

**Green Orientation and Crowdfunding Success of Green Projects:  
Moderating Role of Project Characteristics**

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**ABSTRACT**

*The study investigates the impact of green orientation on crowdfunding success and the moderating role of project characteristics, i.e., project duration, project stage, and project innovativeness, on the green orientation-crowdfunding success relationship. We test our hypothesis using two studies. Our first study uses 151 energy and green technology crowdfunding ventures from the Indigogo platform. For our second study, we designed three experiments with four hypothetical green crowdfunding projects each and collected data from 119 crowdfunders about their likelihood of funding the projects. The results of both studies highlighted the significant positive impact of green orientation on crowdfunding success. Moreover, in line with our expectation, projects with longer duration and high innovativeness leverage the benefit of green orientation significantly higher than projects with shorter duration and low innovativeness, respectively. However, in contrast to our hypothesis, the impact of green orientation on crowdfunding success was much stronger among projects in advanced stages than in early stages. We also discuss the implication of our findings on research and practice.*

**INTRODUCTION**

Green entrepreneurship refers to the exploration and exploitation of opportunities that contribute to environmental sustainability by providing eco-friendly products and services in the market (Dean & McMullen, 2007; Gibbs & O'Neill, 2014; Parry, 2012; Schaefer et al., 2015). Environmental or green orientation is at the core of green ventures highlighting their commitment towards environmental friendliness in the products, services, and business model (Bohari et al., 2020; Hong et al., 2009; Keszey, 2020). Prior studies have already explored the entrepreneur's motivation to pursue green orientation and its benefits on social, environmental, and economic value creation (Gast et al., 2017; Gibbs & O'Neill, 2014; Hockerts & Wüstenhagen, 2010; Kirkwood & Walton, 2014). However, their role in securing financial resources for a green project is relatively underexplored. As innovative green projects still face enormous challenges to gain access to adequate resources and capital (Mrkajic et al., 2019; Owen et al., 2018), it is important to explore how green orientation to potential funders could help them gain access to required funding.

In recent years, crowdfunding has emerged as an innovative financing mechanism in addition to traditional funding sources such as banks, angel investors, and venture capital (Lin et al., 2019; Mollick & Robb, 2016). Crowdfunding provides a low-risk opportunity for the young innovative ventures to receive monetary contribution (capital) from a large number of people (crowd) (Butticè et al., 2018; Gerber & Hui, 2013; Kim et al., 2017; Mollick, 2014; Sorenson et al., 2016). Crowdfunding not only supports young ventures to gain capital but also helps them to understand the market needs, find early adopters, create word-of-mouth, and gain legitimacy for their innovative product (Belleflamme et al., 2014; Lagazio & Querci, 2018; Mollick, 2014). Prior studies have highlighted the importance of crowdfunding for young ventures (Gerber & Hui, 2013; Kim et al., 2017; Mollick, 2014; Sorenson et al., 2016) and identified various factors that could enhance the success of crowdfunding projects (Cappa et al., 2021; Colombo et al., 2015; Mollick, 2014; Song et al., 2020). However, the impact of green orientation on crowdfunding success is still unclear as some studies highlight positive, while others found no significant effects (e.g., Calic & Mosakowski, 2016; Hörisch, 2015; Testa et al., 2020). Moreover, our understanding of the contingent factors and boundary conditions that influence the relationship between green orientation and crowdfunding success is also limited. Therefore, exploring the impact of green orientation – crowdfunding success relationship and the moderating factors influencing this relationship would contribute to both green entrepreneurship and crowdfunding literature.

