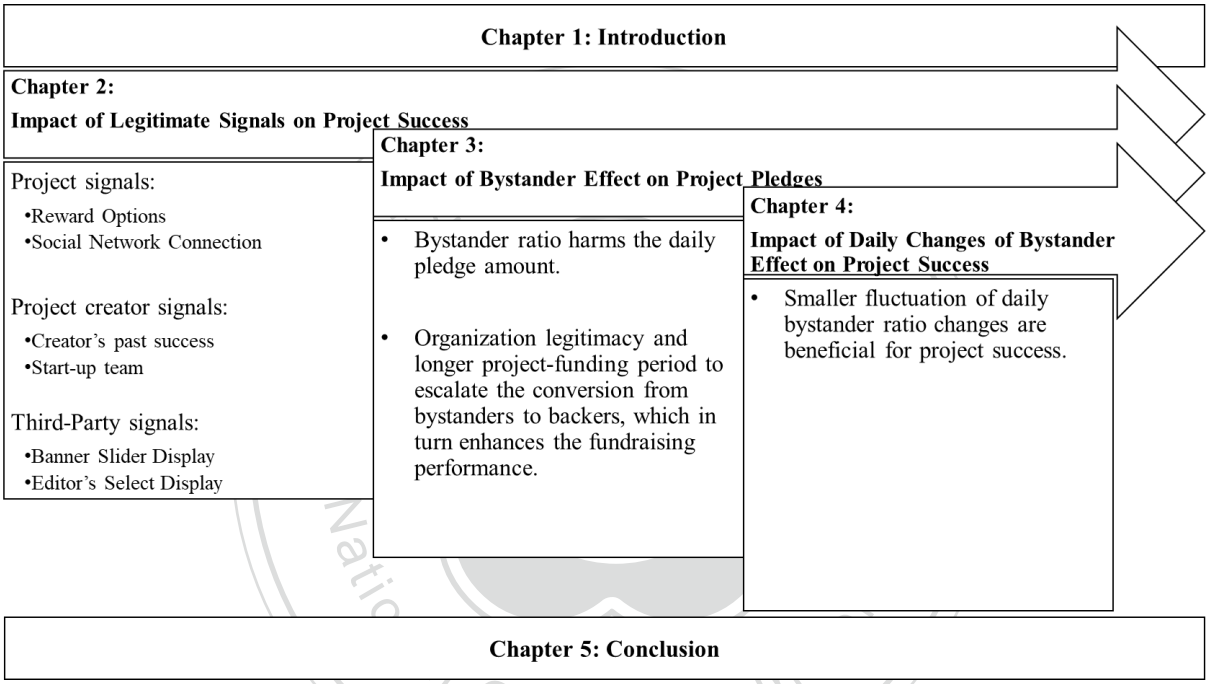

Figure 1-1. Structure of the dissertation

In chapter two, I examine the multiple legitimate signals from project itself, project creators, and third-party recommendation on the reward-based crowdfunding platform. When potential project backers visit the project page on flyingV, they receive multiple signals. I find that project creators showing legitimate signals could increase the propensity of a project's success based on 189 projects on flyingV, such as providing more reward options,

DOI:10.6814/NCCU202101456

establishing social network connections of the project, presenting project creator's past success experience, and project creator being a start-up team. Furthermore, the results also reveal that the third-party signals show legitimacy to project backers. Staff of flyingV displaying the projects on the banner slider and editor's select section on the platform frontpage suggest these projects possess high quality and therefore the platform's third-party recommendation are crucial to the reward-based crowdfunding success. In addition, by further investigating on the prediction results of three different types of legitimate signals (i.e., project signals, project creators' signals, and third-party signals), the results reveal that the project creators' past crowdfunding success experience and being a start-up team increase more odds of project success than other two types of legitimate signals.

In chapter three, co-authored with Drs. Fu, Yu, and Huang, we pay attention to a specific group of participants in the crowds, the "bystanders", who may or may not provide financial help to the crowdfunding project. Drawing on the bystander effect literature, the non-helping behaviors of fellow bystanders among the followers will inhibit potential backers to act to lessen the project performance. By analyzing 5,773 daily observations from 191 crowdfunding projects on the flyingV platform in the second study, the co-authors and I show that the bystander effect harms the daily pledge amount. To mitigate such a negative impact, crowdfunding project creators may signal organization legitimacy and use a longer project-funding period to escalate the conversion from bystanders to backers, which in turn enhances

DOI:10.6814/NCCU202101456

the fundraising performance.

I further investigate the influence of daily changes of bystander effect during the entire crowdfunding campaign in chapter four. While previous studies were mostly conducted with one-time experimental methods in the laboratory, this study is done by analyzing 79,855 real daily observations from 41 interval-censored reward-based crowdfunding projects on the flyingV platform. Following the traditional exploratory studies in entrepreneurship (Mollick, 2014), I find that a smaller fluctuation of daily changes of bystander effect during the fundraising cycle is positively related to the propensity of the project success. This study reveals that it takes time for bystanders to participate and evaluate the situation before they respond to it. Project creators shall pay close attention in managing social influence tactics along the entire project campaign. Adaptable legitimate signals such as project updates or information cascades could alleviate the social inhibition of helping in the middle of the fundraising cycle. This study extends bystander effect in non-emergent situations such as reward-based crowdfunding platform and proves that it takes time for bystanders to participate and evaluate the situation before they respond to it.

DOI:10.6814/NCCU202101456

Chapter 2: Exploring legitimate signals of Reward-based crowdfunding projects

2.1 INTRODUCTION

Nascent organizations suffer from substantial information asymmetry between the venture and potential investors (Wiklund, Baker and Shepherd, 2010). Some new ventures may treat it as a catalyzing strategy to attract professional investors by proving its market needs as a time around "Proofpoints" signal (Hallen and Eisenhardt, 2012). Several important quality signals that lead to investment in more traditional face-to-face investment settings are identified, such as preparedness and passion (Chen, Yao, and Kotha, 2009, Mollick, 2013), research alliances as indicators of technological quality (Hoenig and Henkel, 2015), and the proportion of the entrepreneur's initial wealth invested in projects (Prasad, Bruton, and Vozikis, 2000). Suchman (1995) defines legitimacy as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions." Previous literatures have shown how legitimacy are interrelated with resource acquisition and resource acquirers need to be perceived as legitimate (Fisher, Kotha, and Lahiri, 2016; Delmar and Shane, 2004; Martens, Jennings, and Jennings, 2007; Navis and Glynn, 2011; Zimmerman and Zeitz, 2002; Zott and Huy; 2007).

DOI:10.6814/NCCU202101456

Crowdfunding is a new form of fundraising venue and helps new ventures to obtain resources from the internet users. Project creators display their project plans or pitches on the crowdfunding platform, where he/she can self-explain their motivation and reasons to collect small amount of pledges from the crowds. Crowdfunding and IPOs shows different context and crowdfunding projects are often much smaller than the typical seen in venture capital seed funding, whereas the audience group size is much bigger than IPOs' (Mollick, 2013; Connelly, Certo, Ireland, and Reutzel, 2011).

There are four types of crowdfunding platforms: equity-based, donation-based, reward-based, and peer-to-peer lending (Ahlers et al., 2015; Kuppuswamy and Bayus, 2017; Mollick, 2014; Lin, Prabhala, and Viswanathan, 2013). Donation-based and reward-based crowdfunding are mostly operating in product/service pre-ordering or patronage perk mechanism, while equity-based and peer-to-peer lending are interested in a share of future profit (Mollick, 2014; Belleflamme, Lambert, and Schwienbacher, 2014).

On the reward-based crowdfunding platform, there are two models offered to project creator setting his/her fundraising goals, the "Keep-it-All" model and the "All-or-Nothing" model (Cumming, Leboeuf, and Schwienbacher, 2020). When the project creator chooses to use the "Keep-it-All" (KIA) model, they can set up a fundraising goal and would be able to keep any amount raised regardless of whether they meet their goal. The KIA model shows some risks to the crowd that an underfunded project will kick off regardless lacking of enough

DOI:10.6814/NCCU202101456

funding. On the other hand, when the project creators choose to operate under the "All-or-Nothing" (AON) model, they set up a fundraising goal and would be possible keep only if the funding goal is achieved. This model shifts the funding risk on the project creators and the crowdfunding platform and also indicates that the project creators believe their projects are more valuable and shall send a signal to potential backers that the projects are more promising (Cumming et al., 2020).

Reward-based crowdfunding usually incorporate social and business goals by offering product prototype or pre-selling mechanism in return to receive funding. The potential project backers can be seen as early customers or co-creators rather than professional investors (Frydrych, Bock, Kinder, Koeck, 2014, Mollick, 2014) and they cannot meet project creators face-to-face and get to know their social network or discuss about the quality of the projects in real life. Unlike traditional investment such as bond and stock purchase, project creators on reward-based crowdfunding platform usually provide patron-style compensation and tangible guaranteed rewards to project backers (Tomczak and Brem, 2013; Burkett, 2011). On flyingV, the biggest reward-based crowdfunding platform in Taiwan which is operating only in "All-or-Nothing model", project creator can choose to offer both patronage perks and as-of-yet product that the entrepreneur is making (Bradford, 2012). A contemporary example from flyingV is the "White Power-your milk is saved by yourselves." Dr. Kung Chien-Chia, and his two partners, Ms. Lin Hsiao-wan and Mr. Kuo Che-Yu, under the age of 30,

DOI:10.6814/NCCU202101456

established the milk brand Puremilk through a successful crowdfunding project on flyingV (Yu, Huang, Chou, and Kuo, 2018). Dr. Kung created and designed the crowdfunding project by himself. He set a $150 patronage perk reward in return for a free ticket to an informal meeting for raw milk testing. In addition to the patronage perk reward, Dr. Kung provided other 12 reward options which includes fresh milk delivery and free ticket to the raw milk testing meeting.

Traditional signaling theory focuses on isolated signals because it assumes that receivers process signals in isolation. And traditional signaling theory mainly focuses on insiders taking actions to intentionally communicate positive, observable qualities of the insiders in low-noise environment (Bergh, Connelly, Ketchen, and Shannon, 2014). In entrepreneurship studies, scholars almost focus on the leaders of IPO firms and start-up as signalers. The receivers are nearly always existing or potential shareholders and investors in a low-noise environment (Connelly et al., 2011).

In reward-based crowdfunding context, on the other hand, the signalers and signal receivers are mostly inexperienced internet users. Most projects are proposed by first-time project creators, who previously did not have much access to financial support and do not have much experience in raise funds from the public; potential backers also do not have enough expertise and experience to evaluate the project, the problem of information asymmetry is more severe in reward-based crowdfunding (Vismara, 2018). To attract

DOI:10.6814/NCCU202101456

financial resources, project creators on crowdfunding platforms shall use extensive signaling activities consistent with the definition of high-noise environments (Connelly et al., 2011; McKenny, Allison, Ketchen Jr., Short, and Ireland, 2017).

In high-noise environments such as reward-based crowdfunding, scholars have shown that many firms try to bundle multiple signals into portfolios (Steigenberger and Wilhelm, 2019; Courtney, Dutta, and Li, 2017; Plummer, Allison, and Connelly, 2016). That means, inexperienced project backers on reward-based crowdfunding may receive multiple signals from project itself, project creators, crowdfunding platform, and possibly other social network influences. Therefore, sending multiple legitimate signals to reward-based project backers to differentiate the crowdfunding project is very crucial to project success.

Legitimacy is both important to individual, new firms, and established firms. Delmar and Shane (2004) suggests that establishing legitimacy is crucial for the survival for new ventures, and establishing legal entity and writing business plan make impacts on the initial 30 months of life. Certo (2003) states investor perceptions of board prestige signals organization legitimacy and therefore improving firm stock performance. In reward-based crowdfunding context, less sophisticated project backers look for legitimacy from the crowdfunding project and provide their support to project funding success. For example, Dr. Kung, who is a professional cattle veterinarian and established the crowdfunding project to call for public help to produce high-quality milk, shows his legitimacy in the eye of project backer (Yu et

DOI:10.6814/NCCU202101456

al.,, 2018; Fisher, Kuratko, Bloodgood, and Hornsby, 2017; Franke and Gruber, 2008; Burton, Sørensen, and Beckman, 2002).

Many scholars investigated the success factors and new venture legitimacy of crowdfunding (Mollick, 2014; Kuppuswamy and Bayus, 2017; Courtney et al., 2017; Überbarcher, 2014), but there are only a few looking into signals that show legitimacy to less sophisticated reward-based project backers who also actively participate in crowdfunding community (Jung, Susarla, and Sambamurphy, 2015). Mollick (2014) discovered that crowdfunding backers respond to the quality of the project regardless of their expectation for financial returns. Frydrych et al. (2014) shows that cultural entrepreneurship activities are important to create online project legitimacy in reward-based crowdfunding. Crowdfunding success is significantly related to the quality of project signals such as preparedness, narrative, and others' contribution decisions as well as individual quality signals such as personal characteristics (including gender and race), creditworthiness, and social networks (Kuppuswamy and Bayus, 2017). The funding success is significantly related to the use of media, founders' pass success experience, and backer sentiment (Courtney et al., 2017). Chu and Lin (2016) found that user participation, medium of reward choice, and project popularity positively influence project success.

Potential backers on the reward-based crowdfunding platforms are less sophisticated and he/she tends to contribute much smaller amount in comparison with equity-based

DOI:10.6814/NCCU202101456

crowdfunding (Belleflamme et al., 2014). Even with smaller amount, potential backers still suffer from the problem of information asymmetry and uncertainty because project creators may know more about the project quality (Stiglitz, 2002). Recent literatures mostly focus on discovering the success factors or quality signals influencing crowdfunding success, but rarely talk about how to alleviate the problem of information asymmetry by examining multiple legitimate signals from the crowdfunding project, or even from crowdfunding platforms, especially in reward-based context. Therefore, we believe that the legitimacy signals of the reward-based crowdfunding projects deserved further investigation.

To address this gap, this chapter revisits signaling theory and legitimacy literatures to demonstrate that in a high-noise environment, such as reward-based crowdfunding platform, multiple signalers (project creators and platforms) can send multiple legitimate signals to multiple signal receivers (potential project backers) simultaneously to reinforce the crowdfunding success.

Since due diligence can be difficult to execute in virtual environment, my findings show that having good social tie by establishing a virtual social networking community that supports the project is crucial for funding success. Project creators show more confident and willingness to share and co-create with crowdfunding community by establishing Facebook fanpage connections. Meanwhile, project creators as a start-up team and possess prior crowdfunding success experiences would encourage the project backers who are keen to be a

DOI:10.6814/NCCU202101456

co-producer to join their adventurous journey and increase the odds of project success (Bruner, 1990). Project creators on reward-based crowdfunding platform not only obtain small amount of financial help, but also acquire non-financial help such as social capital, early customer, innovation of the product/service, and on-going business (Jung et al., 2015). Therefore, the potential backers may view these are important legitimacy to make pledges.

Furthermore, the analysis results indicate that third-party legitimate signals are also crucial to reward-based crowdfunding success. Staffs of flyingV platform exhibiting the projects on the banner slider and editor's select section on the website frontpage suggest these projects possess high quality and therefore the platform's third-party recommendations contribute to the crowdfunding success.

This chapter contributes to signaling theory by extending its traditional definition in the entrepreneurship domain of isolated signals in low-noise environment (such as IPO firms) to multiple signals in high-noise environment such as the reward-based crowdfunding. This chapter also expands the discussion on the signals combining institution theory on what legitimate signals are valuable to the crowdfunding success. By doing so, this chapter answers the calls to expand traditional signaling theory (Connelly et al, 2011), contributes to reward-based crowdfunding research (Mollick, 2014; McKenny et al., 2017), and provides some managerial implications.

DOI:10.6814/NCCU202101456

2.2 THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

For the last 10 years, crowdfunding has gained enormous attention globally since it is becoming a novel way to receive funding from the internet platforms. The World Bank believes that crowdfunding could account for over $300 billion in cumulative transactions by 2025 (Meyskens and Bird, 2015). However, in fact, the very first crowdfunding campaign was raised over 200 years ago, which is initiated by Joseph Pulitzer, who completed the fundraising campaign of Statue of Liberty's pedestal on the New York World newspaper (National Park Service, 2016; Short, J.C., Ketchen Jr., D.J., McKenny, A.F., Allison, T.H., Ireland, R.D, 2017). The crowdfunding initiative was so successful is because the crowds are newspaper readers who are already familiar with the newspaper and Mr. Pulitzer. Therefore, the campaign followers perceived both NY World newspaper and Mr. Pulitzer as legitimate signals and were willing to donate.

Traditional signaling theory focuses on isolated signals because it assumes that receivers process signals in isolation (Bergh et al., 2014). And traditional signaling theory mainly focuses on insiders taking actions to intentionally communicate positive, observable qualities of the insiders. In entrepreneurship signaling studies, scholars almost focus on the leaders of IPO firms and start-ups as signalers. The signal receivers are nearly always existing or potential shareholders and investors and thus the entire research context is identified as a low-noise environment. The high-quality firms are more motivated to signal than the low-quality

DOI:10.6814/NCCU202101456

firms because they expect to receive better payoff. For example, high-quality firms can pay dividends and such signal may influence signal receivers' perceptions of firm quality (Connelly et al., 2011). Spence (1973) first utilized the labor market to model the signaling function of education. The job candidate signals their quality by obtaining higher education and reduce information asymmetry. Quality refers to the unobservable capability of the job applicant, which is signaled by completion of the education necessary for the graduation (Connelly et al., 2011).

On the reward-based crowdfunding platform, a rather high-noise environment, project creators disclose his/her project content information to potential backer to attract funding. However, potential backers may be totally strangers who lack of related experiences and he/she does not own as much information as project creators do. Project creators may know more about the project quality than the potential backers (Stiglitz, 2002). Thus, potential backers face the risk of funding in information asymmetry (Akerlof, 1970) and they need good quality signals to assist them to make decisions.

Many studies have demonstrated different quality signals and one of them is establishing legitimacy (Mollick, 2014; Connelly et al., 2011). Certo (2003) shows that investor perceptions of board prestige structure signal organizational legitimacy and therefore improving IPO firm stock performances. Fisher et al. (2016) indicates that new ventures need to send the right signals to the right audiences in order to be perceived legitimate, and they

DOI:10.6814/NCCU202101456

meet multiple legitimacy thresholds as they grow. Fisher et al. (2017) further identifies new venture legitimacy judgments across diverse audiences among crowdfunding backers, government agencies, angel investors, venture capitalists, and corporate venture capitalists. For crowdfunding projects to be perceived legitimate, signalers shall send signals of being a part of the community and a community value adder, or endorsed by a prominent community member, or the level of professionalism and venture certification.

Recent studies have started to examine how different signals might have reduced the information asymmetry in crowdfunding (Steigenberger and Wilhelm, 2019; Connelly et al., 2011; Colombo, 2021). Several researchers have found that signalers send multiple signals simultaneously in high-noise environment setting like crowdfunding platforms are useful (Steigenberger and Wilhelm, 2019; Courtney et al., 2017; Plummer et al., 2016). Steigenberger and Wilhelm (2019) find that rhetorical signals complement substantive signals strengthen the impact on crowdfunding success. Courtney et al. (2017) finds that the signals of media usage and founder past success mitigate information asymmetry concerns about project quality and founder credibility, therefore increasing the project's likelihood of receiving funding. Frydrych, Bock, and Kinder (2016) shows that lower funding targets and shorter project durations represent positive project legitimacy and towards project success. Therefore, sending multiple legitimate signals to reward-based project backers to differentiate the crowdfunding project is very crucial to project success.

DOI:10.6814/NCCU202101456

In high-noise environments such as reward-based crowdfunding, inexperienced project backers on reward-based crowdfunding receive multiple legitimate signals from project itself, project creators, crowdfunding platform, and possibly other social network influences. Signalers may include project creators and platform itself and they send legitimate signals to disclose credible information of the project to reduce information asymmetry and convince potential backers (i.e., signal receivers) to promote the crowdfunding projects in virtual environment (Fisher et al., 2017; Connelly et al., 2011).

According to previous literatures, the empirical analysis of the hypotheses 1-3 is to validate whether legitimate signals of project characteristics, such as project duration, number of reward options, and establish a social network fanpage (such as Facebook), have influence on the propensity of reward-based project success. The analysis results of hypotheses 4-5 are expected to verify if legitimate signals of project creators' characteristics have influence on the propensity of project success. For example, project creators' past crowdfunding success experiences and being a start-up team. Lastly, hypotheses 6a and 6b are expected to explore if crowdfunding platform's recommendations are perceived as legitimate signals to potential backers and thus have influence on the propensity of crowdfunding success. The developments of the hypotheses are presented next section.

DOI:10.6814/NCCU202101456

2.2.1 Project Duration

flyingV is a reward-based, all-or-nothing crowdfunding platform (Cumming, et al., 2020), therefore, project creators receive the whole funding only if the funding amount is reached 100% target goal before or on the target date. By investing time and attention in the entire project duration, the project creator will pay close attention along the funding journey by constantly answering questions or reporting any important progress on the project update column in order to make sure the project success. Based on the pre-purchase or pre-order characteristics of the reward-based crowdfunding project, through the longer funding period, potential backer may get to know this project better to acknowledge the legitimate signals of the project. Recent research shows "entrepreneur's social engagement with the crowdfunding community" is important to the success on a crowdfunding platform (Jung et al., 2015). Thus, project creators shall have more time to provide legitimate signals to potential backers in the community. Extant literatures show different results on fundraising period as a legitimacy building. Although previous studies indicated that longer fundraising periods lead to decreasing support for the project (Überbacher, 2014; Frydrych et. al, 2014; Kunz et al., 2017), I believe that the longer fundraising period may mitigate the impact of information asymmetry (Courtney et al., 2017). Therefore, I propose the following:

Hypothesis 1: Longer project funding period increases the propensity of a crowdfunding project success.

DOI:10.6814/NCCU202101456

2.2.2 Reward options

Based on the variety of fundraising project characteristics, each project offers different reward ways to the backers. Most projects offer a minimum NT$100 for a “Thank you” note as the first patronage reward. And the rest of reward options are usually listed as NT$200, NT$500, NT$800, and up to as much as the project creator wishes. Usually, project creators design reward options by mixing different product or service rewards combinations based on different contribution options. Bock et al. (2014) identified that creative projects tend to incorporate a higher number of reward-levels. Kickstarter (2014) also states the influence of the right rewards for successful crowdfunding efforts, ‘the importance of creative, tangible, and fairly priced rewards cannot be overstated’. In Taiwan, the “pre-selling” of products or services to potential customer (backer) is common on any reward-based crowdfunding platform. More reward options provided by project creators show that he/she values the heterogeneous features of potential customers. Previous literatures have discussed many pros on offering a large variety of options to customers. With more reward options, potential backers can maintain flexibility in view of uncertainty about his/her future taste (Kahn and Lehmann, 1991; Kahneman and Snell, 1992; Kreps, 1979) and the perception of freedom of choices (Kahn, Moore, and Glazer, 1987). The greater the number of the reward options in the choice set, the higher the chance that potential backers can find a close match to his/her purchase goal (Baumol and Ide, 1956; Hotelling, 1929). Project creators have made efforts in

DOI:10.6814/NCCU202101456

designing and preparing a variety of reward choices to accommodate different needs and mitigate the information asymmetry (Chen et al., 2009; Pollack, Rutherford, and Nagy, 2012), therefore, it signals project legitimacy to the crowds (Frydrych et al., 2016). I believe that projects with more reward options encourage backers to make pledges. Therefore, I propose:

Hypothesis 2: More reward options increases the propensity of a crowdfunding project success.

