

12-2017

# An Eye-Tracking Experiment of Investors' Visual Attention and Investment Intention Toward Crowdfunding Platforms

Pei-Hsuan Hsieh

*National Cheng Kung University, Tainan,, peihsuan@mail.ncku.edu.tw*

Yen-Ting Liu

*National Cheng Kung University, zu00460116@gmail.com*

Follow this and additional works at: <http://aisel.aisnet.org/sighci2017>

## Recommended Citation

Hsieh, Pei-Hsuan and Liu, Yen-Ting, "An Eye-Tracking Experiment of Investors' Visual Attention and Investment Intention Toward Crowdfunding Platforms" (2017). *SIGHCI 2017 Proceedings*. 12.

<http://aisel.aisnet.org/sighci2017/12>

This material is brought to you by the Special Interest Group on Human-Computer Interaction at AIS Electronic Library (AISeL). It has been accepted for inclusion in SIGHCI 2017 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# An Eye-Tracking Experiment of Investors' Visual Attention and Investment Intention Toward Crowdfunding Platforms

**Pei-Hsuan Hsieh**

National Cheng Kung University  
peihsuan@mail.ncku.edu.tw

**Yen-Ting Liu**

National Cheng Kung University  
zu00460116@gmail.com

## ABSTRACT

Numerous crowdfunding platforms are available on the Web. Such platforms provide access for both profit-making and non-profit organizations. It is worth exploring how to attract investor attention related to viewing fundraising proposals and to assess investment intention on such platforms. The purpose of this study is to explore which one or more elements contained in fundraising proposals presented on the platforms under consideration significantly affect investment intention. In this study, three observable elements were selected based on the development of a business model, where an eye-tracking method was used to capture investors' visual attention. Six experimental scenarios were developed, and a total of 48 participants were invited to participate. Finally, it was found that the value proposition element obtained the most visual attention, and the key activities element had a significant impact on the participants' investment intention, especially when the proposal provided adequate details related to the appropriation of funds.

## Keywords

Crowdfunding, eye-tracking method, investment intention, business model development.

## INTRODUCTION

Crowdfunding typically occurs through the Internet and is mainly done through e-commerce platforms, where a proposal is advertised to generate public attention and raise funds (Belleflamme et al., 2014; Mollick, 2014; Ordanini et al., 2011). According to Massolution's annual report, fundraisers had generated a total of \$880 million USD in 2010, with an estimated market capitalization of \$34.4 billion USD by 2015, and the 2016 crowdfunding venture capital industry was expected to account for even more funding. In recent years, as crowdfunding has become a more stable means by which to obtain profit, non-profit organizations have also started to use it for fund-raising, especially in the case of literary or cultural and creative industries (Morpus, 2016).

Crowdfunding involves a wide range of project proposals; some are for personal benefit, while others are to intended help the public interest. Therefore, crowdfunding ventures can be divided into two types: non-profit and for-profit. A project proposal must provide sufficient reason to invest, must establish good interaction with investors, and must

explain how the funds will be used, as well as the time commitment that will be necessary to bring to project to completion and yield returns (Cabral, 2012; Stotts, 2014). In addition, a sound project proposal must be written to clarify the plan for potential investors, so they can invest with peace of mind (Kshetri, 2015; Jegelevičiūtė and Valančienė, 2015). Therefore, it is worth exploring how such fundraising project proposals should be presented on crowdfunding platforms.

When an organization is writing a fundraising project, it is a business model based on how the company maintains its operations. A business model refers the logic behind a business and how it creates value while serving the internal interests of enterprises (Brettel et al., 2012; Magretta, 2002; Osterwalder & Pigneur 2010; Teece, 2010). The development of a business model contains nine elements: key partners, key activities, key resources, channels, value propositions, customer relationships, customer segments, cost structure, and revenue streams (Dahan et al., 2010; Osterwalder & Pigneur, 2010; Teece, 2010). Among them, value propositions are easily found in the proposed project title on the fundraising platform, and investors usually value the return, such as a souvenir and thank-you card, they may receive after investment. On the platform, presented the celebrities' names and a fan page link help widen promotional channels for the proposed project. Reaching the fundraising goal is the key activity in the proposed project. It is also important to establish investor trust. Thus, key activities in the proposed project include lowering the target funds and providing progress reports to investors. However, the remaining elements are not easily observed or measured on fundraising platforms.