Information asymmetry is one of the major challenges in crowdfunding as the potential funders have limited knowledge about the product or service compared to the venture team (Calic & Mosakowski, 2016; Courtney et al., 2017). Prior studies have highlighted that the crowdfunding project provides the potential funders with adequate informational cues or signals to reduce the information asymmetry (Courtney et al., 2017). In this vein, green ventures could signal their green orientation to potential crowdfunders via texts, videos, and images in their crowdfunding projects. In this study, we use signaling theory to explore if green orientation (signaled via crowdfunding campaign) leads to crowdfunding success. Additionally, we examine the moderating role of project characteristics such as project duration (short vs. long), project stage (early vs. advanced), and project innovativeness (low vs.

high) on this relationship. We test our hypothesis using two studies. In our first study, we use data from 151 energy and green technology ventures from the Indiegogo platform, which is considered as one of the best crowdfunding platforms for green and environmental-friendly projects. To check the validity of our findings from study 1, we conducted a second study, which included three short experiments where 119 crowdfunders were asked their likelihood of funding four hypothetical green technology ventures in each experiment.

The findings from our study contribute to the theory and the practice of green entrepreneurship and crowdfunding in multiple ways. First, both our studies indicated that green orientation in the crowdfunding project significantly increases crowdfunding success among green ventures. Our finding adds to green entrepreneurship literature by highlighting the importance of crowdfunding as an essential entrepreneurial finance avenue for green innovative projects. Our study also suggests that the green ventures should emphasize highlighting green orientation to enhance their crowdfunding success. Second, our results highlight the moderating role of project characteristics, i.e., project duration, project stage, and project innovativeness, on the relationship between green orientation and crowdfunding success. Specifically, our results indicate that the positive relationship between green orientation signals and crowdfunding success is stronger for projects which (1) have a longer duration for crowdfunding than a shorter duration; (2) are in an advanced developmental stage such as prototype or production stage than early stages such as idea or concept stage; (3) have high innovativeness than low innovativeness; Thus, green ventures should consider project duration, project stage, and project innovativeness to leverage the benefits of green orientation during crowdfunding. Finally, our study contributes to crowdfunding literature by identifying green orientation as an important antecedent and project characteristic such as innovativeness, duration, development stage as essential moderators of crowdfunding projects, especially among green or environmental-focused projects.

## **THEORETICAL BACKGROUND**

### ***Green orientation***

Green orientation represents the venture team's focus on environmental sustainability by pursuing environmental-friendly products and services (Dean & McMullen, 2007; Gibbs & O'Neill, 2014). Therefore, ventures with high green orientation explore opportunities that not only contribute to financial benefits for the firm but also add to environmental sustainability (Dean & McMullen, 2007; Gibbs & O'Neill, 2014; Parry, 2012; Schaefer et al., 2015). Prior studies have explored the underlying motivation of green orientation and

suggest that intrinsic stimulus such as emotional embeddedness and social aspirations encourage entrepreneurs towards green orientation and green entrepreneurship (Biniari, 2012; Gast et al., 2017; Kirkwood & Walton, 2014; Thompson et al., 2011). Scholars also found that external environments such as institutional context, government regulation, and social norms drive green orientation (Meek et al., 2010; Silajdžić et al., 2015). Extant studies highlight a positive influence of green orientation on ecological benefits, reducing environmental degradation, and environmental marketing (Baker & Sinkula, 2005; Keszey, 2020; Miles & Covin, 2000). Existing findings are inconsistent regarding the impact of green orientation on financial performance as some scholars found positive, while others found no significant relationship (e.g., Calic & Mosakowski, 2016; Hörisch, 2015; Testa et al., 2020). Although prior studies have enhanced our knowledge about green orientation, its impact on securing capital for green ventures is relatively underexplored. Securing capital is one of the major challenges of green ventures as they find it difficult to acquire funds and initial investments from traditional sources such as banks, angel investors, and venture capitalists (Mrkajic et al., 2019; Owen et al., 2018). Thus, to manage their funding requirements, many of these green ventures explore alternate funding sources such as crowdfunding to survive and grow (Kuma & Yosuff, 2020; Spoz et al., 2020). Hence, it is important to understand the phenomenon by which innovative green ventures can successfully finance their venture. In this vein, our study explores the impact of green orientation on crowdfunding success.