2.2.3 Social Network Connection

For crowdfunding project creators, his/her main purpose is asking for the financial aids from investors using internet without any intermediaries. (Mollick, 2014). Project creators present their business plans or pitches on crowdfunding platform to seek funding or reputation (Frydrych et. al, 2016; Doganova and Eyquem-Renault, 2009; Clarke, 2008). Belleflamme, Lambert, and Schwienbacher (2010) points out that the development regarding Web 2.0 is a critical factor that facilitates the access to the crowd. Three major properties of Web 2.0 are shown, which are supporting entrepreneurs seeking funds mostly. These properties are openness, collaboration and participation (Danmayr, 2014). A crowdfunding platform provides a virtual space for creators and potential backers to exchange comments and suggestions to realize ideas. Ordanini, Miceli, Pizzetti, and Parasuramann (2011) believes crowdfunding is a new paradigm that customers decide to pay for producing and promoting a product, instead of buying it and additionally bearing risks associated with that decision.

DOI:10.6814/NCCU202101456

Many other studies also investigate the social network externality effect to the successful crowdfunding. Mollick (2014) suggests a positive association between Facebook friends and crowdfunding projects' success of fundraising. Zheng, Li, Wu, and Xu (2014) found the entrepreneur's social ties have strong effects on crowdfunding performance both in China and U.S. Jung et al. (2015) believes that crowdfunding platforms connect two parties virtually, project creator and potential backer, and the problems of information asymmetry in such settings can be mitigated by the collective evaluation mechanisms enabled by the online community aspects of crowdfunding. Fisher et al. (2017) illustrates that the legitimacy of crowdfunding may be judged differently by potential backers under a community logic, and therefore the project creators need to form and signal ties with community members to signal legitimacy. Thus, I propose:

Hypothesis 3: Social Network connection increases the propensity of a crowdfunding project success.

2.2.4 Project creator's past success experience

In crowdfunding research, project creators seek financial support from project backers to establish business or launch new products or services, and those project backers can be seen as the early adaptor or consumers. Spence (2002) believes that signaling theory is fundamentally concerned with reducing information asymmetry between two parties

DOI:10.6814/NCCU202101456

when entrepreneurs have relevant industry and start-up experience, stakeholder perceptions of a new venture's cognitive legitimacy may increase (Nagy, Pollack, Rutherford, and Lohrke, 2012; Zimmerman and Zeitz, 2002). In a survey of 100 venture capitalists, MacMillan, Siegel, and Narasimha (1985) shows the strong dependence of a venture capitalist on personality and experience, and less dependence on the market, product, and strategy when assessing the viability of an investment. They found that 5 out of 10 essential factors were directly associated with the entrepreneurs themselves. On flyingV, potential project backers can easily examine all the projects the same creator have created before, and whether those projects are successful. Recent studies show that the project creator's crowdfunding experience is an essential characteristic that informs about the project creator's ability and experience in developing a project and realizing a successful outcome (Courtney et al., 2017; Cheng, 2016). I also believe it is very important to show the past funding success to potential backers because it is a strong signal to demonstrate a good credibility of the project creator and potential project backers shall find it legitimate to support the project. Therefore, I propose:

Hypothesis 4: A project creator's past crowdfunding success increases the propensity of a crowdfunding project success.

DOI:10.6814/NCCU202101456

2.2.5 Project Creator as a start-up team

Early studies show different ways to obtain resources to help growing the firm, such as good business plan techniques (Delmar and Shane, 2004); the reputation of affiliated firms and institutions (Stuart, Hoang, and Hybels, 1999; Higgins and Gulati, 2003); and legitimating certification contests (Rao, 1994). Lately, open innovation for firms are implemented widely (Chesbrough, 2003a; West, Salter, Vanhaverbeke, and Chesbrough, 2014).

In reward-based crowdfunding context, the potential project backers can be seen as early customers or co-creators rather than professional investors (Frydrych et al., 2014, Mollick, 2014). Though potential project backers can not meet project creators face-to-face and get to know their social network or discuss about the quality of the project in real life, they could exchange their comments or answer questions about the projects on the crowdfunding platform or other social network sites.

Since crowdfunding phenomenon is emerged from crowdsourcing, potential backer is often active early adopter who offers ideas and feedback on the crowdfunded product. The rise of internet changes the way for firms seeking external innovation. Stanko and Henard (2017) believes crowdfunding backers can be seen as the earliest possible adopters, who may be even more valuable than traditional early adopting consumers.

DOI:10.6814/NCCU202101456

Their study also shows the number of backers attracted during the crowdfunding campaign does impact the later market performance of the crowdfunding product. Arrow (1993) states that less costly and more original innovations come from small firms. Recent study proves that people financially supports projects when they believe that their contribution matters (Kuppuswamy and Bayus, 2017) and they often value the "being along for the ride" experiences along the crowdfunding campaign (Stanko and Henard, 2016). Therefore, I propose that potential project backers may perceive project creators being a start-up as legitimate to co-create and collaborate together during the funding period. I believe that crowdfunding backers are more likely offer financial supports to new ventures than venture capitalists. Thus, I predict:

Hypothesis 5: Project creator being a start-up team increase the propensity of a crowdfunding project success.

2.2.6 Third-Party Recommendation

When information on an organization's reputation is unavailable, we often turn to the reputations of the firm's affiliates as signals of its likely quality and capabilities (Petkova, 2012; Rindova, Williamson, Petkova, and Sever, 2005). For example, when deciding whether to invest in or do business with new firms, affiliations with prominent and reputed third parties such as venture capital (VC) firms, investment banks, and alliance partners are treated

DOI:10.6814/NCCU202101456

as valuable signals favorable to the new firms (e.g., Lee and Wahal, 2004; Pollock, Chen, Jackson, and Hambrick, 2010; Stuart et al., 1999).

Previous studies show that third-party's prestigious endorsements serve as legitimate signals of new ventures by affiliating themselves with prestigious lead underwriters (Higgins and Gulati, 2003; Pollock et al., 2010; Fisher et al., 2017). These prestigious ties are even more important in a firm's early lifecycle and even complement other signals in the early financing stages (Hallen and Eisenhardt, 2012; Plummer et al., 2016). Plummer et al. (2016) reveals that new ventures should signal their quality by aligning with a third party, such as a venture development organization, who offers a combination of concept reshaping, mentorship, networking services, and financial access in return of a client service fee (Renault, 2012).

FlyingV requires project creators signing contracts with the platform before uploading the project to the website. By signing the contract, it is project creators' obligation to pay service fees to flyingV when project pledges reach the pre-determined funding goal. The amount of service fees varies depending on what assistance the project creators need. Consequently, flyingV will make efforts on ascertainment of project success. flyingV assigns project managers to project creators ever since the day project creators make inquiry and until the fundraising cycle ends. Thus, project managers, who know nuts and bolts of the project creators and projects' status, can be viewed as a credible third-party affiliation.

DOI:10.6814/NCCU202101456

The staffs of flyingV promoting projects base on their own observation and they would recommend projects on the frontpage by exhibiting project information on the banner slider or the Editor's Select section. The number of posting days of the projects depends on staff's judgement on how interesting a project is or an inspiring idea is being revealed. Kunz et al., (2017) reports that projects are posted in "Staff's selection" on Kickstarter have higher probability to success. Therefore, I propose the following:

Hypothesis 6a: More days a project being exhibited on the frontpage banner slider increase the propensity of the crowdfunding project success.

Hypothesis 6b: More days a project being exhibited on the Editor's Select section increases the propensity of the crowdfunding project success.

Figure 2-1 summarizes the hypotheses and related variables.

DOI:10.6814/NCCU202101456

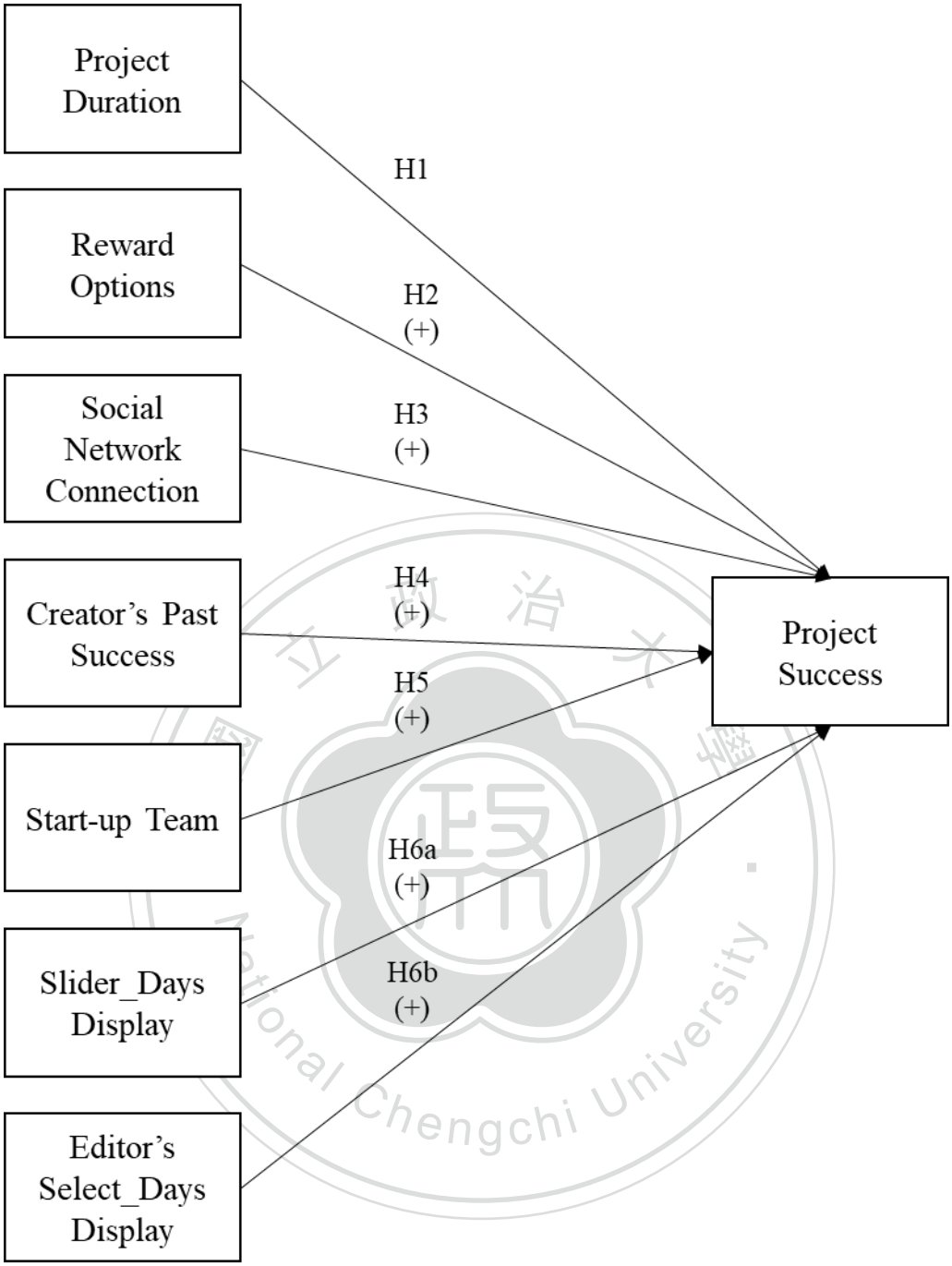

Figure 2-1. Research Framework

DOI:10.6814/NCCU202101456

2.3 DATA AND METHOD

2.3.1 Sample and Data Collection

As the goal of this study is to test several research hypotheses about reward-based crowdfunding, I extracted the data from flyingV, one of the largest and dominant reward-based crowdfunding platforms in Taiwan. It is accounted for 72.0 % shares of total accumulated crowdfunding amount of NTD 160 Million Dollars accumulated since the beginning of the platform until July 2014 calculated by Backer-Founder[1]. Since its inception in 2012, flying had raised more than NT$1.6 billion from backers by the end of 2019 (Backer-Funder, 2020). FlyingV applies the All-or-Nothing model (Cumming et al., 2020), which is likely to serve as a broadly useful model for examining crowdfunding efforts. By operating under All-or-Nothing model, project creators can receive the funds raised if they meet or exceed their pre-set funding goal by the end of a campaign.

Figure 2-2 illustrates a project webpage and Figure 2-3 illustrates a frontpage on the flying website. I collected data in the following steps. First, on a project webpage, I recorded the title of the project and project category (“Project categories”) from the upper left corner of the project webpage. Then, from the top right corner, I hand-coded the target pledge amount (“Project Goal”), funding duration (“Project Duration = Funding Start Date – End Date”), accumulate pledge amount, and funding progress. I recorded the funding progress of the

[1] Backer-Founder is a professional crowdfunding consulting company who has helped more than 300 Taiwan projects raising more than US$ 10 million around the world during the last 3 years.

DOI:10.6814/NCCU202101456

project is over or exceed 100% as a successful funding campaign (“Project Success”). I also counted and recorded the number of reward options of each crowdfunding project (“Reward Options”). From the right center of the webpage, I recorded if the project creator has set up a Facebook fanpage for themselves or for the campaign (“Social Network Connection”).

In addition, I clicked on the name of the project creator, the internet browser directed me to the “About me” page of the creator. This step helped me to verify whether the project was established by a single person, a start-up team, or an existing institution. Moreover, I clicked onto the project creator’s detail introduction page to record the number of projects who has created on the flyingV platform. After that, I calculated the number of success projects over the total number of projects initiated by a project creator to retrieve and record the creator’s crowdfunding success ratio (“Creator’s Past Success”).

In the meantime, I captured daily frontpage of the flyingV website. And I recorded the number of days of the projects are displayed on the banner slider session (“Slider Days Display”) and editor’s select section (“Editor’s Select Days Display”).

I covered the projects on flyingV from 22 December, 2014 to 11 March, 2015. The sample included 18,109 funding efforts representing 75.2 Million NT Dollars of pledges, of which 100 out of 189 projects (52.3%) succeeded by reaching their goals — the amount of money they planned to raise. In 2014, there were 78,688 funding efforts representing 115 Million NT Dollars of pledges, of which 238 out of 523 projects (45.5%) succeeded by

DOI:10.6814/NCCU202101456

reaching their goals. No large difference in success rates between our research period and the entire year of 2014 suggesting that our data were acceptable. I eliminated 2 projects that have over 100 reward options to avoid data distortion. I also interviewed flyingV staff to confirm our data collection process.

DOI:10.6814/NCCU202101456

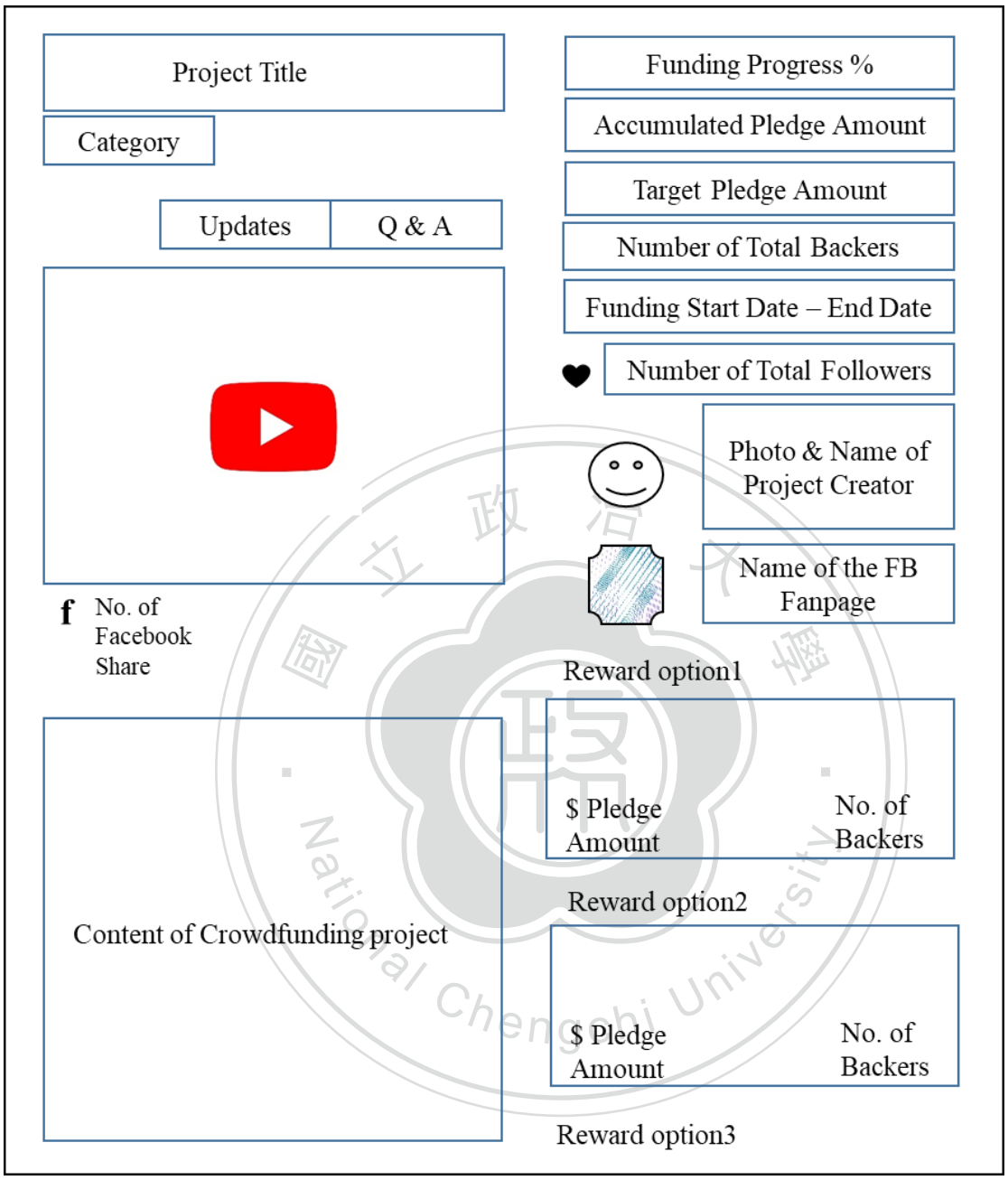

Figure 2-2. Project Schematic Representation Page on flyingV

DOI:10.6814/NCCU202101456

Figure 2-3. Frontpage Schematic Representation Page on flyingV

DOI:10.6814/NCCU202101456

2.3.2 Variable Measurements

Dependent Variable

Project Success. Project success indicates whether a project reaches or exceed its pre-set funding goal by the end of the fundraising duration. This variable is coded as 1 if a project successfully reaches its targeted goal and 0 otherwise.

Explanatory Variables

Project Duration. Project duration is measured by the number of days for which a project creator chooses to accept pledges.

Reward Options. Reward options are the number of different reward ways of each crowdfunding project.

Social Network Connection. A dummy variable was created, with 1 indicating the Facebook fanpage of the project is established and 0 otherwise.

Creator's Past Success. flyingV provides information on project creator's past projects history. flyingV visitors can click on the link of a project creator to find out how many projects he/she/they have been created on the platform and the progress of these projects. Creator's past success rate was calculated by the ratio of the number of success projects over the total number of projects initiated by a project creator.

Project creator as a start-up team. Following Hemer (2011), I coded a project as 1 if it was created by a start-up founding team and as 0 if an incumbent institution initiated it.

DOI:10.6814/NCCU202101456

Slider Days Display. On the frontpage of the flying website, the banner slider shows promotion message daily. I recorded the daily webpage and hand-coded the number of days of the crowdfunding projects which are displayed on the banner slider.

Editor's Select Days Display. On the frontpage of the flyingV website, the website administrator posts different projects on the Editor's Select session. I recorded the daily webpage and hand-coded the number of days of the crowdfunding projects which are displayed on the Editor's Select session. Table 2-1 summarizes the key variables in this chapter.

Control Variables

***Project Categories*.** Projects were categorized by flyingV into nine categories during that period, including Product Design (C1), Music and Film (C2), Art and Performance (C3), Entertainment (C4), Writing and Publication (C5), Society and Culture (C6), Technology Application (C7), Food and Drink (C8), and Travel (C9). Different types of projects may have different impacts on the success of fundraising. For instance, while Product Design and Technology Application projects usually deliver concrete products as rewards, Society and Culture projects normally propose a concept for the patronage reward. Thus, I controlled the effect of project types.

Project Goal. I used the logarithm of the amount of project goal to control the effect to the regression results.

DOI:10.6814/NCCU202101456

Table 2-1. Variable Definition

Variables	Definitions
Project Success	Coded 1 if a project reaches or exceed its pre-set funding goal by the end of the fundraising duration and 0 otherwise.
Project Duration	The number of days for which a project creator chooses to accept pledges.
Reward Options	The number of different reward ways of each crowdfunding project.
Social Network Connection	Coded 1 if a Facebook fanpage of the project is established and 0 otherwise.
Creator's Past Success	The ratio of the number of previous successful projects to the total number of projects launched by the project creator
Start-up Team	Coded 1 if a project is initiated by a start-up team and 0 if initiated by an incumbent institution
Slider Days Display	The number of days a project is exhibited on the banner slider section of the frontpage on the flyingV website
Editor's Select Days Display	The number of days a project is exhibited on the Editor's Select section of the frontpage on the flyingV website
Project Categories	Projects were categorized by flyingV into nine categories during that period, including Product Design (C1), Music and Film (C2), Art and Performance (C3), Entertainment (C4), Writing and Publication (C5), Society and Culture (C6), Technology Application (C7), Food and Drink (C8), and Travel (C9).
Project Goal	The logarithm of the amount of project goal.

DOI:10.6814/NCCU202101456

2.4 FINDINGS

Table 2-2 reports the descriptive statistics and correlations among the variables. And Table 2-2 shows the average success rate of is 0.52，which is quite reasonable compared to the industry average success rate of 50%-60% (Crowdwatch, 2015). The average of project funding duration is around 53 days. The average number of reward options of a project is around 9, which means generally project creators establish 8-10 types of reward for a reward-based crowdfunding project.

Table 2-3 presents the logit regression results. Model 1 examines the effect of all control variables. Model 2 examines the effect of project's legitimate signals. As shown in Model 2 in Table 2-3, project duration shows no impact on project success indicating that Hypothesis 1 is not supported. The result suggests that project backers do not see longer funding period as legitimate signals of the reward-based crowdfunding projects. Reward options is positively associated with the project success (B=.188, $p<0.01$). The result suggests that more reward options are perceived as a legitimate signal to project backers and has positive impact on the propensity of project success, thus supporting the Hypothesis 2. Social Network Connection is also positively associated with the project success (B=1.758, $p<0.001$). The result suggests that having a Facebook fanpage of the project is also perceived as a legitimate signal to project backers and hence increases the propensity of crowdfunding success. Therefore, Hypothesis 3 is supported.

DOI:10.6814/NCCU202101456

Model 3 examines the effect of project creators' legitimate signals. As shown in Model 3 in Table 2-3, project creator's past crowdfunding success is positively associated with project success (B=4.736, p<0.001) and thus Hypothesis 4 is supported. The result suggests that creator's past success crowdfunding experience is perceived as a legitimate signal to project backers and increases the propensity of crowdfunding success. Project creators as a startup team is also positively associated with the project success (B=1.364, p<0.01) and Hypothesis 5 is supported. The result shows that project creators being a new venture is perceived legitimate to project backers and increases the propensity of crowdfunding success.