For example, there is no limitation on investor identities on the platforms (customer segments). The online services and feedback provided to different investors, regardless of the amount invested, are the same (customer relationship). Detailed exact numbers of funds obtained are usually not mentioned on the platform (revenue streams). Investors are also unable to find the amount of resources obtained and the services provided to investors on the platforms (key resources). Also, since providing a complete list of project partners is impossible, discussion on the part of the investors regarding the significance of key partnerships is minimal (key partnership). The cost to run a fundraising project is usually not mentioned on the platforms (cost structure). Therefore, for the purposes of this study, three elements, i.e.,

value propositions, channels, and key activities, are deemed observable and thus make it easier to design an experiment to explore which of these elements has the most significant effect on investment intention.

To achieve the purpose of this study, an eye-tracking method was applied. An eye movement test deals with the visual information processes of viewers to lead to an understanding their psychological feelings (Holmqvist et al., 2011). Eyes are the window of the soul. People mostly receive information visually, and visual attention helps lead to an understanding of complex information (Broadbent et al., 2014). Therefore, an experiment is developed for this study in which an eye movement tracker is used to capture investors' visual attention, including data such as first fixation duration, total fixation count, total fixation duration time, and the total number of times a platform is viewed, to identify factors that affect investment intention.

## LITERATURE REVIEW

Crowdfunding is a form of crowdsourcing. In recent years, increasing numbers of individual groups and organizations have assembled mass forces or resources to raise enough funds to complete a specific project in a short time. The content of crowdfunding project proposals varies, where some people want to start a business, or some may want to manufacture an invention for which they need money, and some of the proposals are intended to serve the public interest. Regardless of whether the crowdfunding proposal content is non-profit or profit-making, through a sponsorship or loan approach, fundraisers are able to achieve a specific fundraising goal, and their plan, design, or dream can thus be realized.

### Crowdfunding Proposal Success Factors

In the case of the fundraising project proposal itself, its content must include the following items to make it easier for the masses to understand the meaning of the project: (1) explain the project with a film; (2) use videos and pictures to convey project goals and plans; (3) provide a complete, feasible proposal with considerations of project time limits and potential investment groups; (4) set reasonable expectations for the project goals; (5) express project value and ideas in a simple and powerful way; (6) find the appropriate fundraising theme; (7) delineate a story that can easily touch investors; (8) decided how many days in which to raise money (a minimum of 30 days is recommended, not to exceed 60 days); (9) report the success of the project with appreciation of investor support, and (10) avoid typos and incorrect spelling (Stotts, 2014).

Good publicity is also necessary for a crowdfunding project proposal since such techniques allow investors to know more about the project, make it easier to reach the target goals, and enhance the visibility of products in order to enhance sales. The publicity techniques are as follows: (1) find an appropriate fundraising platform to reach investors and obtain a fair public evaluation; (2) create a professional project team to establish good word of mouth from investors, and (3) provide effective support from both online and

offline activities and consumer trials, including the establishment of social community sites to publicize the fundraising proposals (Kang et al., 2016).

In addition, every crowdfunding project should have a well-planned execution process that makes it easy to understand the expected project progress and to update the published information on a regular basis. Thus, the following points should be considered to seize every potential investor: (1) establish good interaction with investors; (2) understand who the investor is, and express gratitude, and (3) report project progress (Joenssen et al., 2014).

Overall, a crowdfunding project, regardless of whether it is non-profit or for-profit, must have a good start, from the project itself to the content of the proposal, to successfully use the crowdfunding platform and gain early access to investor trust.

### Fundraising Proposal Content and Business Model Content

The term business model refers to the logic of how companies operate (Magretta, 2002; Osterwalder & Pigneur, 2010; Teece, 2010) and describes how companies capture, create, and deliver value (Richardson 2008). The development of a business model usually includes nine elements: (1) customer segments, (2) value propositions, (3) channels, (4) customer relationships, (5) revenue streams, (6) key resources, (7) key activities, (8) key partnerships, and (9) cost structure. All these elements are contained in mass fundraising project proposal content, but investors' initial impression of the proposal is based on direct information, specifically, the following three elements: value proposition, channels, and key activities, as presented on the crowdfunding platform, which are observable and make it easier to design an experiment by which to explore which element has the most significant effects on investment intention. Value proposition refers to the presentation of the proposed project content on the fundraising platform (Mitra et al., 2014). Channels refers to the use of promotional tools on the Internet (Agrawal et al., 2013; Lin et al., 2013). Key activity refers to the goal of reaching fundraising numbers and continuous and regular project progress updating for the investors (Belleflamme et al., 2014).