Model 4 examines the effect of third-party legitimate signals. As shown in Model 4 in Table 2-3, the number of days a project is displayed on the banner slider section is positively associated with the project success (B=.238, p<0.01) and Hypothesis 6a is supported. The number of days a project is displayed on the Editor's Select section is also positively associated with the project success (B=1.225, p<0.05), hence Hypothesis 6b is supported. The results indicate third-party's recommendation are perceived as a legitimate signal and therefore increases the propensity of project success.

Model 5 examines the full model. As shown in Model 5 in Table 2-3, Project Duration and Reward Options shows no impact on project success. On the other hand, Social Network Connection (B=1.976, p<0.01), Creators' Past Success (B=5.055, p<0.001), Start-up team (B=1.286, p<0.05), Slider Days Display (B=.186, p<0.05), and Editor's Select Days Display

DOI:10.6814/NCCU202101456

(B=1.790, $p<0.01$) are positively associated with project success. The results of Hosmer-Lemeshow goodness-to-fit of Model 1-5 are all smaller than 0.05 which indicate no evidence of poor fit.

DOI:10.6814/NCCU202101456

Table 2-2. Descriptive Statistics and Correlations

		Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.	Project Success	0.52	0.50	0	1																	
2.	C1	0.20	0.40	0	1	1																
3.	C2	0.90	0.29	0	1	-.155*	1															
4.	C3	0.06	0.24	0	1	-.128	-.082	1														
5.	C4	0.04	0.20	0	1	-.104	-.066	-.055	1													
6.	C5	0.11	0.31	0	1	-.170*	-.108	-.090	-.072	1												
7.	C6	0.30	0.46	0	1	-.324**	-.207**	-.171*	-.138	-.226**	1											
8.	C7	0.10	0.29	0	1	-.160*	-.102	-.084	-.068	-.112	-.213**	1										
9.	C8	0.06	0.24	0	1	-.128	-.082	-.068	-.055	-.090	-.171	-.084	1									
10.	C9	0.04	0.20	0	1	-.104	-.066	-.055	-.044	-.072	-.138	-.068	-.055	1								
11.	Ln_Goal	11.79	1.26	8.01	14.91	-.174*	.083	-.141	.033	-.007	.094	.123	.078	-.117	1							
12.	Project Duration	53.07	15.49	1	93	.035	.055	-.118	.048	.136	-.073	.017	-.028	-.086	.236**	1						
13.	Reward Options	8.46	9.18	2	126	-.070	-.008	-.056	.032	.001	.118	.036	-.020	-.011	.152*	.082	1					
14.	Social Network Connection	0.60	0.49	0	1	.100	.217**	-.321**	-.205**	-.319**	.180*	.153*	-.011	-.044	.142	-.091	-.021	1				
15.	Creator's Past Success	0.36	0.46	0	1	.108	.154*	-.112	.005	.112	-.098	-.160*	-.065	.063	-.247**	-.141	.143*	.125	1			
16.	Start-up team	0.38	0.49	0	1	.025	.058	-.160*	-.003	.013	.007	.228**	-.115	-.165*	.064	.051	.006	.213**	.111	1		
17.	Slider Days Display	1.47	3.47	0	17	-.028	-.037	-.098	.093	.083	.128	-.064	-.085	-.089	.050	.001	.203**	.115	.131	.077	1	
18.	Editor's Select Days Display	0.37	1.23	0	10	-.049	-.003	-.077	-.020	-.046	.255**	-.096	-.077	-.062	.090	.056	.194**	.170*	.041	.086	.381**	1

*Significant at 0.05 level **Significant at 0.01 level ***Significant at 0.001 level

DOI:10.6814/NCCU202101456

Table 2-3. Logit Regression Results

Variable	Model 1	Model 2	Model 3	Model 4	Model 5 (Full Model)
Control Variables					
C1	-.384 (.843)	-.502 (.926)	-1.202 (1.213)	-.730 (.867)	-1.636 (1.230)
C2	.347 (.928)	-.099 (1.013)	-1.138 (1.421)	.037 (.959)	-2.060 (1.479)
C3	-2.560 (1.157)*	-1.797 (1.263)	-2.686 (1.914)	-2.746 (1.187)*	-2.108 (2.146)
C4	-.107 (1.056)	.501 (1.126)	-.465 (1.516)	-1.012 (1.133)	-.948 (1.729)
C5	-.006 (.900)	.810 (.961)	-1.031 (1.291)	-.512 (.939)	-.863 (1.387)
C6	.732 (.832)	.519 (.884)	1.194 (1.124)	.106 (.851)	.396 (1.100)
C7	-.721 (.929)	-1.204 (1.024)	-.823 (1.258)	-.896 (.954)	-1.531 (1.317)
C8	-1.169 (1.033)	-1.411 (1.151)	-1.638 (1.450)	-1.197 (1.043)	-2.305 (1.542)
Ln_Goal	-.558 (.155)***	-.782 (.188)***	-.401 (.213)*	-.653 (.169)***	-.722 (.263)**
Explanatory Variables					
1. Project Duration		-.015 (.012)			.014 (.017)
2. Reward Options		.188 (.064)**			.014 (.096)
3. Social Network Connection		1.758 (.502)***			1.976 (.726)**
4. Creator's Past Success			4.736 (.735)***		5.055 (.890)***
5. Start-up team			1.364 (.496)**		1.286 (.612)*
6. Slider Days				.238 (.083)**	.186 (.109)*
7. Editor's Select Days				1.255 (.612)*	1.790 (.832)**
Constant	6.790	7.684	3.316	7.882	5.098
Hosmer & Lemeshow Test	.592	.472	.479	.106	.893
Negelkerke R^2	.745	.405	.655	.383	.745
Cox & Snell R^2	.559	.303	.491	.287	.559
-2 Log Approximation	107.021	193.233	133.984	197.674	107.021

*Significant at 0.05 level **Significant at 0.01 level ***Significant at 0.001 level

DOI:10.6814/NCCU202101456

2.5 DISCUSSION

In this chapter I examine what legitimate signals influence the propensity of reward-based crowdfunding success. To this I extend the signal theory and legitimacy literatures in reward-based crowdfunding context. Current studies mostly focus on discovering success factors or quality signals of crowdfunding projects. My research, however, demonstrates that legitimacy signals play a significant role to reduce information asymmetry and obtain resources for project creators in high-noise environment. The empirical results suggest that multiple legitimate signals sent from project itself, project creators, and third-party recommendation could increase the propensity of a project's success. This chapter revisits signaling theory and legitimacy literatures to demonstrate that in a high-noise environment, such as reward-based crowdfunding platform, where multiple signalers, such as project creators and platforms, send multiple legitimate signals to multiple signal receivers (i.e., potential project backers) simultaneously to reinforce the crowdfunding success.

Moreover, three types of legitimate signals are empirically analyzed and major findings are as follows. First, project legitimacy signals such as having more reward options and establishing social network connection are more likely to achieve project funding success. Reward options should be designed carefully to cater for diversified needs of less sophisticated project backers who want to join the journey and contribute to the project. It is also important to have a connection to Facebook fanpages to increase the effect of network externality and community engagement. Unlike previous studies, my results show that project

DOI:10.6814/NCCU202101456

creators on a reward-based crowdfunding platform should establish another fan group on other social network platform, rather than connecting to project creator's personal social network (Mollick, 2014; Zheng, et al., 2014).

Second, project backers perceived project creators as a start-up team and possess past crowdfunding success experience as legitimate signals. It explains that backers are more willing to support new ideas and creativity from the early stage of ventures on reward-based crowdfunding platform. In addition, project creators should find a way to demonstrate a project creator's credibility such as other crowdfunding project success and start-up experiences.

Lastly, third-party's legitimate signals from crowdfunding platforms plays another important role to amplify the crowdfunding success. The staffs on flyingV knows more information of the projects than potential backers and they choose projects to be demonstrated on the frontpage based on their subjective judgement. By doing so, potential project backers are better convinced by these legitimate signals which alleviate the effect of information asymmetry thus increases the odds of crowdfunding project success.

Furthermore, I compared the prediction results of three types of legitimate signals. Table 2-4 presents the predictions results. As shown in Table 2-4, the prediction result of the full model is 86.8%. Model 2 examines the effect of project's legitimate signals and the prediction result is 72.5%. Model 3 examines the effect of project creator's legitimate signals and the prediction result is 81.5%. Model 4 examines the effect of third party's legitimate

DOI:10.6814/NCCU202101456

signals and the prediction result is 73%. The prediction results suggest that project creator's legitimate signals have bigger impact on reward-based crowdfunding success than those of other two types of legitimate signals. It is coherent to the work of Fisher et al. (2017) which indicates that crowdfunding backers are operating under a community logic and they want to participate the funding cycle and connect themselves to a new venture. As a result, under the community logic, project creators should pay attention on managing the crowds along the funding cycle and establish good reputations on past crowdfunding success.

While this study offers farther understanding on signaling theory, legitimacy literatures, and reward-based crowdfunding, several limitations and challenges in this study reveal the need for further investigation. First, it appears that reward-based crowdfunding process is close to pre-ordering and co-creation process. Pre-ordering seems like providing a good deal for the early customers but reveals risks of overestimated quality of the product/service simultaneously. Therefore, project creators may need to balance the motivation of the project backers between supporting the realization of an innovative idea and pleading for a good bargain. Most importantly, project creators may need to avoid choice-overloading (Chernev, Böckenholt, and Goodman, 2015) in designing reward options.

Second, traditional signaling theory states that signals are costly and observable (Connelly et al., 2011). However, my results show some variations that may contain some costless signals such as displaying reward options and setting up a connection to a Facebook fanpage. Previous studies show the positive impact on the fanpage engagement on consumers'

DOI:10.6814/NCCU202101456

brand awareness, word of mouth (WOM) activities, and purchase intention (Hutter, Hautz, Denhardt, and Füller, 2013). Therefore, setting up and managing a Facebook fanpage seems like a substantial task for a project creator and may turn out to be a costly and obvious signal. Future research may dive deeper in discovering network externality effect between social network platform and reward-based platform.

DOI:10.6814/NCCU202101456

Table 2-4. Prediction Results of 3 Types of Legitimate Signals

		Model 2 (Project's legitimacy)			Model 3 (Project creator's legitimacy)			Model 4 (3rd Party legitimacy)			Model 5 (Full Model)		
		Prediction			Prediction			Prediction			Prediction		
		Success		Percentage	Success		Percentage	Success		Percentage	Success		Percentage
Observations		0	1	-	0	1	-	0	1	-	0	1	-
Success	0	59	31	65.6	76	14	84.4	68	72	75.6	79	11	87.8
	1	21	78	78.8	21	78	78.8	29	70	70.7	14	85	85.9
				72.5			81.5			73.0			86.8

DOI:10.6814/NCCU202101456

Chapter 3: The more, the merrier? – The bystander effect on crowdfunding platforms[1]

3.1 INTRODUTION

Early-stage financing is very important for new ventures to succeed (Gompers and Lerner, 2004). However, due to their high-risk nature (Hanley and Girma, 2006), lack of a track record (Scholtens, 1999), limited cash flow (Hanley and Girma, 2006), and absence of collateral, new ventures face more difficulties than large or developed firms do to obtain financial resources (Cassar, 2004), thus making capital shortage a common phenomenon for new ventures. Conventionally, new ventures may access financial resources from different sources, such as entrepreneurs' families, friends, or angel inventors (Bruton, Khavul, Siegel, and Wright, 2015). Recently, crowdfunding has become a novel channel to obtain financial support for start-ups (Agrawal, Catalini, and Goldfarb, 2015).

Crowdfunding is "an open call, essentially through the Internet, for the provision of financial resources either in the form of donation or in exchange for some form of reward and/or voting rights to support initiatives for specific purposes" (Mollick, 2014). The query of whether crowdfunding can help new ventures raise funds more easily than the conventional means has been examined by researchers increasingly (Bruton et al., 2015; Mollick, 2014).

[1] Co-authored with Dr. Jyun-Yu Fu, Dr. Chwo-Ming Joseph Yu, and Dr. Kuo-Feng Huang.

DOI:10.6814/NCCU202101456

Prior studies suggest that founders' social networks in social media (i.e., Facebook or Twitter) prompt more people to visit the crowdfunding project initiator's webpage, thus increasing the publicity of the project and the possibility of the project being funded (Hong, Hu, and Burtch, 2018; Kuppuswamy and Bayus, 2018; Mollick, 2014). However, the social psychology literature suggests that a growing size of social networks create positive outcomes. That is, more people may lead to non-helping behaviors when people are aware of others being around; this is termed as the bystander effect (Darley and Latané, 1968). This implies that, in the crowdfunding context, more followers may negatively influence people's decision to provide funding to projects. Therefore, we propose that when more people pay attention to the crowdfunding project (that is, the followers of the project), they should not necessarily pledge (they are only bystanders of the project) (Darley and Latané, 1968).

While the bystander effect may arise on the crowdfunding platforms, prior studies have not provided direct evidence due to data unavailability (Kuppuswamy and Bayus, 2018). Fortunately, one reward-based crowdfunding platform in Taiwan, flyingV, records all related information by showing "Number of Followers" for each project. Followers refer to those who click "Like" on the project webpage. The followers' list includes "backers" and "bystanders." "Backers" are defined as project funders who contribute funds to the projects (Kuppuswamy and Bayus, 2018). "Bystanders" are those who only psychologically support the project but have not contributed funds to the project. Of course, not all bystanders will be

DOI:10.6814/NCCU202101456

converted into backers. However, the real effect of those bystanders on project fundraising performance in crowdfunding remains unexplored and represents a crucial oversight in the crowdfunding literature.

To bridge this gap, our research draws on the bystander effect in the social psychology literature to examine their role in crowdfunding. First, we propose that a higher bystander ratio (i.e., more bystanders but with fewer backers) in a project is negatively associated with the project's daily pledge amount. Furthermore, we propose two factors that mitigate these ambiguous situations by providing more information while mitigating the adverse bystander effect, i.e. organization legitimacy and project duration.

We expect organization legitimacy may lessen the adverse bystander effects (Belleflamme, Lambert, and Schwienbacher, 2013). A crowdfunding project can signal its organization legitimacy by revealing whether the project creator is an incumbent firm. Moreover, the funding duration would mitigate the bystander effect. Specifically, as the project fundraising period goes by, the platform helps spread project information to more people who will be often attracted to the crowdfunding project (Pariser, 2012). Therefore, we expect that an extended project funding period will convert “bystanders” into “backers,” thus mitigating the negative bystander effect on project fundraising. By examining 5,773 daily observations from 191 crowdfunding projects on the flyingV platform, our results support our three proposed hypotheses.

DOI:10.6814/NCCU202101456

This study complements recent works on the crowdfunding phenomenon and bridges several important gaps in the literature. While significant empirical work has pointed out the importance of the network effect on crowdfunding for entrepreneurs (Hong et al., 2018; Kuppuswamy and Bayus, 2018; Mollick, 2014), we take the social-psychological approach and suggest that the bystander effect reduces the aggregate daily pledge amount on crowdfunding platforms. Moreover, we extend the literature on bystander effects by examining its boundary conditions (Fischer, Krueger, Greitemeyer, Vogrincic, Kastenmuller, Frey, Heene, Wicher, and Kainbacher, 2011; Hussain, Shu, Tangirala, and Ekkirala, 2019). We propose that organization legitimacy and project funding duration would mitigate the adverse bystander effect. Overall, we contribute to a better understanding of funding dynamics on crowdfunding platforms.

After the introduction, we discuss the research hypotheses in section 2. Section 3 describes the research methodology and section 4 presents our empirical results. Section 5 discusses the findings, and the last section provides the conclusion for this study.

3.2 THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

3.2.1 Bystander Effects and Crowdfunding

The association between social ties and the success of startup projects has been widely documented in the literature (Shane and Cable, 2002; Sullivan and Ford, 2014). Particularly,

DOI:10.6814/NCCU202101456

prior studies suggest that family and friends are important sources of seed capital for startups (Agrawal, Catalini, and Goldfarb, 2011). According to Parker (2009), 31% of startups' capital comes from the founders' family and friends. This is because relatives and friends have an information advantage over other potential investors, which allows them to overcome information asymmetry between project creators and potential investors (Agrawal et al., 2011). In addition to family and friends, social media platforms, such as Facebook, is another important social network in our daily lives. Crowdfunding creators might benefit from sharing their projects on such platforms (Kuppuswamy and Bayus, 2018). Prior studies have demonstrated the significance of social media in shaping crowdfunding campaign performance. For instance, Mollick (2014) finds a positive association between the number of project initiator's Facebook friends and the success of crowdfunding fundraising. In a similar vein, Courtney, Dutta, and Li (2017) document that the use of media and backer sentiment are important predictors for funding success. Kuppuswamy and Bayus (2017) also find that the contribution number of other investors on the platform is crucial in shaping project funding success.

While prior studies have suggested that social networks play an important role in fundraising, whether the increasing social network size only provides benefits to the project remains unexplored (Chiu and Chang, 2015). Indeed, within the project's social network, there are a few followers who only psychologically support the project by merely clicking the

DOI:10.6814/NCCU202101456

"Like" button and not contributing funds. The question of interest is whether these types of social ties also contribute to better fundraising performance. We draw on the bystander effect perspective from the social psychology literature to develop our arguments.

The bystander effect is defined as situations in which individuals are less likely to offer any means of help to those in need when others are present (Darley and Latané, 1968). This perspective suggests that the greater the number of bystanders, the less likely it is that any one of them will offer help. Scholars show that bystanders abstain from providing help for three reasons (Latané and Nida, 1981). First, bystanders do not offer any help because they may fear that their helping behavior would be negatively construed by other bystanders, also known as audience inhibition. Second, in an ambiguous situation, bystanders are more likely to look for information cues from other bystanders. When bystanders notice that no one is providing help, they would restrain their helping behavior; this phenomenon is called social influence. Third, bystanders might not act in the presence of other people because they believe that someone else will take up this responsibility, also referred to as the diffusion of responsibility. Furthermore, Fischer et al. (2011) show that the three phenomena driving the bystander effect can also be extended to non-emergency situations, such as answering the door or helping with a flat tire. In such situations, people will assume that someone else will eventually help, and therefore, there is no need for them to provide any help. However, the bystander effect is less likely in emergency situations. Chiu and Chang (2015) extend the

DOI:10.6814/NCCU202101456

bystander effect to the social media context and find that the increasing size of social networks might not contribute to more social support that an actor may receive on a Facebook page.

Applying these insights, we explore how the bystander effect on the crowdfunding platform would influence fundraising performance. On the platform, people can psychologically support a project by clicking the "Like" button on the project's webpage. These followers also include bystanders, who have yet only psychologically supported the project and have not contributed any funds (Chan, Parhankangas, Sahaym, and Oo, 2020; Kuppuswamy and Bayus, 2017). These bystanders have a "wait-and-see" attitude because they have not made their funding decisions yet. Most crowdfunding platforms regularly send notification letters to bystanders once they have clicked the "Like" button. These letters provide updated project-related information, such as the percentage funded, number of followers for the project, and request for funding. In this respect, after clicking the "Like" button, these bystanders are still informed of the progress of the project, which is consistent with the notion in Latané and Darley (1968).

Drawing on the bystander effect literature, we expect that social influence and diffusion of responsibility mechanisms are particularly relevant in our context. First, prior studies find that most investors on the crowdfunding platform do not possess investment-related expertise or skills (Fisher, Kuratko, Bloodgood, and Hornsby, 2017), so investors tend to base their

DOI:10.6814/NCCU202101456

investment decisions on others' investing behavior (Chan et al., 2020; Kuppuswamy and Bayus, 2018). This tendency is particularly pronounced on the crowdfunding platform since this platform is a highly noisy and ambiguous environment (Kuppuswamy and Bayus, 2018). As such, the focal bystander might look for cues from other bystanders about how to act in this ambiguous situation. When the focal bystander notices that other bystanders still have a "wait-and-see" attitude, it is more likely that the focal bystander will mimic the non-helping behavior of others. Second, when those bystanders notice that there are others interested in the focal project in the notification letter, they might expect that they will take up the responsibility for providing help. That is, the bystanders might refrain from contributing funds since they tend to interpret the request for funding as "none of their business" and not something for which they should take the responsibility. In defining the bystander ratio as the number of bystanders divided by the number of followers, we suggest a negative association between the daily bystander ratio and the daily aggregate amount of capital received.

Hypothesis 1: The daily bystander ratio of a project is negatively associated with the daily project pledge amount.

3.2.2 Interplay of Bystander Effect and Organization legitimacy

If the bystander effect prevents bystanders from investing in crowdfunding projects, the question of interest would be: How can project creators alleviate such effects? From the social psychology perspective, when the project creator provides more information to bystanders,

DOI:10.6814/NCCU202101456

they are more likely to provide help (Darley and Latané, 1968). That is, they are more likely to intervene in less ambiguous situations than in more ambiguous situations. Thus, how to reduce ambiguity with more information becomes an important mechanism to convert bystanders to backers.

The crowdfunding platform presents significant information asymmetries between project creators and crowd funders (Colombo, Franzoni, and Rossi-Lamastra, 2015; Mollick, 2014). For crowd funders, they face two main information challenges. First, these crowdfunding projects take place on the platform in a relatively short period, and it is difficult for the followers to evaluate the quality of campaigns. For example, the project creators usually hold private and undisclosed information about the developmental stage, product quality, and prospectus of the campaign. Project creators may likely overstate the quality of their projects (Usman, Bukhari, Usman, Badulescu, and Sial, 2019). Second, most of the projects are at the conceptual or developmental stages, and followers have information disadvantage over whether the project creators will deliver the projects or services after the campaign ends (Mollick, 2014). Therefore, prior studies suggest that those followers rely on various signals, such as founders' social and human capital, third-party endorsement, or organization legitimacy (Colombo et al., 2015) to decide their pledge amount.

Considering the uncertainty of project quality, we expect that organization legitimacy would reduce information ambiguity and mitigate the bystander effect. Prior studies suggest

DOI:10.6814/NCCU202101456

that legitimacy is one positive signal that indicates a firm's underlying quality (Certo, 2003; Meyer and Rowan, 1977) and reduces investors' perception of project uncertainty. New ventures build legitimacy through affiliation with reputable or high-status third-party organizations, such as venture capitalists and university or alliance partners (Rao, 1994; Sorescu, Shankar, and Kushwaha, 2007; Zimmerman and Zeitz, 2002).

On the crowdfunding platform, organization legitimacy can be conferred by the background of the project initiator, such as whether these projects are initiated by incumbent organizations. Incumbent firms are considered legitimate for the following two reasons. First, incumbent firms have more information about their past business operations and a record of their historical financial performance (Stinchcombe, 1965). Second, incumbent firms have abundant resources, knowledge, and experiences necessary for completing the projects (Aldrich and Fiol, 1994). Consequently, incumbent firms have a higher probability of delivering their products or services after the campaign ends.

Organization legitimacy in the form of firm incumbency reveals the underlying quality of the project, which reduces project ambiguity. It is more likely that less ambiguous situations will turn those bystanders into backers, who finally contribute funds to these incumbent firms' projects. Thus, the negative relationship between the bystander effect and the daily pledge amount will be diminished for projects initiated by incumbent firms. Our research proposes the following hypothesis:

DOI:10.6814/NCCU202101456

Hypothesis 2: Organization legitimacy weakens the negative relationship between the daily bystander ratio of a project and the daily project pledge amount.

3.2.3 Interplay of Bystander Effects and Project Duration

The bystander effect literature suggests that if people know there are other bystanders in an emergent situation, the responsibility for helping would be diffused among them. Prior studies suggest that bystanders be more likely to take action in less ambiguous situations than in more ambiguous ones (Darley and Latané, 1968). Thus, providing those bystanders more information to reduce ambiguity is an important way to convert bystanders to backers.

We expect that the funding project duration may influence the degree of ambiguity and thus reduce the bystander effect on crowdfunding platforms. On the flyingV platform, notification letters are sent to the followers after they press the “Like” button on the project webpage. When project followers receive notification letters from the flyingV platform, they are aware of the progress of the project, including such details as the number of remaining funding days and the accumulated number of pledges. At the same time, project creators will continue to post project updates and answer project-related questions to all followers (Block, Hornuf, and Moritz, 2018), and this will significantly reduce information asymmetry between project creators and bystanders (Mollick, 2014). Therefore, the longer the project funding duration, the more likely it that the bystanders have more opportunities to gather and evaluate information. The reduced project ambiguity is therefore more likely to convert bystanders to

DOI:10.6814/NCCU202101456

backers. We propose the following hypothesis:

Hypothesis 3: Project funding duration weakens the negative relationship between the daily bystander ratio of a project and the daily project pledge amount.

Thus far, we propose three hypotheses and Figure 3-1 illustrates our research framework.

DOI:10.6814/NCCU202101456

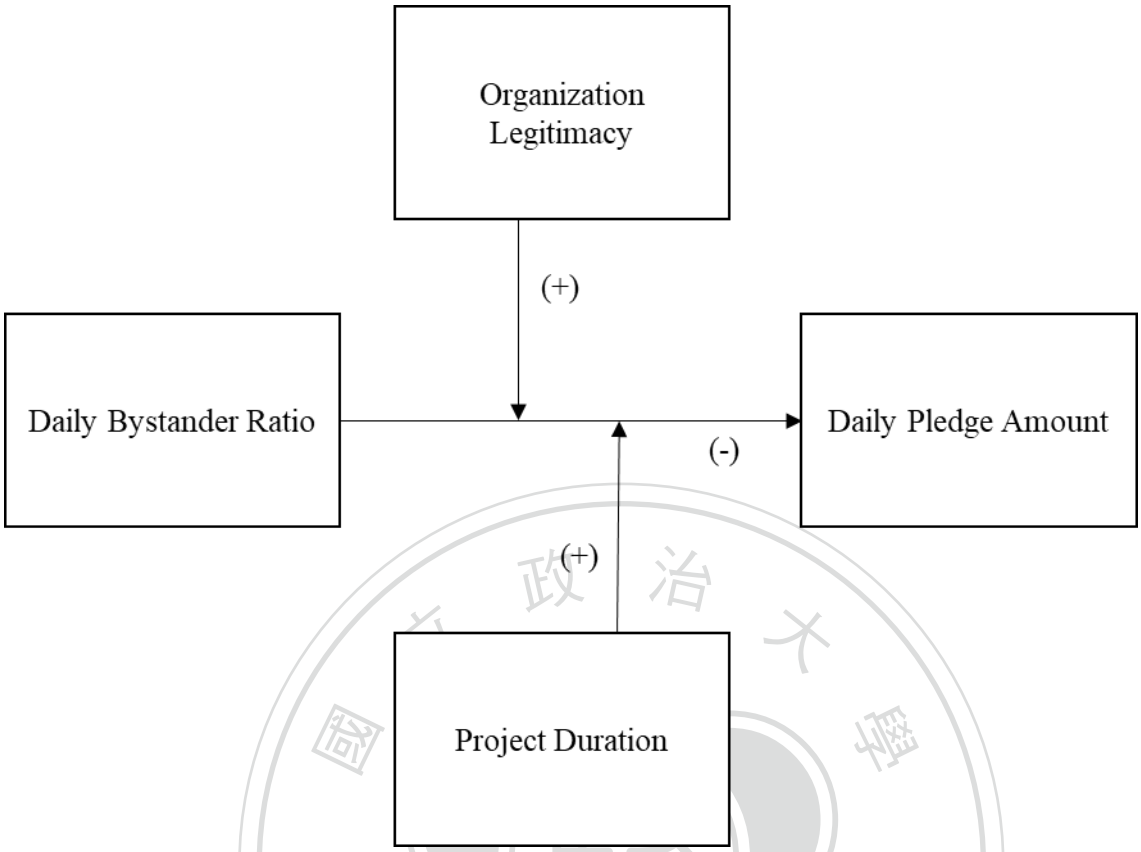

Figure 3-1. Research framework

DOI:10.6814/NCCU202101456

3.3 DATA AND METHOD

3.3.1 Sample Construction and Data Collection

As the goal of this paper is to test research hypotheses about crowdfunding, we extracted data from flyingV, one of the largest and dominant reward-based crowdfunding platforms in Taiwan. flyingV, established in 2012, operates under the All-or-Nothing model, which is a commonly used model for crowdfunding platforms. That is, project creators can receive the funds raised if they meet or exceed their pre-set funding goal by the end of a campaign. For backers, they receive tangible products or services in return for their financial contributions. Since its inception in 2012, flyingV had raised more than NT$1.6 billion from backers by the end of 2019 (Backer-Funder, 2020).

We hand-collected 5,773 daily observations from the webpage of the 191 projects on the flyingV platform from December 22 2014 to March 11 2015 and extracted related information such as funding days, the amount of target pledge, the number of backers, and the number of followers.

DOI:10.6814/NCCU202101456

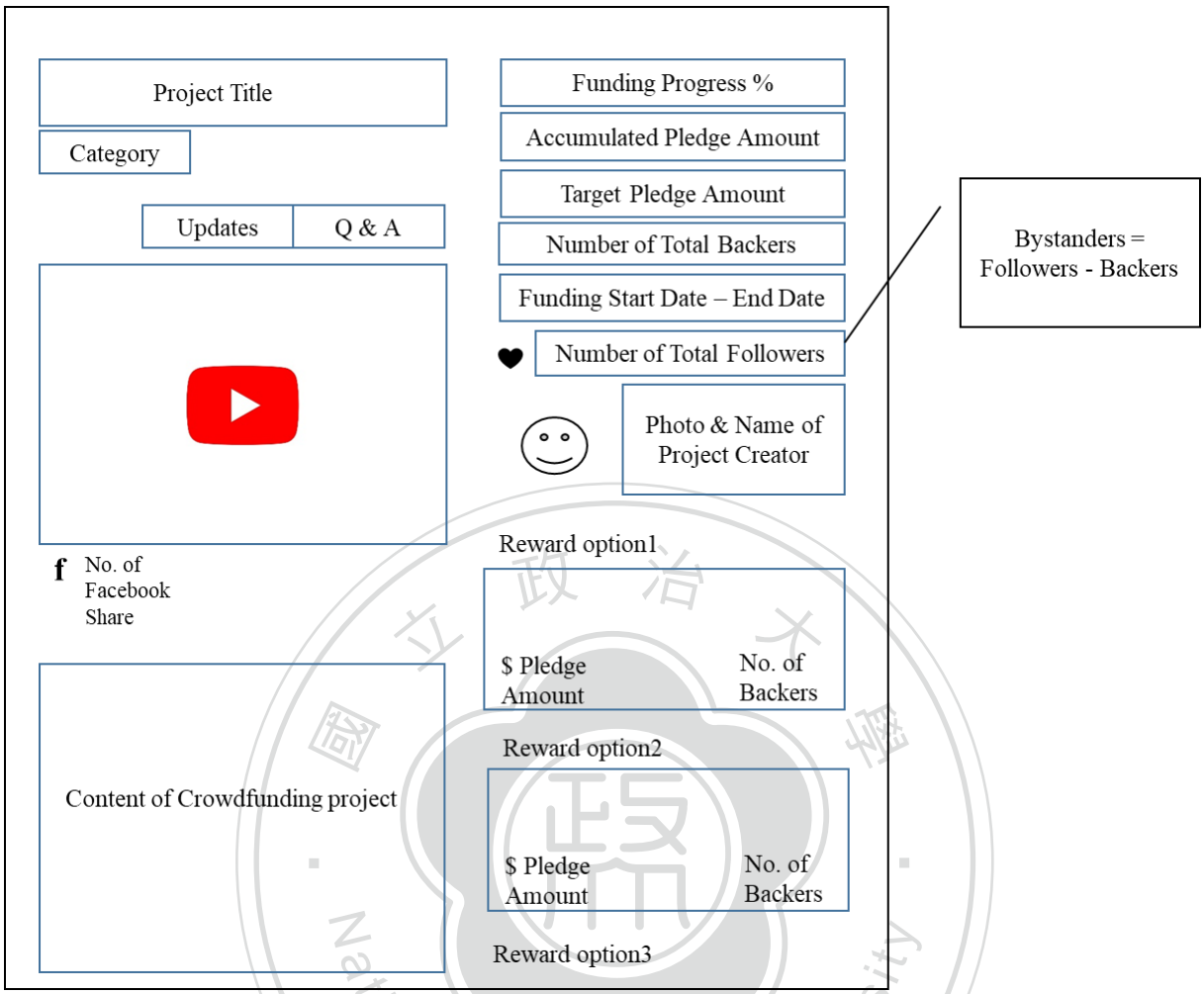

Figure 3-2. Project schematic representation page on flyingV

DOI:10.6814/NCCU202101456

Figure 3-2 illustrates a project page on the flyingV website. We collected our data in the following steps. First, we recorded the title of the project and project category ("Project Categories") from the upper left corner of the webpage. Thus, from the top right corner, we recorded the number of accumulated backers ("Number of Total Backers"), the number of accumulated followers ("Number of Total Followers"), and the number of accumulated pledges for each day. By doing so, we were able to record not only the number of daily backers, followers, and pledges but also the increase in the number of backers, followers, and pledge amount. We subtracted the daily number of backers from the daily number of followers to ascertain the daily number of bystanders; to derive the daily bystander ratio, we divide the daily number of bystanders by the daily number of followers.

Moreover, we also hand-coded the funding duration on the project page ("Funding Start Date – End Date"), the name of the project creator, and the target number of pledges from the project creator's original expectation ("Target Pledge Amount"). We calculated the days between the funding start date and end date to get the data of project duration. When we clicked on the name of the project creator, the Internet browser direct us to the "About me" page of the project creator. This step enabled us to verify whether the project was initiated by a single person, an entrepreneur team, or an existing organization.

To ensure the accuracy of daily observations hand-coded from the flyingV platform, we double-checked the sum of daily numbers against funding amounts and the total number of

DOI:10.6814/NCCU202101456

backers on the flyingV platform. We also interviewed flyingV staff to confirm our data collection process. Our final sample consisted of 5,773 funding efforts representing NT $ 75.2 Million of pledges, of which 100 out of 191 projects (52.3%) succeeded in reaching their funding goals.

According to flyingV, in 2014, 78,688 funding efforts were representing NT $ 115 Million of pledges, of which 238 out of 523 projects (45.5%) succeeded in reaching their funding goals. No significant differences in success rates exist between our sample period and all of 2014, thus suggesting that our data should be representative of the funding efforts on the flyingV platform.

3.3.2 Variable Measurements

Dependent Variable

Daily Pledge amount. This variable refers to the project pledge amount for each day, i.e., the total amount that a crowdfunding project received at the end of each day. To reduce the skewness of this value, we take the logarithm of the monetary value of the daily pledge amount.

Explanatory Variable

Daily Bystander ratio. The bystander ratio is the number of bystanders divided by the number of followers for each day. The flyingV platform provides information about the number of followers and backers. The number of bystanders is given by the difference between the

DOI:10.6814/NCCU202101456

numbers of followers and backers. A higher ratio indicates that fewer people have pledged but there are more bystanders. To alleviate concerns about reverse causality, this variable is lagged by one day.

Moderators

Organization legitimacy. The attributes of project creators may also affect the daily amount of fundraising. We coded *organization legitimacy* as 1 if a project is initiated by an incumbent private or public organization and as 0 if it is initiated by a non-incumbent firm.

Project duration. This variable represents the number of fundraising days for which a project is open to accept donations from backers on the platform. The flyingV platform allows projects to raise funds for as many as 90 days, but most projects set their duration from 30 to 60 days. We take the logarithm value of this variable to reduce its skewness (Courtney et al., 2017).

Control Variables

Cumulative pledge amount. Considering the impact of prior funding, we calculate the cumulative amount of money that has been pledged into this project from the beginning of the campaign to the previous day (Chan et al., 2020). We use the ratio of cumulative pledge amount to the funding goal in our empirical analysis.

Creator's Past Success. To control for perceived project quality, we use the project creators' past campaign experiences on the flyingV platform as a proxy. Project creators with better

DOI:10.6814/NCCU202101456

past performance are expected to launch projects of better quality (Usman et al., 2019). Moreover, such experiences represent a certain guarantee for delivering the products or services after the campaign ends (Courtney et al., 2017). We manually gathered information from the project creators' profiles on the flyingV platform. In addition, we excluded those projects whose starting date is before December 22, 2014, and the ending date is after March 11, 2015. We only include those projects that are completed before the start date of the focal project. The past success of the project creator is the ratio of the number of previous successful projects completed by the project creator to the total number of projects launched by this project creator on the flyingV platform. A project is considered successful if the project reaches its funding goal by the end of the crowdfunding campaign.

Project categories. Projects are categorized by flyingV into nine categories in our data collection period, including product design (C1), music and film (C2), art and performance (C3), entertainment (C4), writing and publication (C5), society and culture (C6), technology application (C7), food and drink (C8), and travel (C9). Different types of projects may have different impacts on the daily amount of fundraising. For instance, while product design and technology application projects usually deliver concrete products as rewards, society and culture projects typically propose donations. To control for unobservable category-specific heterogeneity, we add category fixed effects in our main analysis. Table 3-1 summarizes the key variables in our research.

DOI:10.6814/NCCU202101456

Table 3-1. Variable Definition

Variables	Definitions
Daily Pledge amount	The total amount of pledges that a crowdfunding project received at the end of each day. We take the logarithm value of this variable.
Daily Bystander ratio	The ratio of the daily number of bystanders over the daily number of backers
Organization legitimacy	Coded 1 if a project is initiated by an incumbent firm and 0 if initiated by non-incumbent firms
Project duration	The number of days for which a project creator chooses to accept pledges. We take the logarithm value of this variable.
Cumulative pledge amount	The cumulative number of pledges until day t-1 divided by the funding goal
Creator's past success	The ratio of the number of previous successful projects to the total number of projects launched by the project creator

DOI:10.6814/NCCU202101456

3.3.3 Statistical Methods

We use regression models with robust standard errors to test our hypotheses. We use robust standard errors to consider the correlation among error terms over time within the same project. In the regression models, we also added year, month-of-year, and day-of-week fixed effects to control for unobservable time factors that may influence the pledge amount over time. Category fixed effects are added to control for unobservable category-level heterogeneity.

Model 1 examines the effects of the bystander ratio on the daily aggregate amount of capital received. Models 2 tests the moderating effects of organization legitimacy on the daily amount of fundraising. Model 3 examines the moderating effects of project funding duration on the daily amount of fundraising. For the robustness tests, we also examine our three main hypotheses at the project level.

3.4 RESULTS

Table 3-2 shows the descriptive statistics and correlations among variables. Since a moderate level of correlation among variables is observed, we further used variance inflation factor (VIF) to examine the multicollinearity problem. Our results show that the VIF scores for all independent variables are less than 1.6, suggesting no serious concerns about multicollinearity (Bowerman and O'Connell, 1990).

DOI:10.6814/NCCU202101456

Table 3-2 shows that the average bystander ratio is 0.45 in our sample, suggesting that approximately 45% of followers do not pledge funds to the campaign. Approximately 39.2% of campaigns are initiated by incumbent firms. Each campaign has 55.7 (=$e^{4.02}$) days of funding duration. The average cumulative pledge amount is 0.934. Moreover, we also find that some campaigns receive almost 100 times more than their amount required in one day, and it seems that some campaigns perform much better than the rest of the campaigns.

Our unreported results further indicate that approximately 29.62% of our observations are in the society and culture (C6) category, and 21.38% of observations are in the product design (C1) category. Technology application (C7) and music and film (C2) account for 9.45% and 8.59% of our sample, respectively. These four categories account for approximately 70% of our sample.

DOI:10.6814/NCCU202101456

Table 3-2. Descriptive Statistics and Correlations

	Mean	S.D.	Min	Max	1	2	3	4	5	6
1. Daily Pledge amount	2.983	3.868	0	13.102	1					
2. Daily Bystander ratio	0.45	0.332	0	1	-0.412	1				
3. Organization legitimacy	0.392	0.488	0	1	-0.073	0.042	1			
4. Project duration	4.021	0.36	0.693	5.587	-0.066	0.027	-0.061	1		
5. Cumulative pledge amount	0.934	8.653	0	193.726	0.16	-0.084	-0.063	-0.027	1	
6. Creator’s past success	0.027	0.158	0	1	0.037	-0.049	0.023	-0.366	-0.012	1

Notes: Number of observations = 5,773; All correlations above |.027| are significant at 0.05 level

DOI:10.6814/NCCU202101456

Table 3-3 presents the regression results. Model 1 examines the effect of the bystander ratio. As shown in Model 1 of Table 3-3, the daily bystander ratio was negatively associated with the daily number of pledges ($B = -4.3108$, $p < 0.01$). The results suggest that bystander effects do harm daily fundraising, thus supporting our Hypothesis 1. Model 2 of Table 3-3 tests the moderating effect of organization legitimacy on the daily amount of fundraising. The results suggest projects initiated by incumbent firms mitigate the negative impact of the bystander ratio on the daily amount of fundraising ($B = 0.6690$, $p < 0.05$). We thus receive qualified support for Hypothesis 2.

Figure 3-3 visualizes the moderating effect of organization legitimacy on the relationship between bystander ratio and pledge amount based on Model 2 of Table 3. Specifically, we plot the effect of the bystander ratio when organization legitimacy takes the value of one ("organization legitimacy") and zero ("no organization legitimacy"). The downward sloping line clearly shows that the negative effect of the bystander ratio is weakened when the project is of a higher level of organization legitimacy, i.e., projects initiated by incumbent firms.

DOI:10.6814/NCCU202101456

Table 3-3. Regression Results for the Effect of Bystander Ratio on Pledge Amount (Daily level)

	Model 1 Pledge amount	Model 2 Pledge amount	Model 3 Pledge amount
H1: Bystander ratio	-4.3108***	-4.5539***	-8.2143***
	(0.1611)	(0.2107)	(1.2786)
H2: Bystander ratio * organization		0.6690**	
		(0.2930)	
H3: Bystander ratio * project duration			0.9721***
			(0.3220)
Organization legitimacy	-0.5560***	-0.8647***	-0.5716***
	(0.0981)	(0.1904)	(0.0985)
Project duration	-0.6235***	-0.6468***	-1.0873***
	(0.1402)	(0.1407)	(0.2126)
Cumulative pledge amount	0.0549***	0.0543***	0.0546***
	(0.0034)	(0.0034)	(0.0034)
Creator's Past Success	0.2809	0.2756	0.4586
	(0.3505)	(0.3506)	(0.3632)
Constant	7.0569***	7.2444***	8.9233***
	(0.6044)	(0.6162)	(0.8708)
# of observations	5773	5773	5773
Adjusted R-square	0.2236	0.2241	0.2243

Robust standard errors are shown in parentheses. * significant at 0.1 level; ** significant at 0.05 level; *** significant at 0.01 level. Year, month, day, and category fixed effects included in the regression models but not shown in the table

DOI:10.6814/NCCU202101456

Model 3 of Table 3-3 tests Hypothesis 3, which predicts that the negative effect of bystander ratio on daily fundraising will become weaker for projects with a longer funding duration. The results show that project duration weakens the negative relationship between bystander ratio and the daily amount of fundraising ($B = 0.9721$, $p < 0.01$). Thus, supporting Hypothesis 3.

Based on Model 3 of Table 3-3, Figure 3-4 plots the moderating effect of project duration when it takes the value of one standard deviation above (long project duration) and below (short project duration) the mean value of project duration. It shows an apparent positive moderating effect so that the negative impact of bystander ratio becomes smaller as the project duration is extended. However, the negative impact of the bystander ratio is stronger for those projects with a shorter period. Therefore, we find support for Hypothesis 3.

DOI:10.6814/NCCU202101456

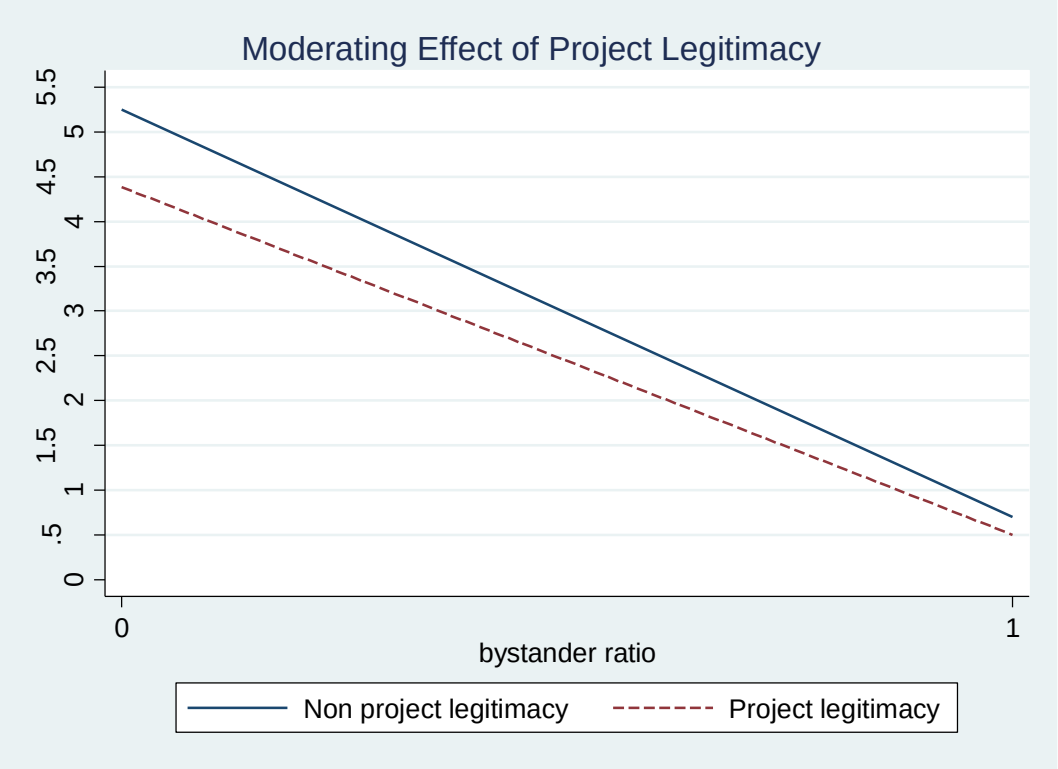

Figure 3-3. Moderating Effect: Organization Legitimacy

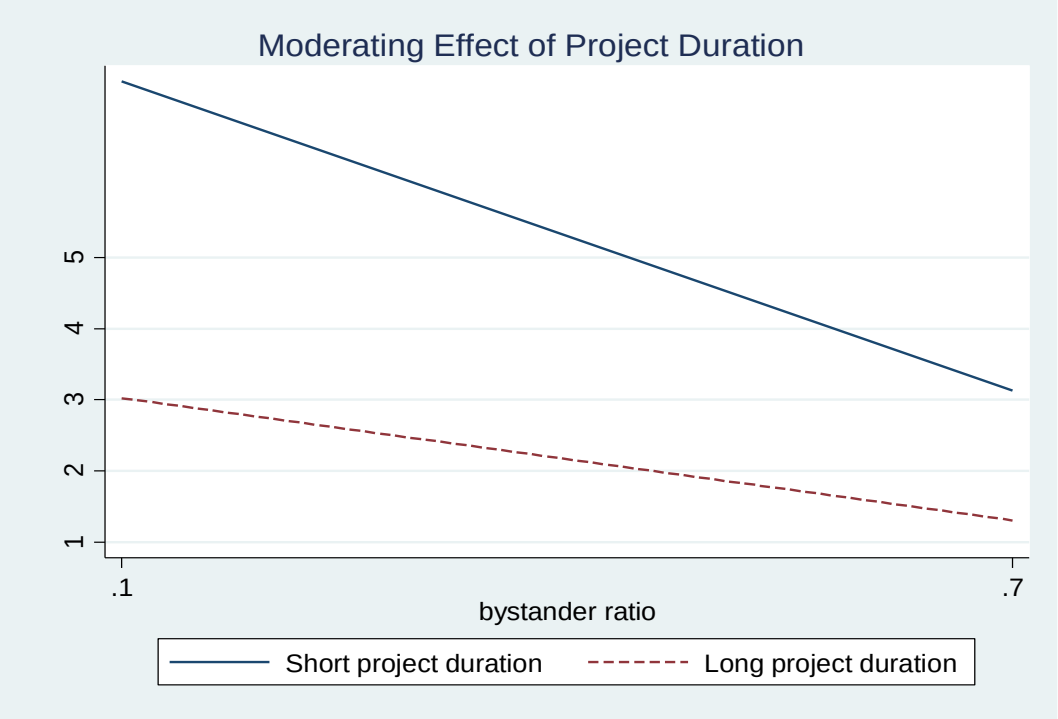

Figure 3-4. Moderating Effect: Project Duration

DOI:10.6814/NCCU202101456

Concerning the controls, we interpret our results based on Model 1 of Table 3-3. We found that organization legitimacy is negatively associated with the daily aggregate raised amount (B = -0.5560, $p < 0.01$). While firm incumbency may provide crowd funders with information about the project creator, it may also indicate that these incumbent firms have financial resources to support their campaign projects; therefore, these projects would need fewer contributions from crowd funders. Given the possible conflicting interpretations, prior studies regarding the effect of project creators also provide mixed evidence (Bukhari, Usman, Usman, and Hussain, 2019; Josefy, Dean, Albert, and Fitza, 2017).