In regard to value proposition, when contemplating investment decisions, crowdfunding investors usually assess the slogan used to promote the project to determine whether it can successfully achieve the project results they expect (Agrawal et al., 2011). Positive language including "reciprocity," "positive energy" and "green," makes it easier to get funds (Mitra et al., 2014). In contrast, "no more" or "if not" are examples of negative words. It is also important to give investors the desired return or substantial benefits to increase their investment intention (Kshetri, 2015). Channels can help promote the project, especially celebrity support, and can increase the predictability of success (Greenberg et al., 2013). Also, social community websites such as fan pages can be used to promote fundraising activities, and because they have a greater network of publicity channels,

more people and investors will see the proposal content, thus enhancing willingness to invest (Kuppuswamy & Bayus, 2015). The key activity of a fundraising project is to reach the target fund. Thus, lowering the amount of the target funds makes it more likely that the project will be successful (Belleflamme et al., 2014). Establishing investor trust is regarded as a key activity. Regularly updating the financial information related to the project and the use of the published funding details help investors know their investment funds have been properly used (Lukkarinen et al., 2016).

Overall, this study focuses on exploring three elements, each including two factors, i.e., value proposition, which includes positive slogan and clear return; channels, which includes celebrities and a fan page, and key activities, which includes a low fund target and progress reports, to determine which one most significantly affects investment intention.

## METHODOLOGY

In this experimental study, an eye-tracking method was applied after validating the six developed scenarios, which included two for each element (A. value proposition – A1. positive slogan and A2. clear return, B. channels – B1. celebrities and B2. fan page presented, C. key activities – C1. low target fund and C2. progress report), with two MIS experts and two eye-tracking experts from the field of psychology used to explore the factors related to the success of the fundraising project proposal content presented on a specific crowdfunding platform. The forty-minute experiment, adopting the Eyelink II head-mounted eye tracker, was carried out in Taiwan, and thus the scenario context was designed on flyingV, the most popular crowdfunding platform in Taiwan. Participants aged 18 and above were invited to participate in the experiment.

The participants included approximately half men and half women. At the end of the experiment, every participant was given 10 USD as a gift to express appreciation for their participation. In the experiment, the participants watched random images of the six experimental scenarios, all of which were screens on the flyingV platform. Each screen collected the eye movement information of the study participants based on the different areas of interest (Figure 1).

The eye movement index data, i.e., total fixation count, total fixation duration time, and the first fixation duration, were collected and then organized using Data Viewer software. SPSS 17.0 was then used to calculate and to compare the selected areas of interest by using the following analyses: Descriptive statistics, a Chi-squared test, and an ANOVA.



Figure 1. Examples of Area of Interest in All Six Scenarios

## RESULTS

In regard to fixation count, the element with the highest average was the value proposition (A) presented on the left side of the platform ( $M = 2.4417$  times,  $SD = 0.65548$ ), a specifically positive slogan (A1). Then, it was further confirmed whether the factors on the right and left side of the platform exhibited significant factorial differences by conducting a one-way ANOVA. No significant difference was found in the slogan factor between the left and right sides ( $F=0.142$ ,  $p=0.707$ ). This result shows that, regardless of which side the positive slogan is on, participants' visual attention is attracted to this element more times than it is to other factors. The same results were also found for the fixation duration time. The element with the most average views was the value proposition on the left side of the platform ( $M = 675.83$  m.s.,  $SD = 120.39$ ), a specifically positive slogan (A1). A further analysis was also carried out using a one-way ANOVA, and it was found that there were no significant differences in the positive slogan factor between the left and right sides of the platform ( $F=0.277$ ,  $p=0.600$ ).

Next, it was further verified whether in addition to the participants' visual attention being attracted by a specific element, whether investment intention was also enhanced by that element. By carrying out a cross analysis to examine the participants' behavioral data collected after viewing each scenario, it was found that the scenario focusing on presenting the key activity element (C), and the celebrities factor (B1), had higher fixation counts. However, more fixation counts resulting in higher investment intention only occurred when the key activity element was emphasized in the scenario. In contrast, the scenario focusing on presenting the channels element (B), especially the factor, fan page presented (B2), had more fixation duration time. Notably, the participants' higher investment intention resulted from longer fixation duration time only on the channel element emphasized in the scenario.

Overall, the value proposition (A) compared with other two elements was shown to be the obtain the most visual attention, and the key activity (C) had the greatest impact on the participants' investment intention.

## DISCUSSION

Most of the relevant literature regarding crowdfunding has been focused on the type of project (profit-making or for-profit). There has been very little research on crowdfunding for non-profits. The current study is an attempt to close this research gap on the part of the crowdfunding institute. During the organization and preparation of any fundraising project proposal, this study suggests the importance of going through a credible review mechanism before presenting it on the crowdfunding platform, so that fundraisers will find it easier to gain investor trust on the platforms. In future studies, it is recommended that researchers explore elements developed in other business models by using different instruments to explore investor intention.

Eye tracking is used to understand investor focus on the fund-raising platform. Visual attention means the investor's eyes are attracted toward some type of content. Investors view the fundraising project content on the platform and then decide to invest in the project in the same manner that buyers find goods and make purchases. Eye tracking is a fast, non-invasive, objective way to collect participant behavior as they watch a message (Graham et al., 2012). Eye tracking helps study factors that may affect consumer choices and behavior, including decision goals and ways of thinking (Ares et al., 2014; Hou et al., 2011; Mormann et al., 2012). In this study, increased fixation counts and longer fixation time indicated that the participants were willing to invest in a specific project.

## CONCLUSION

This study explores how investor visual attention can be attracted and in turn how investment intention can be increased after subjects randomly view all three business model development elements, i.e., value proposition, channel, and key activities, totally presented as six experimental scenarios (Note: two scenarios were used to represent each of the three elements) on Taiwan's popular crowdfunding platform, flyingV. It was found through the collection of eye movement data that investors tend to obtain more information about the fundraising project proposal, such as expenditure details and fan pages, before they make any decision. The results of this study also showed that among the three business model development elements, key activities are the most influential factors related to investment intention. In addition, among the six factors (value proposition (positive slogan and a clear return), channels (celebrities and fan page presented), and key activities (low target fund and progress reports) of crowdfunding success, progress reports, especially expenditure details, are the most influential investment intent factor. If the proposal content presented on the crowdfunding platform does not provide expenditure details to investors, the number of funds raised will be reduced (Ahlers et al.,

2015; Cumming et al., 2014). In addition, this study suggests that fundraisers should regularly update expenditure details to reduce investor fatigue and increase the success of crowdfunding (Kuppuswamy and Bayus, 2017).

## ACKNOWLEDGMENTS

We thank the Mind Research and Imaging Center (MRIC) at National Cheng Kung University for consultation and instrument availability. The MRIC is supported by the Ministry of Science and Technology.