Consistent with prior studies (Chan et al., 2020), we found that project duration leads to a lower level of daily pledge amount (B = -0.6235, $p < 0.01$). This finding seems to show that campaigns with longer project duration indicate the project creator's low self-confidence, thus influencing investors' confidence in the focal project. However, the cumulative pledge amount is positively associated with the level of daily pledge amount (B = 0.0549, $p < 0.01$). Finally, we found that creator's past success is not significantly related to the daily pledge amount (B = 0.2809, $p > 0.1$).

DOI:10.6814/NCCU202101456

3.4.1 Robustness Test

We also checked the robustness of our findings at the project level. Table 3-4 shows the results of the robustness tests. We used a logistic regression since our dependent variable, *Project Success*, is a binary variable. *Project success* is equal to 1 if the project achieves the targeted funding goal at the end of the funding period, and equal to 0 otherwise.

Model 1 examines the effect of the bystander ratio on project success. Model 1 of Table 3-4 shows that the bystander ratio is negatively associated with project success ($B = -2.7732$, $p < 0.05$). Models 2 and 3 show the moderating effect of organization legitimacy and project duration, respectively ($B = -4.1193$, $p > 0.1$; $B = 1.1308$, $p > 0.1$). We do not find the moderating effects for our project-level analysis. Overall, these results suggest that our project-level results are partially consistent with our daily-level findings.

3.4.2 Controlling for Endogeneity Concerns

While we treat the bystander ratio as an exogenous variable in our main analysis, the negative relationship between the bystander ratio and the daily pledge amount may be driven by some omitted variables. For example, creator's past success experience likely motivates investors to become passive (i.e., bystanders) and reduce their pledge amount concurrently. To address potential endogeneity, we use the two-

DOI:10.6814/NCCU202101456

stage residual inclusion (2SRI) regression method (Giustiziero, Kaul, and Wu, 2019; Terza, Basu, and Rathouz, 2008; Wooldridge, 2015).

Table 3-5 reports the results of the 2SRI regressions. In the first stage, we regress the bystander ratio on creator's past success and other control variables. In the first-stage regressions (Model 1 of Table 5), we find that the coefficient of creator's past success is significantly negative ($B = -0.0918$, $p < 0.01$), indicating that a higher level of creator's past success leads to a lower level of bystander ratio. In the second stage, we include the predicted first-stage residual as an additional variable in the regression model. Including the predicted residual in the second stage helps control for the potential endogeneity concerns during our estimation.

In Model 2 of Table 3-5, we find that the coefficient of bystander ratio is significantly negative ($B = -12.9646$, $p < 0.01$). Our finding continues to hold when we add our interaction terms. Specifically, organization legitimacy and project duration weaken the negative relationship between the bystander ratio and daily pledge amount, respectively ($B = 0.6878$, $p < 0.05$; $B = 1.0431$, $p < 0.01$). In sum, these results lend support to our three proposed hypotheses.

DOI:10.6814/NCCU202101456

Table 3-4. Regression Results for the Effect of Bystander Ratio on Project Success (Project level)

	Model 1	Model 2	Model 3
	Project success	Project success	Project success
H1: Bystander ratio	-2.7732**	-2.0282	-7.2811
	(1.4025)	(1.2744)	(6.8317)
H2: Bystander ratio * organization		-4.1193	
		(3.0772)	
H3: Bystander ratio * project duration			1.1308
			(1.8593)
Organization legitimacy	-1.1136**	0.2238	-1.1261**
	(0.4939)	(1.1168)	(0.4934)
Project duration	-1.0210**	-0.9954	-1.4727*
	(0.4115)	(0.6985)	(0.8172)
Cumulative pledge amount	3.9867	4.0747***	4.0017
	(2.9282)	(0.8749)	(2.9863)
Creator's past success	-4.5122**	-4.7183**	-4.5449**
	(1.9458)	(1.9738)	(2.1763)
Constant	2.5290	2.4576	4.3544
	(3.4649)	(3.5019)	(3.4906)
# of observations	191	191	191
Pseudo R-square	0.5614	0.5698	0.5621

Robust standard errors are shown in parentheses. * significant at 0.1 level; ** significant at 0.05 level; *** significant at 0.01 level. Category fixed effects included in the regression models but not shown in the table

DOI:10.6814/NCCU202101456

Table 3-5. Regression results for the Effect of Bystander Ratio on Pledge Amount (Daily level and 2SRI method)

	Model 1 First stage	Model 2 Second stage	Model 3 Second stage	Model 4 Second stage
Dependent variable	Bystander ratio	Pledge amount	Pledge amount	Pledge amount
H1: Bystander ratio		-12.9646***	-13.2803***	-17.4711***
		(1.5969)	(1.5996)	(2.1436)
Creator's past success	-0.0918***			
	(0.0312)			
H2: Bystander ratio * organization			0.6878**	
			(0.2942)	
H3: Bystander ratio * project				1.0431***
				(0.3077)
Organization legitimacy	0.0202**	-0.4106***	-0.7260***	-0.4184***
	(0.0088)	(0.1036)	(0.1941)	(0.1037)
Project duration	0.0058	-0.5004***	-0.5225***	-1.0168***
	(0.0151)	(0.1350)	(0.1354)	(0.2141)
Cumulative pledge amount	-0.0032***	0.0273***	0.0265***	0.0260***
	(0.0003)	(0.0059)	(0.0059)	(0.0060)
First-stage residual		8.6283***	8.6938***	8.9483***
		(1.6103)	(1.6105)	(1.6164)
Constant	0.3911***	10.3268***	10.5387***	12.5356***
	(0.0651)	(0.7088)	(0.7170)	(1.0219)
# of observations	5773	5773	5773	5773
Adjusted R-square	0.0169	0.2186	0.2192	0.2196

Robust standard errors are shown in parentheses. * significant at 0.1 level; ** significant at 0.05 level; *** significant at 0.01 level. Category fixed effects included in the regression models but not shown in the table

DOI:10.6814/NCCU202101456

3.5 DISCUSSION

In this study, funding dynamics are explored on the crowdfunding platform by examining the role of the bystander effect in project fundraising. While previous studies have provided some evidence on this relationship (Chan et al., 2020; Mollick, 2014), our study contributes to this research stream by explicitly examining the notion of the "bystander effect" on the crowdfunding platform. Specifically, we investigate whether the bystanders on the flyingV platform would influence the daily aggregate amount of fundraising. Drawing on insights from the social psychological literature, we find that a higher bystander ratio may discourage these followers from pledging to the project. Consequently, a higher bystander ratio may lead to a lower level of daily pledge amount.

In addition to introducing the bystander effect, we also extend this line of research by considering its boundary conditions (Fischer et al., 2011; Hussain et al., 2019). First, we find that organization legitimacy, derived from firm incumbency, is an important signal to these bystanders, and our results reveal that organization legitimacy mitigates the negative bystander effect. Moreover, the longer the duration of the fundraising period, the weaker the negative bystander effect. Our findings suggest that when the project duration is extended, backers have more opportunities to collect information about the focal campaign, thus reducing the information

DOI:10.6814/NCCU202101456

asymmetries between backers and the campaign. As such, potential backers may decide to pledge rather than be a passive bystander.

One unique feature of the flyingV platform is that it records the number of followers and backers. As such, we can derive the number of bystanders by subtracting the number of backers from the number of followers. Such information is important since most crowdfunding platforms such as Kickstarter only records the number of backers who pledge (Kuppuswamy and Bayus, 2018). By using data from the flyingV platform, we can capture information about the number of bystanders who are attentive to the project but have not contributed funds yet. Our measure of bystanders is thus closer to the original definition in Darley and Latané (1968). Overall, our using of data from the flyingV platform provides us an opportunity to directly capture the bystander effect in the crowdfunding context.

Another unique feature of the flyingV platform is that it allows project creators to reach the real crowd. In particular, when people click on the Facebook "share" button on the project page, their Facebook friends will also receive information about the current project. After their Facebook friends share this crowdfunding project information on their individual Facebook message wall, based on the algorithm of the Facebook platform (Pariser, 2012), more people will have an opportunity to receive information about the focal crowdfunding project. Other crowdfunding platforms,

DOI:10.6814/NCCU202101456

such as Kickstarter, primarily rely on the social network of the project creator alone. In this regard, flyingV helps project creators reach a broader audience. Thus, using data from the flyingV platform allows us to better examine the social network and the associated bystander effect in crowdfunding.

3.6 THEORETICAL CONTRIBUTION

Our research contributes to the existing crowdfunding research by providing new insights into the funding dynamics on a crowdfunding platform. While prior studies have examined how the founders' social networks influence funding success (e.g., Kuppuswamy and Bayus, 2018), our study cautions that this social network may cause potential adverse bystander effects. Specifically, when the bystander notices that other bystanders also receive the request for funding in the notification letter, this will negatively influence a person's decision to fund. This is primarily because the bystander might believe that someone else will provide help. From this perspective, the bystander ratio leads to a reduced number of pledges. Our findings provide more direct empirical evidence about the bystander effect on the crowdfunding platform.

Our research also contributes to the literature on the bystander effect. While prior studies have examined the bystander effect in experimental or field situations (Darley and Latané, 1968; Fischer et al., 2011), we apply these insights in the crowdfunding setting. Specifically, we add to this line of literature by providing empirical evidence

DOI:10.6814/NCCU202101456

that the bystander effect reduces the daily pledge amount on crowdfunding platforms. Furthermore, in line with information asymmetries arguments, we find that organization legitimacy and funding durations convert more bystanders into backers. Our results thus provide a more nuanced perspective on how the bystander effect, organization legitimacy, and funding duration all together shape project fundraising performance.

3.7 MANAGERIAL IMPLICATIONS AND LIMITATIONS

Our research has several policy implications. First, entrepreneurs can gain further insights from our research, especially that not all followers contribute funds to campaigns. Notably, some of those followers are only bystanders who do not pledge and may cause the bystander effect, which negatively influences fundraising performance. In this respect, project creators may consider more effective communication strategies that would help convert bystanders into backers. Our findings suggest that organization legitimacy in the form of firm incumbency and funding duration mitigate the negative bystander effect.

Second, our research also highlights the importance of setting funding durations, as this will affect the projects' amount of capital received. Specifically, a long funding period will weaken the bystander effect, primarily because these followers have more

DOI:10.6814/NCCU202101456

time to evaluate and gather information about campaigns. By setting an appropriate period of funding duration, creators would likely convert bystanders into real backers.

Third, our findings also provide some implications for crowdfunding platform managers. While making the crowdfunding platform more transparent to users is of primary importance (Cumming, Vanacker, and Zahra, 2021), our findings suggest that how investors interpret such information influences their pledge amount. Specifically, additional details about the bystander ratio provided by the flyingV platform lead to a reduced daily pledge amount, which was counterintuitive. Thus, platform managers should caution that some project-related information they display on the webpage might lead to unintended consequences.

Several limitations may constrain the generalizability of our findings. First, we use a Taiwan-based crowdfunding platform, flyingV, as our sample of analysis. Compared to Kickstarter in the US, the biggest crowdfunding platform in the world, the scale of flyingV is relatively small, leading to the concern about the generalization of our case. However, from the social psychology perspective, the behaviors of investors should be similar all around the world regardless of the size of the platform (Fischer et al., 2011). Thus, our research provides an initial attempt that allows future researchers to explore related research questions on other crowdfunding platforms.

Second, in line with the definitions in Darley and Latané (1968), we define

DOI:10.6814/NCCU202101456

bystanders as those who pay attention to the project but who do not pledge (do not offer help). On the crowdfunding platform, those followers likely become bystanders for different reasons, for example, they might forget to "unclick" the "Like" button on the project webpage after evaluating the project and changing their perception. Indeed, due to data limitation, we do not know why those bystanders do not pledge. However, the bystander literature primarily focuses on how the presence of bystanders influences non-helping behavior (Darley and Latané, 1968; Fischer et al., 2011), without explicitly considering the motivation for being bystanders. While examining the motivations for being bystanders and its implications for fundraising performance is an interesting research question, it is beyond the scope of our study. We encourage future researchers to investigate how various reasons for being bystanders would influence subsequent non-helping behavior.

Third, we used incumbent-firm projects as a proxy for organization legitimacy, and future studies are encouraged to explore other forms of legitimacy, such as affiliation with reputable organizations (Rao, 1994; Sorescu et al., 2007) or entrepreneurs' narratives (Frydrych, Bock, Kinder, and Koeck, 2014), on crowdfunding platforms. We hope that our study will stimulate more researchers to delve more deeply into the role of legitimacy on crowdfunding platforms.

Lastly, similar to prior studies (Chan et al., 2020; Kuppuswamy and Bayus, 2017),

DOI:10.6814/NCCU202101456

we examine the daily funding dynamics based on a sample of crowdfunding projects. However, it may be of value to gather more information about how individual investors pledge through survey questions or face-to-face interviews. Understanding the decision-process of investors may represent a promising avenue for future research. Despite these limitations, our findings provide robust evidence on the existence of the bystander effect by using a representative sample of crowdfunding projects in Taiwan.

DOI:10.6814/NCCU202101456

Chapter 4: Discovering the daily changes of bystander effect on reward-based crowdfunding projects

4.1 INTRODUCTION

Prior studies on bystander effect find the presence of other people in a critical situation decreases the chances that an individual will help (Darley and Latané, 1968; Levy, Lundgren, Ansel, Fell, Fink, and McGrath, 1972). Scholars in social psychology fields have done tremendous investigation of the bystander effect phenomenon based on one-time experimental or quasi-experimental settings on serious dangerous and less dangerous emergency incidents (Fischer, Krueger, Greitemeyer, Vogrincic, Kastenmuller, Frey, Heen, Wicher, and Kainbacher, 2011). Darley and Latané (1970) introduces three processes which reduce an individual's likelihood of helping in emergency situations: audience inhibition, social influence, and diffusion of responsibility. When a bystander is in an ambiguous situation, he must first notice the incident, then begins to interpret the degree of emergency and the cost of not helping. It suggests that there should be a period of time for bystanders to observe the situation and make decision to respond.

In reward-crowdfunding context, backers are recognized not only as capital providers but also early customers (Mollick, 2014). Since most products or service are introduced to the market for the first time without customer reviews, potential backers

DOI:10.6814/NCCU202101456

rely more on project description and social interaction to evaluate the project quality (Colombo, Franzoni, and Rossi-Lamastra, 2015; Thies, Wessel, and Benlian, 2016, Hong, Hu, and Burtch, 2018). Prior literatures reveal that social influence through social network is beneficial to crowdfunding success (Mollick, 2014; Liu, Chen, and Fan, 2021). Although herding effect attracts more followers to crowdfunding projects (Banerjee, 1992; Bikhchandani, Hirshleiifer, and Welch, 1998), more bystanders may negatively influence people's decision to provide funding to projects (Chan, Parhankangs, Sahaym, and Oo, 2020; Agrawal, Catalini, and Goldfarb, 2015; Mollick 2014). "Bystanders" are those who only psychologically support the project but have not contributed funds to the project. Kuppuswamy and Bayus (2018) argues that bystander effect prevents potential backers from contributing to a project because they believe this project has already received enough pledges. Chan et al., (2020) further indicates a U-shaped relationship exists between prior funding and subsequent funding, and bystander effect is easier to happen when the early contribution is small.

While it is possible that bystander effect may occur in the not-so-critical situation such as on the crowdfunding platforms, most prior studies only provided limited evidence. Scholars states that the project success is related with the amount of early and subsequent contributions, and they can be easily affected bystanders (Mollick, 2014; Chan et al., 2020; Kuppuswamy and Bayus, 2017). Colombo et al., (2015)

DOI:10.6814/NCCU202101456

reveals that if fewer backers participates at the beginning of the crowdfunding project campaign, the fundraising is more likely to fail. However, there is no further investigation on bystanders and how bystander effect is associated with project funding cycle. And we do not know whether daily changes of bystander effect truly exist and neither its impact on project success.

Observing the daily changes of numbers of successful and unsuccessful projects on flyingV, the fluctuation between successful and unsuccessful projects are different. Figure 4-1 to 4-2 illustrate the accumulated and daily incremental changes of followers, bystanders, backers and pledges trajectories of successful projects. In Figure 4-1, the smoothly upward slope of the increasing path shows that the daily number of followers, backers, bystanders, and pledges increases steadily along the fundraising cycle. Meanwhile, Figure 4-2 shows the frequent up-and-down daily changes along the fundraising cycle. On the contrary, Figure 4-3 and Figure 4-4 exhibits the accumulated and daily incremental changes of followers, bystanders, backers, and pledges trajectories of unsuccessful projects. The path of the accumulated and the incremental differential trajectories shows stagnation periods on several plateau.

The lack of empirical analysis on bystanders and crowdfunding proves that bystander effect on crowdfunding is understudied. This suggests that prior research

DOI:10.6814/NCCU202101456

had focus on part of the crowdfunding phenomenon only and we shall conduct investigation on bystander effect in respond to the academic calls (McKenny, Allison, Ketchen Jr., Short, and Ireland, 2017). Following a tradition of exploratory studies about new phenomena in crowdfunding (Mollick, 2014; Rice, 2002; Tan, Shao, and Li, 2013), this study is one of the first attempt to examine the influence of daily changes bystander effect on reward-based crowdfunding phenomenon from a different perspective.

Unlike prior literatures, this study is conducted with real bystander data from flyingV, the largest reward-based crowdfunding platform in Taiwan. And to offer one of the first observation of real daily bystander effect on the reward-funding platform, I intend to provide a clearer picture on the effect of daily dynamics of bystander ratio to crowdfunding success. I thus extend the literature on bystander effect by utilizing real panel data during fundraising cycles of crowdfunding projects. The results provide a clearer picture of the daily bystander effect along the crowdfunding campaign. This study also suggests that there is substantial value in further studying bystander effect on the crowdfunding phenomenon. This study contributes to our understanding of crowdfunding projects on two aspects. First, I find a smaller fluctuation of the daily bystander ratio variation along the fundraising cycle is positively associated with the project success. I believe inexperienced potential backers may need to receive

DOI:10.6814/NCCU202101456

adaptable quality signals or cues to alleviate bystander effect along the funding period. Second, the results confirm that bystander effect does have an impact on both successful and unsuccessful projects.

This chapter is organized into four sections. After the introduction, the extent literature on bystander effect and crowdfunding is reviewed and research question is raised. I next describe the nature of the daily bystander data used for the exploratory analysis and offer preliminary analysis results. After that, this chapter provides a few findings and discussion of the empirical results. Lastly, theoretical and practical implication are provided.

DOI:10.6814/NCCU202101456

4.2 THEORETICAL BACKGROUND AND CONCEPT DEVELOPMENT

4.2.1 Bystander effects

Classic bystander effect depicts the phenomenon that when a person believes there are other people around, whether physically or virtually, they inhibit this person from responding to those who need help. This person may feel that his own responsibility for reacting is lessened. And the more bystanders around, the less likely and slowly for bystanders to respond (Darley and Latané, 1968; Latané and Nida, 1981). Before these bystanders begin to react, they must first notice the emergent or not-so-emergent situation, interpret the status quo individually or with the fellow bystanders, and decide whether to intervene (Latané and Darley, 1968; Levy et al., 1972).

Bystander effect is proved to be a common phenomenon in many domains (Latané and Nida, 1981; Fischer et al., 2011). For example, bystander effect can be seen in both emergent situations, such as an injury (Latané and Darley, 1968), an asthma attack (Harris and Robinson, 1973); and less critical situations, such as when a door needs to be answered (Levy et al., 1972), when pencils spill to the ground (Latané and Dabbs, 1975). Bystander effect is stronger when the bystanders are less competent (van den Bos, Müller, and Bussel, 2009; Cramer, McMaster, Bartell, and Dragna, 1988). Bystander effect can also be seen in groups in both sex (Latané and

DOI:10.6814/NCCU202101456

Dabbs, 1975; Levy et al., 1972), different age groups (Staub, 1974; Ross and Braband, 1973), and geographical regions (Latané and Darley, 1970; Latané and Dabbs, 1975). Nascent literatures suggest that bystander effect is weaker when a real dangerous situation is quickly and clearly identified (Fischer et al., 2011; Fischer et al., 2006). In recent studies, bystander effect is further investigated in the computer-aided online community, for example, sending private email request for help (Barron and Yechiam, 2002) and sending help text in online chat room (Markey, 2000). And some scholars offer different findings contrary to the traditional bystander effect. For example, more helping is pronounced for bystanders are friends to each other than of strangers (Latané and Rodin, 1969). The bystanders are more like to intervene when they are perceived as friends or are given time to get to know each other for they share such in-group friendship with the victim and themselves (Levin and Crowther, 2008; Rutkowski, Gruder, and Romer, 1983).

4.2.2 Bystander effect and crowdfunding

In online crowdfunding context, some scholars begin to observe how bystander effect would impact the project funding success. Agrawal et al. (2015) find that friends and family of project creator tend to fund earlier in the funding period. Kuppuswamy and Bayus (2017) believe that potential backers are reluctant to make

DOI:10.6814/NCCU202101456

contribution because they saw pledges are already made in early fundraising cycle. In other words, after receiving the earliest pledges from friends or family members, the greater the number of bystanders, the less likely it is that any one of them will make pledge. It is consistent with bystander effect because potential backers' responsibility of helping is diffused. Kuppuswamy and Bayus (2018) reveals that common pattern of project fundraising cycle is U-shaped. Backers are mostly funded in the beginning and end of the funding period. Chan, Parhankangas, Sahaym, and Oo (2020) further introduces that situational urgency weakens the U-shaped relationship of prior and subsequent pledges. Therefore, Du, Hu, and Wu (2019) suggest that project creators could employ contingent stimulus strategy such as providing free sample, upgrading project features, and offering a limited-time offer along the campaign process, especially in the middle of the fundraising cycle to improve the chance of receiving funds.

Meanwhile, the growing literature on herding behavior suggest that observational learning can lead to rational herding (Banjaree, 1992; Bikhchandani et al., 1998; Zhang and Liu, 2012; Tian, Song, Luo, Zhou, and Lev, 2021). Social connections and social influences are critical to the project creator to attract following pledges to assure a successful fundraising campaign during the entire fundraising period (Liu et al., 2021; Thies et al., 2016; Mollick, 2014). Posting and sharing project updates on

DOI:10.6814/NCCU202101456

the crowdfunding platform and social media to attract potential backers are also crucial to increase the propensity of the project success (Mollick, 2014, Liu et al., 2021).

On flyingV, followers refer to those who click “Like” on the project webpage. The followers’ list includes “backers” and “bystanders.” In the beginning of the project campaign, project followers and backers are mostly project creator’s personal friends and family. Prior studies suggest that project creators’ personal network is associated with project success (Mollick, 2014; Colombo, Franzoni, and Rossi-Lamastra, 2015). Scholars also suggest expanding social network outside of a relatively small network of family and friends can contribute to the success of a crowdfunding projects (Jung, Susarla, and Sambamurphy, 2015; Hong et al., 2018; Borst, Moser, and Ferguson, 2018). Project creators, followers and backers are mostly inexperienced investors on the reward-based platforms. They need more time to be persuaded and evaluate the project related information from the crowdfunding platform and social media. They are also afraid of misunderstanding the situation and are easily influenced by the passive behaviors of fellow bystanders. These are all classic features of social inhibition of helping (Latané and Darly, 1970).

To counter the effect of social inhibition, project creators shall send quality signals to bystanders from time to time to lower the ambiguity along the fundraising

DOI:10.6814/NCCU202101456

progress (Solomon, Solomon, and Stone, 1978) and encourage them to make pledges. Sending regular project updates or utilizing social influence indicates that a project creator-potential backer relationship may influence more potential backers (Liu et al., 2021; Bagozzi and Dholakia, 2002; Chan et al., 2020). Nascent studies also show that information cascades and project updates have a positive effect on project success (Thies et al., 2016; Block et al., 2018; Vismara, 2018).

As the project fundraising period goes by, the crowdfunding platform and social media help spread project information to more people who will be often attracted to the project (Pariser, 2012). Though many scholars focus on the success factors such as early contribution and social networks on successful projects (Mollick, 2014; Colombo et al., 2015), while more and more potential backers are interested in the project, these people are aware of their own reputation. In social psychology literatures, decades of studies reveal that people influence each other more than themselves imagine (Latané and Darly, 1970). Fisher et al. (2017) identified crowdfunding backers operating with a community logic and the source of legitimacy is from the unity of will and belief in trust and reciprocity. Since they are attracted to the project from social media, they are in the social environment of grouping and may develop a sense of "we-ness" (Levine and Manning, 2013). Scholars believe that by showing the bystanders group identity and continually raising their public self-

DOI:10.6814/NCCU202101456

awareness, group size may promote helping (van Bommel, van Prooijen, Elffers, and van Lange, 2012; Levine and Crowther, 2008; Pretince-dunn and Rogers, 1982).

Thies et al. (2016) state that while popularity information such as prior backer's pledges has a more immediate effect on potential backer's funding behavior, its effect decays quickly; whereas electronic Word-of-Mouth (eWOM) such as Facebook shares and project comments takes longer time to build up their effectiveness yet decay rather slowly. Before a bystander making pledges, he/she must make a series of decisions and making own interpretation based on a variety information emerged from the crowdfunding community. Since social influence via social networks positively affects backers' crowdfunding pledges through the peer-to-peer influence process (Liu et al., 2021; Hong et al., 2018), the social influence process should be implemented smoothly and make sure that effectiveness fad out rather slowly.

Although previous studies in social influence, bystander effect, and crowdfunding demonstrate many different impacts on funding success, there is a high level of disagreement over the impact of prior funding amount and number of backers to subsequent pledges and number of backers along the fundraising cycle. And the discussion over bystander effect on crowdfunding project success are mostly based on their own interpretation on the phenomenon rather implementing empirical analysis based on real bystander data. Given the limited degree of previous research on how

DOI:10.6814/NCCU202101456

bystander effect affects the fundraising cycle of reward-based crowdfunding projects, it would be too early and immature to propose specific research hypotheses. Therefore, this study aims to theories or concepts development, not theory testing. Due to the exploratory nature and to enhance our understanding of this issues, I followed the research methodology by Mollick (2014) to address the following question: How does daily changes of bystander along the fundraising cycle affect the success of reward-based crowdfunding projects?

DOI:10.6814/NCCU202101456

4.3 DATA AND METHOD

4.3.1 Sample Construction and Data Collection

I collected the data form flyingV, one of the oldest and largest reward-based crowdfunding platforms in Taiwan. Established in 2012, flyingV offers a novel venue for project creators to establish their crowdfunding project campaigns. A campaign period usually spans from 30 to 60 days, and a project creator must decide the funding target amount before uploading a project. Based on the setting of All-or-Nothing model, a project creator can collect his funding only if the funding target is met before the campaign period ends. I recorded data of 191 projects on the flyingV platform from December 22, 2014 to March 11, 2015 and exacted related information such as funding days, amount of target pledge, number of backers, and number of followers. In order to further investigate how bystander effect affects the probability of campaign success, I employed survival analysis (Miller, 2011) and logit regression. I obtained 41 interval censored projects by subtracting 73 left-censored projects and 77 right-censored projects from the original 191 projects. The 41 projects include 13 successful projects and 28 unsuccessful ones and resulted in 79,855 daily observations.

Figure 3-2 illustrates a project page on the flying website. I recorded the data in the following steps. First, from the top right corner, I am able to record the number of

DOI:10.6814/NCCU202101456

accumulated backers, the number of accumulated followers, and the number of accumulated pledges for each day. By doing so, I was able to record not only the number of daily backers, followers, and pledges but also the increase in the number of backers, followers, and pledge amount. Second, I subtracted the daily number of backers from the daily number of followers to ascertain the daily number of bystanders. And then I subtracted the daily number of bystanders of prior day (Day t) from the daily number of bystanders of latter day (Day t+1) to obtain the incremental difference of the number of daily bystanders (Day t+1 – Day t). Next, to derive the daily incremental bystander ratio ("Daily Incremental Bystander Ratio"), I divided the incremental difference of the number of daily bystanders (Dayt+1 – Day t) over the number of total followers for each day (Day t) of each project. Lastly, I calculated the mean and standard deviation of the "Incremental Daily Bystander Ratio" for each project.

4.3.2 Variable Measurements

Dependent Variable

Project Success. Project success indicates whether a project reaches or exceed its preset funding goal by the end of the funding duration. This variable is coded 1 if a project successfully reaches its target goal and 0 otherwise.

DOI:10.6814/NCCU202101456

Explanatory Variables

Mean of Daily Incremental Bystander ratio. The flying platform provides information about the number of followers and backers. The mean of the "Daily Incremental Bystander Ratio" is calculated for each project.

Standard deviation of Daily Incremental Bystander ratio. The flying platform provides information about the number of followers and backers. The standard deviation of the "Daily Incremental Bystander Ratio is calculated for each project.

Control Variables

In chapter three, we found a higher level of creator's past success leads to a lower level of bystander ratio and increases the propensity of project success. Since the characteristics of project may also have effects on project success, the following three control variables are included in the logit regression model.

Project Duration. Project duration was measured by the number of days for which a project creator chooses to accept pledges.

Number of Reward Options. Number of reward options was the number of different reward ways of each crowdfunding project.

Social Network connection. A dummy variable was created, with 1 indicating a project was connected to Facebook and 0 otherwise. Table 4-1 summarizes the key variables in this research.

DOI:10.6814/NCCU202101456

Table 4-1. Variable Definition

Variables	Definitions
Project Success	Project success indicates whether a project reaches or exceed its preset funding goal by the end of the funding duration. It is coded as 1 if a project successfully reaches its target goal and 0 otherwise.
Mean of Daily Incremental Bystander Ratio	Mean of the daily incremental bystander ratio for each project.
Standard deviation of Daily Incremental Bystander Ratio	Standard deviation of the daily incremental bystander ratio for each project.
Project Duration	The number of days for which a project creator chooses to accept pledges.
Reward Options	The number of different reward ways of each crowdfunding project.
Social Network Connection	A dummy variable was created, with 1 indicating the Facebook fanpage of the project is established and 0 otherwise.

DOI:10.6814/NCCU202101456

4.4 FINDINGS

Table 4-2 reports the description and correlations among the variables. In the logit regression model, I added 3 project-related variables to control for their potential impacts on fundraising success. By controlling the impact of these variables, I could examine the daily changes of bystander effect on the propensity of a project success. Table 4-2 shows that the mean of daily incremental bystander ratio is 0.01647 in our sample, suggesting that on average a crowdfunding project gains 1.6% bystanders each day. The standard deviation of daily incremental bystander ratio is 0.07544, which means the variance of attracting potential backers is around 7.5% each day. The mean of "Project duration" is 46.41 days, which is shorter than it of 191 projects (see Table 2-1). The mean of "Reward options" is 8.22, which is somewhat equal to the mean of 191 projects (8.46). The mean of "Social Network Connection" is 0.56, which is close to the mean of 191 projects (0.60).

DOI:10.6814/NCCU202101456

Table 4-2. Descriptive Statistics and Correlations

	Mean	S.D.	Min	Max	1	2	3	4	5	6
1. Project Success	0.32	0.471	0	1	1					
2. Mean of daily incremental bystander ratio	0.01647	0.02075	-0.04469	0.06922	-0.134	1				
3. SD of daily incremental bystander ratio	0.07544	0.06373	0.00027	0.26034	-0.289	0.601**	1			
4. Project duration	46.41	18.288	6	67	0.298	-0.352*	-0.18	1		
5. Reward options	8.22	3.054	4	19	-0.15	0.058	0.141	0.147	1	
6. Social network connection	0.56	0.502	0	1	0.075	0.21	0.08	0.023	0.227	1

Note: **. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed)

DOI:10.6814/NCCU202101456

Table 4-3 presents the logit regression results. Model 1 examines the results of control variables. Models 2 examines the effect of the mean of daily incremental bystander ratio. As shown in Model 2, the mean of daily incremental bystander ratio is not significantly associated with project success (B=1.751). Model 3 examines the effect of the standard deviation of daily incremental bystander ratio. As shown in Table 4-3, the standard deviation of daily incremental bystander ratio is negatively associated with project success (B=-25.156, $p<0.1$ one-tailed). The results show that the steadily changes of daily incremental bystander ratio during the campaign has no influence on the project success. However, the results suggest that smaller fluctuation of daily incremental bystander ratio along the campaign is beneficial for project success.

Scholars suggest that social networks are important to project success (Mollick, 2014; Thies et al., 2016; Hong et al., 2018) and raising public self-awareness to obtain a good reputation could reverse bystander effect (Bommel et al, 2012). In the beginning of the campaign, friends and family of the project creator make pledges. However, the growth of pledges slows down in the middle of campaign because potential backers saw other people are making pledges and hesitate to help (Kuppuswamy and Bayus, 2018). Scholars made several suggestions on improving the U-shaped situation of the campaign (Du et al., 2017; Burtch, Gupta, and Martin, 2021). Project creators should provide contingent attention seeking strategy such as providing free samples, feature upgrades, and limited time offers in the

DOI:10.6814/NCCU202101456

middle of the campaign; or they can send out referral links including emails and social network connections. Burtch et al. (2021) illustrates different referral timing strategy to stimulate funding on different stages of the campaign.

Prior studies find that most investors on the crowdfunding platform do not possess investment-related expertise or skills (Fisher et al., 2017), so investors tend to make their investment decisions based on others' investing behavior (Chan et al., 2020; Kuppuswamy and Bayus, 2018). Therefore, project creators shall pay attention to manage the daily fluctuation of the daily incremental number of backers and bystanders to assure the project success, including sending quality signals through regular project updates or project referrals. During the project campaign period, potential backers are carefully watching and evaluating the project status before taking actions to provide pledges.

DOI:10.6814/NCCU202101456

Table 4-3. Logit Regression Results for the Effect of Daily Incremental Bystander Ratio on Project Success

	Model 1 Success	Model 2 Success	Model 3 Success
Control Variables			
Project Duration	0.045*	0.044*	0.062*
	(0.24)	(.026)	(.033)
Reward Options	-0.57	-0.57	-0.075
	(.134)	(.134)	(0.158)
Social Network Connection	0.424	0.425	0.704
	(.731)	(.732)	(.803)
Explanatory Variables			
Mean of daily incremental bystander ratio		-1.751	32.456
		(19.008)	(26.398)
SD of daily incremental bystander ratio			-25.156*
			(13.847)
Constant	-2.748	-2.683	-2.544
Hosmer & Lemeshow Test	.182	.264	.788
Negelkerke R^2	0.147	0.147	0.3
Cox & Snell R^2	0.105	0.105	0.214
-2 Log Approximation	46.693	46.684	41.335

*Significant at the 0.1 level; **Significant at the 0.05 level; ***Significant at the 0.01 level

DOI:10.6814/NCCU202101456

4.5 DISCUSSION

Unlike previous studies focusing on the linear or curvilinear relationship on prior and subsequent pledges, this study suggests that smaller fluctuations of the daily bystander effect changes during the entire fundraising cycle is positively related to the propensity of a project success. This suggests that project creators should consider carefully how to devote their resources to send multiple signals to manage backers or followers' expectation throughout the fundraising cycle. Figure 4-5 illustrates the daily incremental bystander ratio trajectories of a successful project and Figure 4-6 illustrates the daily incremental bystander ratio trajectories of an unsuccessful project on flyingV. It is clearly to observe the daily changes of bystander effect representing as many small bumps along the fundraising cycle of a successful project whereas representing as hesitant and volatile variation of an unsuccessful project.

Since backers tend to make contributions at the beginning and the end of the fundraising cycle (Mollick, 2014; Kuppuswamy and Bayus, 2018), project creators should send legitimate signals to enable bystanders to take actions, especially in the middle of the fundraising cycle. This study shows that bystanders may not like to be reminded regularly, but they may need adaptable notification. They need proper cues in the proper time to step up and do something. Consistent with prior literatures, project creators may utilize some techniques to convert bystanders to real backers, such as providing optimal referral timing strategies and contingent stimulus policies (Burtch et al., 2021; Du et al., 2019), and make the crowds enjoying the

DOI:10.6814/NCCU202101456

initiative and being part of a group (Schwienbacher and Larralde, 2010). Social connections and social influences are critical to the project creators to attract pledges to assure a successful fundraising campaign during the entire fundraising period (Liu et al., 2021; Thies et al., 2016; Mollick, 2014). Posting and sharing project updates on the crowdfunding platform and social media to attract potential backers are also crucial to increase the propensity of the project success (Mollick, 2014, Liu et al., 2021).

This finding is informative for project creators and project managers of crowdfunding platforms involving in the reward-based crowdfunding process. When project creators and project managers send multiple legitimate signals to the crowds, they may consider the cognitive dynamics of signal attention and signal interpretation of signal sets (Drover, Wood, and Corbett, 2018). Individual may be first attracted to certain attributes of the crowdfunding projects or the characteristics of the project creator, and then he/she takes some time to interpret the situation based on a series of psychological judgement such as dual process (heuristic-systematic model) and decide if he/she will join the fundraising journey.

Staff on crowdfunding platform and project creators should consider how to devote their resources to different signal sets strategies at different stages of project campaign (Drover et al., 2018). However, there is always a tradeoff between promotion costs and more pledges from project backers. Though previous studies show bystander effect harms the daily pledges, some recent studies show that project creators could incorporate social influence

DOI:10.6814/NCCU202101456

approaches to reverse the daily bystander effect (van Bommel et al., 2012; Chan et al., 2020).

For example, after project followers clicking the “Like” button on the webpage of the project campaign, the platform will send notification emails to all followers including backers and bystanders about the project progress. In the meantime, project creators and project followers can also send project updates and post other related information on social media platforms. Information cascades through internal and external social capital (Mollick, 2014; Bi et al., 2017; Liu et al., 2021) helps them share such in-group friendship with the project creators and themselves and alleviate the bystander effect (Levin and Crowther, 2008; Rutkowski et al., 1983).

While prior research suggests that community engagement through social network is critical to the propensity of project success, this study suggests that it is important to utilize social influence approaches on the crowds along the fundraising cycle. Given the high-level information asymmetries inherent in this high-noise environment such as reward-based crowdfunding, more concerns on resource allocation and cost management to cognitively sending legitimate signals should be taken into account in the project fundraising period. Project backers as signal receivers should not be treated equally to process identical signals, instead, in this virtual crowdfunding place, potential backers receive multiple incongruent signals at different times from different signal senders. Therefore, future research could explore the possibility of sending different combination of signal sets to from different signal

DOI:10.6814/NCCU202101456

senders such as project creators, crowdfunding platforms to different signal receivers including project backers, followers, and third-party players.

DOI:10.6814/NCCU202101456

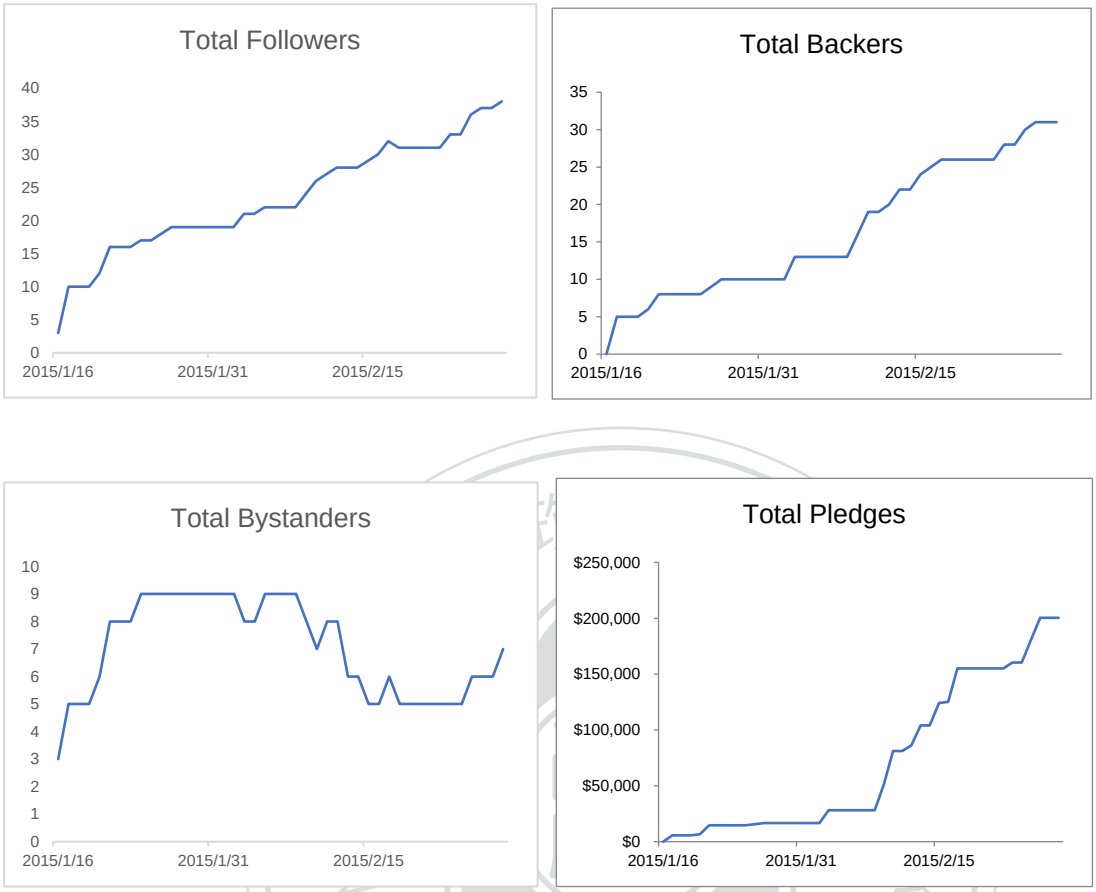

Figure 4-1 Cumulative Followers, Bystanders, Backers, and Pledges trajectories of a Successful Project on flyingV

Note: The horizontal axis indicates the time, and the vertical axis indicates the cumulative amount of the followers, backers, bystanders, and pledges respectively.