## REFERENCES

1. Agrawal, A. K., Catalini, C. and Goldfarb, A. (2011) The geography of crowdfunding, *National Bureau of Economic Research* (NBER Working Paper No. 16820). Retrieved from <http://www.nber.org/papers/w16820>.
2. Ahlers, G. K., Cumming, D., Günther, C. and Schweizer, D. (2015) Signaling in equity crowdfunding, *Entrepreneurship Theory and Practice*, 39,4, 955-980.
3. Belleflamme, P., Lambert, T. and Schwienbacher, A. (2014) Crowdfunding: Tapping the right crowd, *Journal of Business Venturing*, 29, 5, 585-609.
4. Brettel, M., Strese, S. and Flatten, T. C. (2012) Improving the performance of business models with relationship marketing efforts - An entrepreneurial perspective, *European Management Journal*, 30, 2, 85-98.
5. Broadbent, M., Horsley, M., Birks, M. and Persaud, N. (2014) Comparing novice and expert nurses in analysing electrocardiographs (ECGs) containing critical diagnostic information: an eye tracking study of the development of complex nursing visual cognitive skills. In M. Horsley, M. Eliot, B. A. Knight and R. Reilly (Eds.) *Current Trends in Eye Tracking Research* (pp. 297-315), Springer International Publishing, New York, NY.
6. Cabral, L. (2012). Reputation on the Internet. In M. Peitz and J. Waldfoegel (Eds) *The Oxford Handbook of the Digital Economy* (pp. 343-354), Oxford Handbooks Online - Scholarly Research Reviews.
7. Cumming, D. J., Leboeuf, G. and Schwienbacher, A. (2014) Crowdfunding models: Keep-it-all vs. all-or-nothing, Retrieved from <http://dx.doi.org/10.2139/ssrn.2447567>
8. Graham, D. J., Orquin, J. L., & Visschers, V. H. (2012). Eye tracking and nutrition label use: A review of the literature and recommendations for label enhancement. *Food Policy*, 37(4), 378-382.
9. Greenberg, M. D., Pardo, B., Hariharan, K. and Gerber, E. (2013) Crowdfunding support tools: Predicting success & failure, *Proceedings of the CHI'13 Extended Abstracts on Human Factors in Computing Systems* (pp. 1815-1820), ACM New York, NY.
10. Holmqvist, K., Nyström, M., Andersson, R., Dewhurst, R., Jarodzka, H. and Van de Weijer, J. (2011) *Eye*

- tracking: A comprehensive guide to methods and measures*, Oxford University Press, UK.
11. Jegelevičiūtė, S. and L. Valančienė (2015) Comparative analysis of the ways crowdfunding is promoted, *Procedia-Social and Behavioral Sciences*, 213, 268-274.
  12. Joensen, D. W., Michaelis, A. and Müllerleile, T. (2014) A link to new product preannouncement: Success factors in crowdfunding, Retrieved from <https://ssrn.com/abstract=2476841>
  13. Kang, L., Jiang, Q. and Tan, C. H. (2016) Remarkable advocates: An investigation of geographic distance and social capital for crowdfunding, *Information & Management*, 54, 3, 336-348.
  14. Kshetri, N. (2015) Success of crowd-based online technology in fundraising: An institutional perspective, *Journal of International Management*, 21, 2, 100-116.
  15. Kuppaswamy, V. and B. L. Bayus (2015) Crowdfunding creative ideas: The dynamics of project backers in Kickstarter, *UNC Kenan-Flagler Research Paper No. 2013-15*, Retrieved from <http://dx.doi.org/10.2139/ssrn.2234765>
  16. Kuppaswamy, V. and Bayus, B. L. (2017) Does my contribution to your crowdfunding project matter? *Journal of Business Venturing*, 32, 1, 72-89.
  17. 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), 17-35.
  18. Lukkarinen, A., Teich, J. E., Wallenius, H. and Wallenius, J. (2016) Success drivers of online equity crowdfunding campaigns, *Decision Support Systems*, 87, 26-38.
  19. Magretta, J. (2002) Why business models matter, *Harvard Business Review*, Retrieved from <https://hbr.org/2002/05/why-business-models-matter>
  20. Mitra, T. & E. Gilbert (2014). The language that gets people to give: Phrases that predict success on kickstarter. In *Proceedings of the 17th ACM conference on Computer Supported Cooperative Work & Social Computing* (pp. 49-61). New York, NY: ACM Press.
  21. Mollick, E. (2014) The dynamics of crowdfunding: An exploratory study, *Journal of Business Venturing*, 29, 1, 1-16.
  22. Morpus, N. (2016) The top 10 crowdfunding platforms for nonprofits, *Fundraising Software*, Retrieved from <http://blog.capterra.com/top-crowdfunding-platforms-for-nonprofits/>
  23. 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.
  24. Osterwalder, A. and Y. Pigneur (2010) Business model generation: A handbook for visionaries, game changers, and challengers, John Wiley & Sons, New York, NY.
  25. Richardson, J. (2008) The business model: An integrative framework for strategy execution, *Strategic Change*, 17, 5-6, 133-144.
  26. Stotts, M. (2014) 4 secrets behind successful crowdfunding campaigns, *Fastcompany*, Retrieved from <https://www.fastcompany.com/3026978/work-smart/4-secrets-behind-successful-crowdfunding-campaigns>
  27. Teece, D. J. (2010) Business models, business strategy and innovation, *Long Range Planning*, 43, 2, 172-194.