DOI:10.6814/NCCU202101456

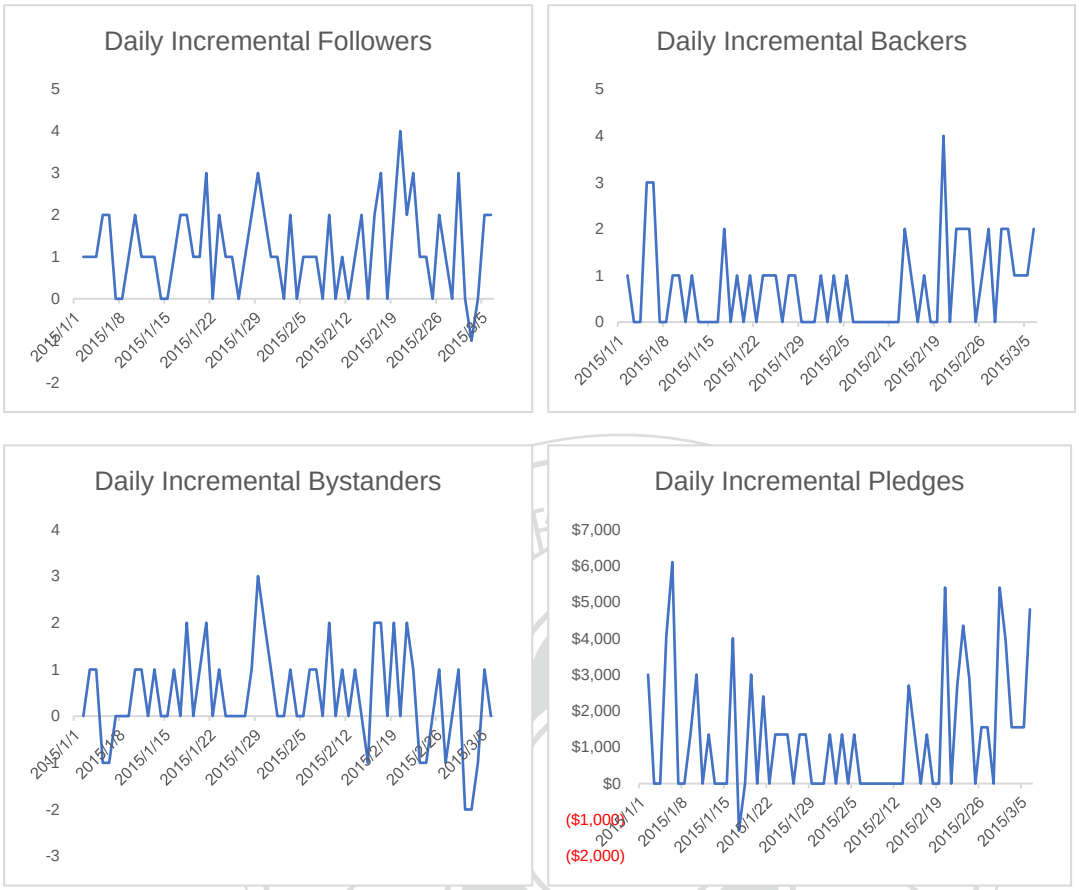

Figure 4-2 Daily Incremental Value of Followers, Bystanders, Backers and Pledges Trajectories of a Successful Project on flyingV

DOI:10.6814/NCCU202101456

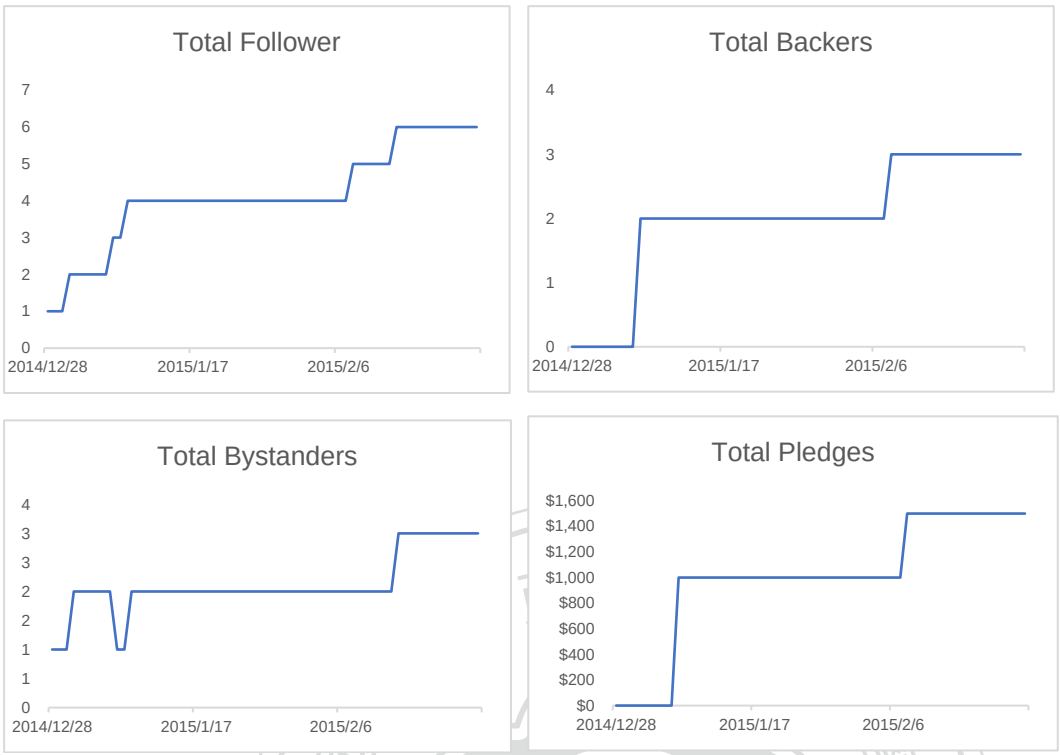

Figure 4-3 Cumulative Followers, Bystanders, Backers, and Pledges Trajectories of an Unsuccessful Project on flyingV

Note: The horizontal axis indicates the time, and the vertical axis indicates the cumulative amount of the followers, backers, bystanders, and pledges respectively.

DOI:10.6814/NCCU202101456

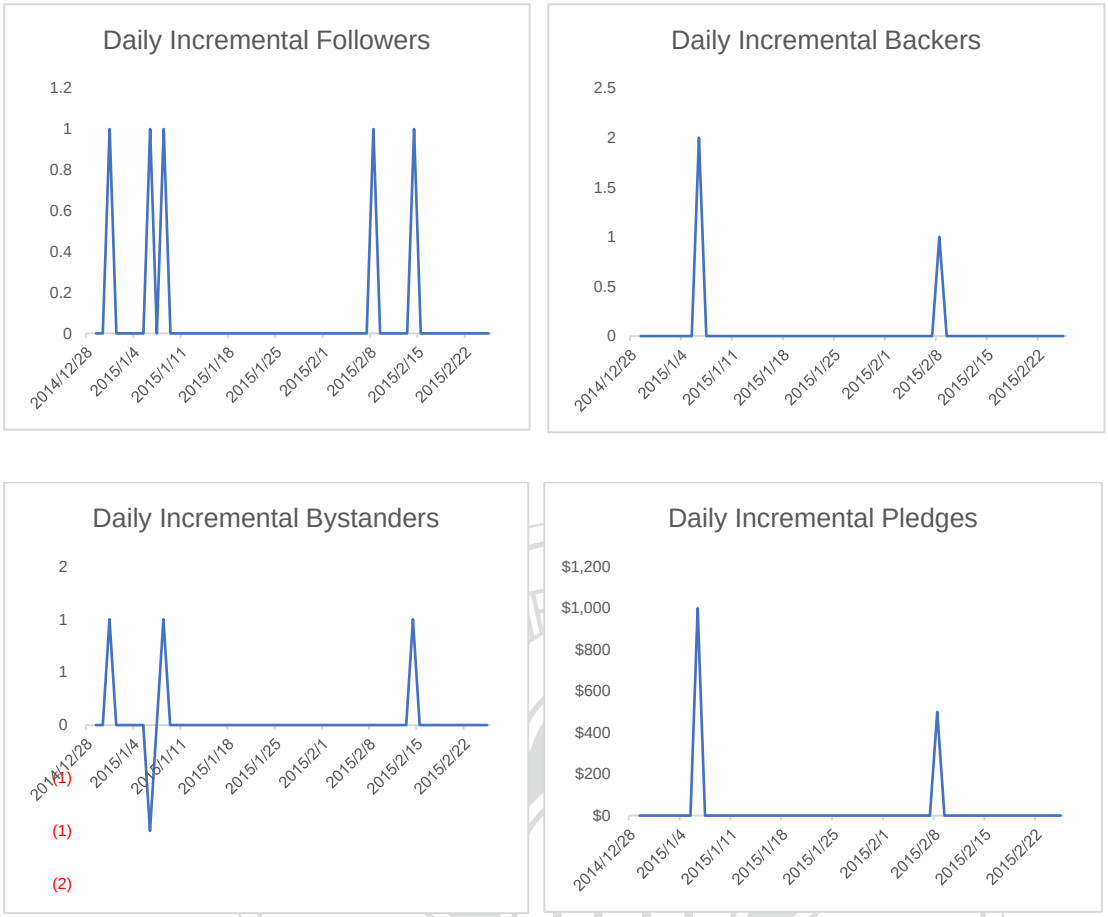

Figure 4-4 Daily Incremental Value of Followers, Bystanders, Backers and Pledges Trajectories of an Unsuccessful Project on flyingV

DOI:10.6814/NCCU202101456

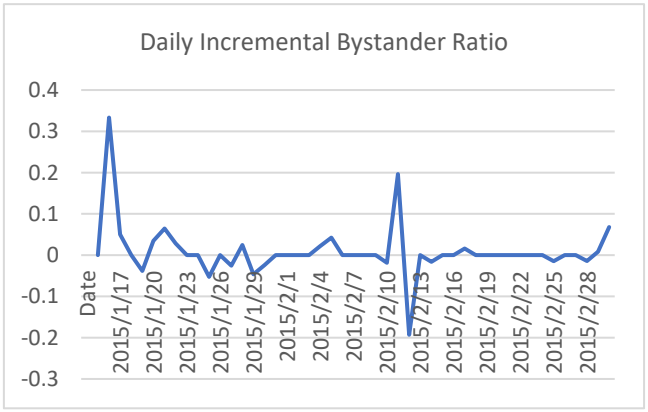

Figure 4-5 Daily Incremental Bystander Ratio Trajectories of a Successful Project on flyingV

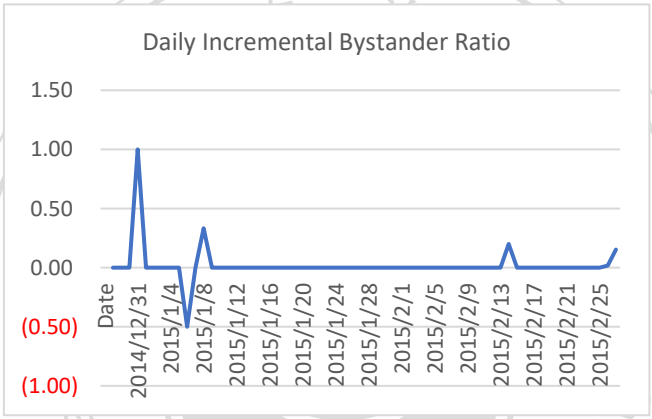

Figure 4-6 Daily Incremental Bystander Ratio Trajectories of an Unsuccessful Project on flyingV

DOI:10.6814/NCCU202101456

Chapter 5: Conclusion

This dissertation aimed to examine the impacts of legitimate signals (Courtney, Dutta, and Li, 2017) and bystander effect (Darley and Latané, 1968) of the reward-based crowdfunding projects. The findings offer insights for project creators on the reward-based crowdfunding platforms to manage multiple legitimate signals to alleviate the problem of information asymmetry and observe bystander effect carefully across social media and crowdfunding platforms along the fundraising cycle. The role of social networks in funding new ventures has been deemed as important (Shane and Cable, 2002). For crowdfunding project creators, their main purpose is asking for the financial aids from investors using internet without any intermediaries (Mollick, 2014). Thus, crowdfunding platforms and social media platforms together provide a virtual social space, which enables social connection and social influence among project creators, project backers, bystanders, and even staff on the platforms.

In chapter two, I found that multiple legitimate signals from project itself, project creators, and third-party recommendation could increase the propensity of a project's success. The empirical results show that legitimate signals such as providing more reward options, establishing social network connection of the project, presenting project creator's past success experience, project creator being a start-up team, and third-party's recommendation will increase the propensity of the project success. By further investigating on the prediction results of three different types of legitimate signals (i.e., project signals, project creators'

DOI:10.6814/NCCU202101456

signals, and third-party signals), the results reveal that the project creators' past crowdfunding success experience and being a start-up team increase more odds of project success than other two types of legitimate signals. This chapter revisits signaling theory and legitimacy literatures to demonstrate that in a high-noise environment, such as reward-based crowdfunding platform, where multiple signalers, such as project creators and platforms, send multiple legitimate signals to multiple signal receivers (i.e., potential project backers) simultaneously to reinforce the crowdfunding success.

From a network externalities perspective, prior studies suggested that social networks can help successful fundraising on crowdfunding platforms. However, according to the bystander effect in the social psychology literature, the number of project supporters may be negatively associated with fundraising performance. The co-authors and I showed that the bystander effect harms the daily pledge amount in chapter three. Organization legitimacy and project duration can mitigate the negative bystander effect on the amount of fundraising. Our findings unveil the black box on the relationship between the bystander effect and the amount of project pledge amount based on the social psychology literature.

Finally, I further examined the daily changes of bystander effect during the entire fundraising cycle in chapter 4. While previous studies were mostly conducted with one-time experimental methods in the laboratory, this study is done by analyzing 79,855 real daily observations from 41 crowdfunding projects on the flyingV platform. The results show that a

DOI:10.6814/NCCU202101456

smaller fluctuation of daily incremental bystander effect during the entire fundraising cycle is positively related to the propensity of the project success. This study reveals that it takes time for bystanders to participate and evaluate the situation before they respond to it. It is important to consider the cognitive view of individual attention and signal set interpretation. Project creators shall pay close attention in managing social influence tactics along the entire project campaign. Adaptable legitimate signals such as project updates or information cascades could alleviate the social inhibition of helping in the middle of the fundraising cycle. This study extends bystander effect in non-emergent situations such as reward-based crowdfunding platform and proves that it takes time for bystanders to participate and evaluate the situation before they respond to it.

This dissertation contributes to signaling theory by extending its traditional definition in the entrepreneurship domain of isolated signals in low-noise environment to multiple signals in high-noise environment such as the reward-based crowdfunding. This dissertation also expands the discussion on the signals combining institution theory on what legitimate signals are valuable to the crowdfunding success. By doing so, this dissertation answers the calls to expand traditional signaling theory (Connelly, Certo, Ireland, and Reutzel, 2011), contributes to reward-based crowdfunding research (Mollick, 2014; McKenny, Allison, Ketchen, Short, and Ireland, 2017), and provides some managerial implications.

This dissertation also complemented the growing literature on the crowdfunding research

DOI:10.6814/NCCU202101456

(McKenny et al., 2017) that showing a diverse portfolio of reward options does influence the project outcome (Iyengar and Lepper, 2000). Project creators on reward-based crowdfunding platform should pay more attention on satisfying project backers' diversified needs and properly managing social connection with followers' community in the high-noise and ambiguous environment. Project backers on reward-based platform are not the same as traditional investor in IPO and venture capital setting. Therefore, project creators may undergo field survey on target audience before officially launching the crowdfunding project to send proper signal sets to successfully obtain project funding.

Bystander effect is known for more than 50 years and has been studied across various academic disciplines including social psychology, customer service management, and crowdfunding (Fischer et al., 2011; Gunarathne, Rui, Seidmann, 2018; Kuppuswamy and Bayus, 2017). While bystander effect is clearly an important issue for many social psychologists, it has so far attracted relatively little research in the field of crowdfunding. This dissertation further suggests that the bystander effect can be real and strong on reward-based crowdfunding projects, especially when problems linger out in the open to everyone's social media interfaces. Practitioners should consider promoting helping behaviors of bystanders by influencing their motivation on community engagement with acceptable costs.

The findings of my three studies are informative for the parties involved in the reward-based crowdfunding process, such as staff of project creators, social media platforms, and

DOI:10.6814/NCCU202101456

crowdfunding platforms. The results show that project creators are not only responsible for sending legitimate signals by establishing a high-quality crowdfunding project, but they also are responsible to send adaptative legitimate signals to the bystanders during the entire fundraising cycle.

Project creators shall arrange a pipeline plan of multiple signal sets showing legitimacy based on well-calculated cost analysis and possibly combine multiple signals into different signal sets depending on the levels of fluctuation of bystander effect during the project campaign period. Along the funding cycle, project creators may over spend their signal-sending budget when utilizing social influence tactics from social media platforms or crowdfunding platform. Project backers

Displaying project information on the website frontpage by staff on crowdfunding platforms serve as a third-party credential to lessen the uncertainty and information asymmetry. Project creator shall co-work with platform staff closely to examine whether offering different signal sets after the recommendation.

My dissertation is not without limitation. This dissertation only studies reward-based crowdfunding projects with small sample sizes and limited measurements. The communication of signals is important in the strategic entrepreneurship domain. Scholars and practitioners may broaden their investigations in different types of crowdfunding such as equity-based and donation-based, and expand more key measurements on the project success.

DOI:10.6814/NCCU202101456

Future researchers could focus on further investigation on legitimate signals from project creators and crowdfunding platforms could lessen the problem of information asymmetry and alleviate bystander effect of this emerging and promising crowdfunding phenomenon. I hope that my study encourages further investigation of signaling theory and bystander effect within strategic management and entrepreneurship research.

DOI:10.6814/NCCU202101456

REFERENCE

1. Agrawal, A., Catalini, C., and Goldfarb, A. 2011. The Geography of Crowdfunding. *(NBER Working Paper Series No. 16820)*. http://www.nber.org/papers/w16820 (accessed October 18, 2015).
2. Agrawal, A., Catalini, C., and Goldfarb, A. 2015. Crowdfunding: Geography, Social Networks, and the Timing of Investment Decisions. *Journal of Economics and Management Strategy*, 24(2): 253-274.
3. Ahlers, G.K.C., Cumming, D., Günther, C., and Schweizer, D. 2015. Signaling in equity crowdfunding. *Entrepreneurship Theory and Practice*, 39(4): 955-980.
4. Akerlof, A.G. 1970. The Market for "Lemons": Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*, 84(3): 488-500.
5. Aldrich, H., and Fiol, C. 1994. Fools Rush in? The Institutional Context of Industry Creation. The *Academy of Management Review*, 19(4): 645-670.
6. Allison, T.H., McKenny, A.F., and Short, J.C. 2013. The effect of entrepreneurial rhetoric on microlending investment: An examination of the warm-glow effect. *Journal of Business Venturing*, 28(6): 690-707.
7. Anglin, A.H., Short, J.C., Drover, W., Stevenson, R.M., McKenny, A.F., Allison, T.H. 2018. The power of positivity? The influence of positive psychological capital language on crowdfunding performance. *Journal of Business Venturing*, 33(4): 470-492.
8. Arrow, K. 1993. Innovation in large and small firms. *The Journal of Entrepreneurial Finance*, 2(2): 111-124.
9. Auerswald, P. E. and Branscomb, L. M. 2003. Valleys of death and Darwinian seas: Financing the invention and innovation transition on the United States. *Journal of Technology Transfer*, 28: 3-4.
10. Backer-Funder. 2020. *Crowd Watch Report.* https://www.2019.report.crowdwatch.tw/. (Assessed Oct. 12, 2020)

DOI:10.6814/NCCU202101456

11. Bagozzi, R. P. and Dholakia, U. M. 2002. Intentional social action in virtual communities. *Journal of Interactive Marketing*, 16(2): 2-21.
12. Banerjee, A.V. 1992. A simple model of herding behavior. *The quarterly journal of economics*, 107(3): 797-817.
13. Barron, G. and Yechiam, E. Private e-mail requests and the diffusion of responsibility. *Computers in Human Behavior*, 18(5): 507-520.
14. Baumol, W.J. and Ide, E. A. 1956. Variety in retailing. *Management Science*, 3(1), 93–101.
15. Belleflamme, P., Lambert, T., and Schwienbacher, A., 2010. Crowdfunding: An organization perspective. Retrieved from: http://economix.fr/uploads/source/doc/workshops/2010_dbm/Belleflamme_al.pdf
16. Belleflamme, P., Lambert, T., and Schwienbacher, A., 2013. Individual Crowdfunding Practices. *Venture Capital*, 15(4): 313-333.
17. Belleflamme, P., Lambert, T., and Schwienbacher, A. 2014. Crowdfunding: Tapping the Right Crowd. *Journal of Business Venturing*, 29(5): 25-49.
18. Bergh, D., Connelly, B., Ketchen Jr, D., and Shannon, L. 2014. Signaling theory and equilibrium in strategic management research: an assessment and a research agenda. *Journal of Management Studies*, 51(8): 1334-1360.
19. Bikhchandani, S., Hirchleifer, D., and Welch, I. 1998. Learning from the behavior of others: Conformity, fads, and informational cascades. *Journal of Economic Perspectives*, 12(3): 151-170.
20. Block, J., Hornuf, L., and Moritz, A. 2018. Which updates during an equity crowdfunding campaign increase crowd participation? *Small Business Economics*, 50(1): 3-27.
21. Borst, I., Moser, C., and Ferguson, J. 2018. From friendfunding to crowdfunding: Relevance of relationships, social media, and platform activities to crowdfunding platform performance. *New media & society*, 20(4): 1396-1414.

DOI:10.6814/NCCU202101456

22. Bowerman, B.L. and O'Connell, R.T. 1990. *Linear Statistical Models: An Applied Approach*, 2nd ed. Belmont: Duxbury.
23. Bradford, C.S. 2012. Crowdfunding and the Federal Securities Laws. *Columbia Business Law Review*, 2012(1): 1-150.
24. Bruner, J. 1990. *Acts of meaning*. Cambridge, MA: Harvard University Press.
25. Bruton, G., Khavul, S., Siegel, D., and Wright, M. 2015. New Financial Alternatives in Seeding Entrepreneurship: Microfinance, Crowdfunding, and Peer-to-Peer Innovations. *Entrepreneurship Theory and Practice*, 39(1): 9-26.
26. Bukhari, F. A. S., Usman, S. M., Usman, M., and Hussain, K. 2019. The effects of creator credibility and backer endorsement in donation crowdfunding campaigns success. *Baltic Journal of Management*, 15(2): 215–235.
27. Burkett, E. 2011. A Crowdfunding Exemption? Online investment crowdfunding and U.S. Securities Regulation. *Transactions: The Tennessee Journal of Business Law*, 13: 63-106.
28. Burtch, G., Gupta, D., and Martin, P. 2021. Referral timing and fundraising success in crowdfunding. *Manufacturing and Service Operations Management,* 23(3): 547-730.
29. Burton, M., Sørensen, J., and Beckman, C. 2002. Coming from good stock: career histories and new venture formation. Available at: https://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1252&context=articles
30. Cassar, G. 2004. The Financing of Business Start-ups. *Journal of Business Venturing*, 19(2): 261-283.
31. Certo, S.T. 2003. Influencing Initial Public Offering Investors with Prestige: Signaling with Board Structures. *Academy of Management Review,* 28(3): 432-446.
32. Chan, C. R., Parhankangas, A., Sahaym, A., and Oo, P. 2020. Bellwether and the herd? Unpacking the u-shaped relationship between prior funding and subsequent contributions in reward-based crowdfunding. *Journal of Business Venturing*, 35(2): Article: 105934.

DOI:10.6814/NCCU202101456

33. Chen, X.P., Yao, X., and Kotha, S. 2009. Entrepreneur Passion and Preparedness in Business Plan Presentations: A Persuasive Analysis of Venture Capitalists' Funding Decisions. *Academy of Management Journal*, 52(1): 199-214.

34. Cheng, K. 2016. *What factors are associated with the successful possibility in crowdfunding?* [Unpublished master's thesis]. National Taiwan Normal University. https://hdl.handle.net/11296/z7ph3v

35. Chesbrough, H. 2003a. *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston: Harvard Business School Press.

36. Chernev, A., Böckenholt, U., and Goodman, J. 2015. Choice overload: A conceptual review and meta-analysis. *Journal of Consumer Psychology*, 25(2): 333-358.

37. Chiu, Y.P. and Chang, S.C. 2015. Leveraging the Buffering Effect and the Bystander Effect in Social Networking. Cyber Psychology, Behavior and Social Networking, 18(8): 450-456.

38. Chu, W. and Lin T. 2016. The determinants of successful crowdfunding projects: An empirical study of a Taiwanese crowdfunding platform, flyingV. *Taiwan Academy of Management Journal*, 16(2): 53-73.

39. Clark, C. 2008. The impact of entrepreneurs' oral "pitch" presentation skills on business angels' initial screening investment decisions. *Venture Capital,* 10(3): 257-279.

40. Colombo, M., Franzoni, C., and Rossi-Lamastra, C. 2015. Internal social capital and the attraction of early contributions in crowdfunding projects. *Entrepreneurship Theory and Practice*, 39(1): 75-100.

41. Colombo, O. 2021. The use of signals in new-venture financing: A review and research agenda. *Journal of Management*, 47(1): 237-259.

42. Connelly, B. L., Certo, S. T., Ireland, R.D., and Reutzel, C.R. 2011. Signaling Theory: A Review and Assessment. *Journal of Management*, 37(1): 39-67.

DOI:10.6814/NCCU202101456

43. Courtney, C., Dutta, S., and Li, Y. 2017. Resolving information asymmetry: Signaling, Endorsement, and Crowdfunding success. *Entrepreneurship Theory and Practice*, 41(2): 265-290.

44. Cramer, R., McMaster, M., Bartell, P., and Dragna, M. 1988. Subject competence and minimization of the bystander effect. *Journal of Applied Social Psychology*, 18(13): 1133-1148.

45. Crowdwatch. 2015. Taiwan Crowdfunding Annual Report. Retrieved from https://annual-report.crowdwatch.tw/2015

46. Cumming, D. J., Leboeuf, G., Schwienbacher, A. 2020. Crowdfunding Models: Keep-it-All vs. All-or-Nothing. *Financial Management*, 49(2): 331-360.

47. Cumming, D. J., Vanacker, T., and Zahra, S. A. 2021. Equity crowdfunding and governance: Toward an integrative model and research agenda. *Academy of Management Perspectives*, 35(1): 69-95.

48. Danmayr, F. 2014. *Archetypes of Crowdfunding Platforms-A Multidimensional Comparison*. Retrieved from https://www.springer.com/gp/book/9783658045586

49. Darley, J. M. and Latané, B. 1968. Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology*, 8(4): 377–383.

50. Delmar, F. and Shane, S. 2004. Legitimating first: organizing activities and the survival of new ventures. *Journal of Business Venturing*, 19(3):385-410.

51. Doganova, L. and Eyquen-Renault, M. 2009. What do business models do? Innovation devices in technology entrepreneurship. *Research Policy*, 38(10): 1559-1570.

52. Drover, W., Wood, M. S., Corbett, A. C. 2018. Toward a cognitive view of signaling theory: individual attention and signal set interpretation. *Journal of Management Studies*, 55(2): 209-231.

53. Du, L., Hu, M., and Wu, J. 2019. Contingent stimulus in crowdfunding. *Rotman School of Management Working Paper No. 2925962.*

DOI:10.6814/NCCU202101456

54. Estellés-Arolas, E. and González-Ladrón-de-Guevara, F. 2012. Towards an integrated crowdsourcing definition. *Journal of Information Science*, 38(2): 189-200.

55. Evans, D. and Leighton, L. 1989. Some empirical aspects of entrepreneurship. *The American Economic Review*, 79(3): 519-535.

56. Fischer, P., Krueger, J. I., Greitemeyer, T., Vogrincic, C., Kastenmuller, A., Frey, D., Heene, M., Wicher, M., and Kainbacher, M. 2011. The bystander Effect: a meta-analytic review on bystander intervention in dangerous and non-dangerous emergencies. *Psychological bulletin*, 137(4): 517-537.

57. Fisher, G., Kotha, S., and Lahiri, A. 2016. Changing with the times: An integrated view of identity, legitimacy, and new venture life cycles. *Academy of Management Review*, 41(3): 383-409.

58. Fisher, G., Kuratko, D. F., Bloodgood, J. M., and Hornsby, J. S. 2017. Legitimate to whom? The challenge of audience diversity and new venture legitimacy. *Journal of Business Venturing*, 32(1): 52-71.

59. Franke, N. and Gruber, M. 2008. Venture capitalists' evaluation of Start-up teams: Trade-offs, knock-out criteria, and the impact of VC experience. *Entrepreneurship Theory and Practice*, 32(3): 459-483.

60. Frydrych, D., Bock, A. J., and Kinder, T. 2016. Creating project legitimacy – the role of entrepreneurial narrative in reward-based crowdfunding. International Perspectives on Crowdfunding-Positive, normative and critical theory. Retrieved from https://www.researchgate.net/publication/312184412_Creating_Project_Legitimacy_-_The_Role_of_Entrepreneurial_Narrative_in_Reward-Based_Crowdfunding_Positive_Normative_and_Critical_Theory

61. Frydrych, D., Bock, A. J., Kinder, T., and Koeck, B. 2014. Exploring entrepreneurial legitimacy in reward-based crowdfunding. *Venture Capital*, 16(3): 247-269.

DOI:10.6814/NCCU202101456

62. Giustiziero, G., Kaul, A., and Wu, B. 2019. The dynamics of learning and competition in Schumpeterian environments. *Organization Science*, 30(4): 668–693.
63. Gompers, P. A., Gornall, W., Kaplan, S. N., and Strebulaev, I. A. 2020. How do venture capitalists make decisions? *Journal of Financial Economics*, 135(1): 169-190.
64. Gompers, P. and Lerner, J. 2004. *The Venture Capital Cycle*. Boston: MIT Press.
65. Gunarathne, P., Riu, H., and Seidmann, A. 2018. When social media delivers customer service: differential customer treatment in the airline industry. *MIS Quarterly*, 42(2): 489-520.
66. Hallen, D. and Eisenhardt, K.M. 2012. Catalyzing Strategies and Efficient Tie Formation: How Entrepreneurial Firms Obtain Investment Ties. *Academy of Management Journal*, 55(1): 35-70.
67. Hanley, A. and Girma, S. 2006. New ventures and their credit terms. *Small Business Economics*, 26(4): 351-364.
68. Harris, V.A. and Robinson, C. E. 1973. Bystander intervention: Group size and victim status. *Bulletin of the Psychonomic Society*, 2(1): 8-10.
69. Hemer, J. 2011. *A snapshot on crowdfunding*. Arbeitspapiere Unternehmen und Region, No. Rs/2011, Fraunhofer, Karlsrruhe.
70. Higgins, M. C. and Gulati, R. 1999. The Effects of IPO Team Ties on Investment Bank Affiliation and IPO Success. *Harvard Business School Working Paper* #00-025.
71. Hoenig, D. and Henkel, J. 2015. Quality Signals? The Role of Patents, Alliances, and Team Experience in Venture Capital Financing. *Research Policy*, 44(5): 1049-1064.
72. Hong, Y., Hu, Y., and Burtch, G. 2018. Embeddedness, Pro-Sociality, and Social Influence: Evidence from Online Crowdfunding. *MIS Quarterly*, 42(4): 1211–1224.
73. Hotelling, H. 1929. Stability in competition. *The Economic Journal*, 39(153): 41–57.

DOI:10.6814/NCCU202101456

74. Hussain, I., Shu, R., Tangirala, S., and Ekkirala, S. 2019. The voice bystander effect: How information redundancy inhibits employee voice. *Academy of Management Journal*, 62(3): 828-849.

75. Hutter, K., Hautz, J., Denhardt, S., and Füller, J. 2013. The impact of user interaction in social media on brand awareness and purchase intention: the case of MINI on Facebook. *Journal of Product and Brand Management*, 22(5/6): 342-351.

76. Josefy, M., Dean, T. J., Albert, L. S., and Fitza, M. A. 2017. The role of community in crowdfunding success: Evidence on cultural attributes in funding campaigns to "save the local theater". *Entrepreneurship Theory and Practice*, 41(2): 161–182.

77. Jung, E. J., Susarla, A., and Sambamurphy, V. 2015. Community engagement and collective evaluation in crowdfunding. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2606449

78. Kahn, B. E. and Lehmann, D. R. 1991. Modeling choice among assortments. *Journal of Retailing*, 67(3): 274–299.

79. Kahn, B. E., Moore, W. L., and Glazer, R. 1987. Experiments in constrained choice. *Journal of Consumer Research*, 14(1): 96–113

80. Kahneman, D. and Snell, J. S. 1992. Predicting a changing taste: Do people know what they will like? *Journal of Behavioral Decision Making*, 5(3): 187–200

81. Kickstarter. 2014. Available at: http://www.kickstarter.com

82. Kleemann, F., Gunter Voss, G., and Rieder, K. 2008. Un(der)paid Innovators: The Commercial Utilization of Consumer Work through Crowdsourcing. *Science, Technology & Innovation Studies*, (4)1: 5-26.

83. Kozinets, R. V., Hemetsberger, A., and Schau, H. J. 2008. The Wisdom of Consumer Crowds: Collective Innovation in the Age of Networked Marketing. *Journal of Macromarketing*, 28(4): 339-354.

DOI:10.6814/NCCU202101456

84. Kreps, D. M. 1979. A representation theorem for preference for flexibility. *Econometrica*, 47(3): 565–577.

85. Kunz, M., Bretschneider, U., Erler, M., and Leimeister, J. 2017. An empirical investigation of signaling in reward-based crowdfunding. *Electronic Commerce Research*, 17(3): 425-461.

86. Kuppuswamy, V. and Bayus, B. L. 2017. Does my contribution to your crowdfunding project matter? *Journal of Business Venturing*, 32(1): 72-89.

87. Kuppuswamy, V. and Bayus, B.L. 2018. Chapter 17. A Review of Crowdfunding Research and Finding. *Handbook of New Product Development Research*, pp. 361-373. Retrieved from https://doi.org/10.4337/9781784718152

88. Kuppuswamy, V. and Bayus, B. L. 2018. Crowdfunding creative ideas: The dynamics of project backers. In Coming, D., and Hornuf, L. (Ed.), The Economics of Crowdfunding: Startups, Portals and Investor Behavior: 151–182. http://doi.org/10.1007/978-3-319-66119-3_8

89. Latané, B. and Dabbs, J. M. 1975. Sex, group size, and helping in three cities. *Sociometry*, 38(2): 180-194.

90. Latané, B. and Darley, J. M. 1968. Group inhibition of bystander intervention in emergencies. *Journal of Personality and Social Psychology,* 10(3): 215-221.

91. Latané, B. and Darley, J. M. 1970. *The unresponsive bystander: Why doesn't he help*? New York: Appleton-Century-Crofts.

92. Latané, B. and Nida, S. 1981. Ten years of research on group size and helping. *Psychological Bulletin*, 89(2): 308-324.

93. Latané, B. and Rodin, J. 1969. A lady in distress: Inhibiting effects of friends and strangers on bystander intervention. *Journal of Experimental Social Psychology,* 5(2): 189-202.

DOI:10.6814/NCCU202101456

94. Lee, P.M. and Wahal, S. 2004. Grandstanding, certification and the underpricing of venture capital backed IPOs. *Journal of Financial Economics*, 73(2): 375-407.

95. Levine, M. and Crowther, S. 2008. The responsive bystander: how social group membership and group size can encourage as well as inhibit bystander intervention. *Journal of Personality and Social Psychology*, 95(6): 1429-1439.

96. Levine, M. and Manning, R. 2013. Social identity, group processes, and helping in emergencies. *European Review of Social Psychology*, 24(1): 225-251.

97. Levy, P., Lundgren, D., Ansel, M., Fell, D., Fink, B., and McGrath, J. E. 1972. Bystander effect in a demand-without-threat situation. *Journal of Personality and Social Psychology*, 14(2): 166-171.

98. Lin, M., Prabhala, N. R., Viswanathan, S. 2013. Judging borrowers by the company they keep: Friendship networks and information asymmetry in online peer-to-peer lending. *Management Science*, 59(1): iv-264.

99. Liu, Y., Chen, Y., and Fan, Z-P. 2021. Do social network crowds help fundraising campaign? Effects of social influence on crowdfunding performance. *Journal of Business Research*, 122(6): 97-108.

100. MacMillan, I., Siegel, R., and Narasimha, P. 1985. Criteria used by venture capitalists to evaluate new venture proposals. *Journal of Business Venturing*, 1(1): 119-128.

101. Manning, S. and Bejarano, T. 2017. Convincing the crowd: Entrepreneurial storytelling in crowdfunding campaigns. *Strategic Organization*, 15(2): 194-219.

102. Markey, P.M. 2000. Bystander intervention in computer-mediated communication. *Computers in Human Behavior*, 16(2): 183-188.

103. Martens, M. L., Jennings, J. E., and Jennings, P. D. 2007. Do the stories they tell get them the money they need? The role of entrepreneurial narratives in resource acquisition. *Academy of Management Journal*, 50(5): 1107-1132.

DOI:10.6814/NCCU202101456

104. Massolution, 2013. 2013 Crowdfunding Industry Report.

105. Massolution, 2015. 2015 Crowdfunding Industry Report.

106. Maxwell, A. L., Jeffrey, S. A., and Lévesque, M. 2011. Business angel early stage decision making. *Journal of Business Venturing*, 26(2): 212-225.

107. McKenny, A. F., Allison, T. H., Ketchen Jr., D. J., Short, J. C., and Ireland, R. D. 2017. How should crowdfunding research evolve? A survey of the Entrepreneurship Theory and Practice Editorial Board. *Entrepreneurship Theory and Practice*, 41(2): 291-304.

108. Meyer, J. W. and Rowan, B. 1977. Institutionalized Organizations: Formal Structure as Myth and Ceremony. *American Journal of Sociology*, 83(2): 340-363.

109. Meyskens, M. and Bird, L. 2015. Crowdfunding and value creation. *Entrepreneurship Research Journal*, 5(2): 155-166.

110. Miller Jr., R. G. 2011. *Survival analysis*, volume 66. NY: John Wiley &Sons.

111. Mollick, E. 2013. Step away by the crowd? Crowdfunding, venture capital, and the selection of entrepreneurs. SSRN Working Paper Series. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2239204.

112. Mollick, E. 2014. The Dynamics of Crowdfunding: An Explorary Study. *Journal of Business Venturing*, 29(1): 1-16.

113. Nagy, B. G., Pollack, J. M., Rutherford, M. W., and Lohrke, F. T. 2012. The influence of Entrepreneurs' Credentials and Impression Management Behaviors on Perceptions of New Venture Legitimacy. *Entrepreneurship Theory and Practice*, 36: 941-965.

114. National Park Service. 2016. Joseph-Pulitzer-Statue of liberty national monument. Available at http://www.nps.gov/stli/learn/historyculture/joseph-pulitzer.htm.

115. Navis, C. and Glynn, M. A. 2011. Legitimate distinctiveness and the entrepreneurial identity: Influence on investor judgements of new venture plausibility. *Academy of Management Review*, 36(3): 479-499.

DOI:10.6814/NCCU202101456

116. O'Reilly, T. 2007. What is Web 2.0: Design patterns and business models for the next generation of software. *Communications & Strategies*, No. 1, p. 17, First Quarter. Available at SSRN: https://ssrn.com/abstract=1008839

117. Ordanini, A., Miceli, L, Pizzetti, M., and Parasuraman, A. 2011. Crowd-funding: transforming customers into investors through innovative service platforms. *Journal of Service Management*, 22(4): 443-470.

118. Pariser, E. 2012. The Filter Bubble: *What the internet is hiding from you*? London, United Kingdom: Penguin Books.

119. Parker, S. C. 2009. *The Economics of Entrepreneurship*. Cambridge: Cambridge University Press.

120. Petkova, A. 2012. From the ground up: Building young firm's reputations. The Oxford Handbook of Corporate Reputations. DOI: 10.1093/oxfordhb/9780199596706.013.0019

121. Plummer, L., Allison, T. H., and Connelly, B. L. 2016. Better together? Signaling interactions in new venture pursuit of initial external capital. Academy of Management Journal, 59(5): 1585-1604.

122. Pollack, J. M., Rutherfold, M. W., and Nagy, B. G. 2012. Preparedness and Cognitive Legitimacy as Antecedents of New Venture Funding in Televised 123. Business Pitches. *Entrepreneurship Theory and Practice,* 36(5): 915-939.

123. Pollock, T. G., Chen, G., Jackson, E. M., and Hambrick, D. C. 2010. How much prestige is enough? Assessing the value of multiple types of high-status affiliates for young firms. Journal of Business Venturing, 25(1): 6-23.

124. Prasad, D., Bruton, G. D., and Vozikis, G. 2000. Signaling value to business angels: The proportion of the entrepreneur's net worth invested in a new venture as a decision signal. *Venture Capital*, 2(3): 167-182.

DOI:10.6814/NCCU202101456

125. Pretince-dunn, S. and Rogers, R. W. 1982. Effects of public and private self-awareness on deindividuation and aggression. *Journal of Personality and Social Psychology*, 43(3): 503-513.

126. Rao, H. 1994. The social construction of reputation: certification contests, legitimation, and the survival of organizations in American Automobile Industry: 1895-1912. *Strategic Management Journal*, 15:29-44.

127. Renault, C. S. 2012. Economic development in the US alters course because of recession. Local Economy, 27(1): 50-54.

128. Rice, M. 2002. Co-production of business assistance in business incubators: an exploratory study. *Journal of Business Venturing*, 17(2): 163-187.

129. Rindova, V. P., Williamson, I. O., Petkova, A. P., and Server, 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.

130. Ross, A. S. and Braband, J. 1973. Effect of increased responsibility on bystander intervention: II. The cue value of a blind person. *Journal of Personality and Social Psychology,* 25(2): 254-288.

131. Rutkowski, S., Levine, R. M., and Romer, D. 1983. Group cohesiveness, social norms, and bystander intervention. *Journal of Personality and Social Psychology*, 44(3): 545-552.

132. Scholtens, B. 1999. Analytical issues in external financing alternatives for SBEs. *Small Business Economics*, 12(2): 137-148.

133. Schwienbacher, A. and B. Larralde. 2012. *Crowdfunding of Entrepreneurial Ventures*. In D. Cumming (ed.), The Oxford Handbook of Entrepreneurial Finance, Oxford, UK: Oxford University Press.

DOI:10.6814/NCCU202101456

134. Scholz, N. 2015. *The Relevance of Crowdfunding: The Impact on the Innovation Process of Small Entrepreneurial Firms.* Manchester, UK: Springer Gabler.

135. Shane, S. and Cable, D. 2002. Network Ties, Reputation, and the Financing of New Ventures. *Management Science*, 48(3): 364-381.

136. Short, J. C., Ketchen Jr., D. J., McKenny, A. F., Allison, T. H., and Ireland, R. D. 2017. Research on crowdfunding: Reviewing the (Very Recent) Past and Celebrating the Present. *Entrepreneurship Theory and Practice*, 41(2): 149-160.

137. Solomon, L. Z., Solomon, H., and Stone, R. 1978. Helping as a function of number of bystanders and ambiguity of emergency. *Personality and Social Psychology Bulletin*, 4:318-321.

138. Sorescu, A., Shankar, V., and Kushwaha, T. 2007. New Product Preannouncements and Shareholder Value: Don't Make Promises You Can't Keep. *Journal of Marketing Research*, 44(3): 468-489.

139. Spence, M. 1973. Job Market Signaling. *The Quarterly Journal of Economics*, 87(3): 355-374.

140. Spence, M. 2002. Signaling in retrospect and the informational structure of markets. *American economic review*, 92(3): 434-459.

141. Stanko, M. A. and Henard, D. H. 2016. How crowdfunding influences innovation. *Sloan Management Review*, 57(3): 15-17.

142. Stanko, M. A. and Henard, D. H. 2017. Toward a better understanding of crowdfunding, openness and the consequences for innovation. *Research Policy*, 46(4): 784-798.

143. Staub, E. 1974. Helping a distressed person: Social, personality, and stimulus determinants. In L. Berkowitz (Ed.), *Advances in experimental social psychology*. New York: Academic Press.

DOI:10.6814/NCCU202101456

144. Steignberger, N. and Wilhem, H. 2019. Extending signaling theory to rhetorical signals: Evidence from crowdfunding. *Organization Science*, 29(3): 357-546.

145. Stiglitz, J. E. 2002. Information and the change in the paradigm in economics. *American Economic Review*, 92(3): 460-501.

146. Stinchcombe, A. L. 1965. Social Structure and Organizations. In: March, J.P., Ed., *Handbook of Organizations*, Rand McNally, Chicago, 142-193.

147. Stuart, T., Hoang, H., and Hybels, R. 1999. Interorganizational endorsements and the performance of entrepreneurial ventures. *Administrative science quarterly,* 44(2), 315-349.

148. Suchman, M. C. 1995. Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20(3): 571-610.

149. Sullivan, D. M. and Ford, C. M. 2014. How entrepreneurs use networks to address changing resource requirements during early venture development. *Entrepreneurship Theory and Practice*, 38(3): 551-674.

150. Tan, J., Shao, Y., and Li, W. 2013. To be different, or to be the same? An exploratory study of isomorphism in the cluster. *Journal of Business Venturing*, 28(1): 83-97.

151. Tain, X., Song, Y., Luo, C., Zhou, H., and Lev, B. 2021. Herding behavior in supplier innovation crowdfunding: Evidence from Kickstarter. *International Journal of Production Economics*, 239 (in press).

152. Terza, J. V., Basu, A., and Rathouz, P. J. 2008. Two-stage residual inclusion estimation: addressing endogeneity in health econometric modeling. *Journal of Health Economics*, 27(3): 531–543.

153. Thies, F., Wessel, M., and Benlian, A. 2016. Effects of social interaction dynamics on platforms. *Journal of Management Information Systems*, 33(3): 843-873.

154. Tomczak, A. and Brem, A. 2013. A Conceptualized Investment Model of Crowdfunding. *Venture Capital*, 15(4): 335-359.

DOI:10.6814/NCCU202101456

155. Überbacher, F. 2014. Legitimation of new ventures: A review and research programme. *Journal of Management Studies*, 51(4): 667-698.

156. Usman, S. M., Bukhari, F. A. S., Usman, M., Badulescu, D., and Sial, M. S. 2019. Does the Role of Media and Founder's Past Success Mitigate the Problem of Information Asymmetry? Evidence from a UK Crowdfunding Platform. *Sustainability*, 11(3), 692.

157. van Bommel, M., van Prooijen, J-W., Elffers, H., and van Lange, P. A. M. 2012. Be aware to care: Public self-awareness leads to a reversal of the bystander effect. *Journal of Experimental Social Psychology*, 48(4): 926-930.

158. van den Bos, K., Müller, P. A., and van Bussel, A. A. L. 2009. Helping to overcome intervention inertia in bystander's dilemmas: Behavioral disinhibition can improve the greater good. *Journal of Experimental Social Psychology*, 45(4): 873-878.

159. Vismara, S. 2018. Signaling to Overcome Inefficiencies in Crowdfunding Markets. In D. Cumming and L. Hornuf (Series Ed.) *The Economics of Crowdfunding-Startups, Portals, and Investor Behavior* (pp. 29-56). Doi: 10.1007/978-3-319-66119-3

160. Voelpel, S., Eckhoff, R., and Förster, J. 2008. David against Goliath? Group size and bystander effects in virtual knowledge sharing. *Human Relations*, 61(2): 271-295.

161. West, J., Salter, A., Vanhaverbeke, W, and Chesbrough, H. 2014. Open Innovation: The next decade. *Research Policy*, 43(5): 805-811.

162. Wiklund, J., Baker, T., and Shehperd, D. 2010. The age-effect of financial indicators as buffer against the liability of newness. *Journal of Business Venturing*, 25(4): 423-437.

163. Wooldridge, J. M. 2015. Control function methods in applied econometrics. *Journal of Human Resources*, 50(2): 420–445.

164. Yechiam, E. and Barron, G. 2003. Learning to ignore online help requests. *Computational & Mathematical Organization Theory*, 9: 327-229.

DOI:10.6814/NCCU202101456

165. Yu, J. C. M, Huang, K. F., Chou, S. W. C., and Kuo, Y. 2018. White Power – your milk is saved by yourselves. Perdo office National Cheng-chi University.

166. Zhang, J. and Liu, P. 2012. Rational herding in microloan markets. *Management Science,* 58(5): 892-912.

167. Zheng, H., Hung, J., Qi, Z., and Hu, B. 2016. The role of trust management in reward-based crowdfunding. *Online Information Review*, 40(1): 97-116.

168. Zheng, H., Li, D., Wu, J., and Xu, Y. 2014. The role of multidimensional social capital in crowdfunding: A comparative study in China and U.S. *Information & Management,* 51(4): 488-496.

169. Zimmerman, M.A. and Zeitz, G. J. 2002. Beyond survival: Achieving new venture growth by building legitimacy. *Academy of Management Review*, 27(3): 414-431.

170. Zott, C. and Huy, Q. N. 2007. How entrepreneurs use symbolic management to acquire resources. *Administrative Science Quarterly*, 52(1): 70-105.

DOI:10.6814/NCCU202101456