### ***Crowdfunding for green ventures***

Crowdfunding is a phenomenon where the entrepreneur or the venture team gains access to required capital from a large number of people (Butticè et al., 2018; Cho & Kim, 2017). Reward-based crowdfunding is one of the more popular crowdfunding models, where the crowdfunders receive a product or a token gift for their contribution (Butticè et al., 2018; Chan & Parhankangas, 2017; Nielsen & Binder, 2020). Reward-based crowdfunding not only helps the green ventures to receive funding but also help them gain access to potential lead users, early adopters, and user feedback to improve their products (Butticè et al., 2018; Cho & Kim, 2017). Even the failed crowdfunding projects can help the green venture learn and improve significantly (Da Cruz, 2018). Additionally, a successful crowdfunding project helps the green venture gain legitimacy, increasing the chances of getting future funding from traditional sources (Mollick & Robb, 2016). The importance of reward-based crowdfunding has encouraged scholars to explore and identify factors that drive crowdfunding success (Colombo et al.,

2015; Mollick, 2014). Therefore, we use reward based crowdfunding in our study.

In recent years, scholars have explored the effectiveness of crowdfunding for green ventures and found green ventures to benefit from crowdfunding (Chen et al., 2017; Lam & Law, 2016). Yang et al. (2019) found crowdfunding project characteristics such as project goal and project duration influence the crowdfunding success of green ventures. However, the impact of green or environmental orientation on crowdfunding success found mixed results. On the one hand, some scholars found a positive impact of green orientation on crowdfunding success (Bento et al., 2019; Calic & Mosakowski, 2016; Hörisch & Tenner, 2020), while others found no significant relationship between green orientation and crowdfunding success (Chan et al., 2019; Hörisch, 2015). These inconsistencies could be due to the presence of contingent or moderating factors. In this vein, Bento et al. (2019) found that the impact of green orientation on crowdfunding success is stronger for women entrepreneurs than for their male counterparts. However, to our knowledge, the moderating role of project characteristics such as duration, development stage, and innovativeness on the relationship between green orientation and crowdfunding success is still unexplored.

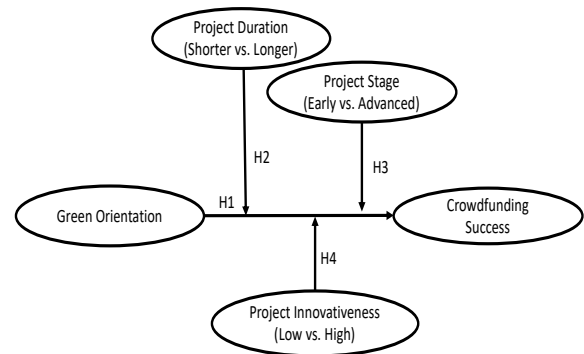
## HYPOTHESIS DEVELOPMENT

### *Green orientation and crowdfunding success*

Crowdfunders have multiple objectives to support and fund a venture, such as economic rewards, philanthropy, a sense of community belonging, and social recognition (Butticè et al., 2018). Green orientation emphasizes the commitment of the venture team towards environmentally sustainable products, services, and business models (Bohari et al., 2020; Hong et al., 2009; Keszey, 2020). Thus, ventures with high green orientation are likely to attract crowdfunders whose funding motivation is more driven by a sense of community belonging, social recognition, and philanthropy than purely economic rewards. Prior studies also advocate that funders supporting green ventures are more environmentally conscious and support ventures with higher environmental impact (Bento et al., 2019; Hörisch, 2015).

*Hypothesis 1: Green orientation positively influences crowdfunding success*

### Figure 1. Conceptual Model



### *Green orientation and crowdfunding success: Moderating role of project duration*

Project duration is an important decision that the entrepreneurial team has to decide while launching the crowdfunding project (Yang et al., 2019). Both longer and shorter durations have their benefits and limitations (Lagazio & Querci, 2018; Yang et al., 2019). On the one hand, shorter duration signals the entrepreneurial team's confidence in the quality and effectiveness of the project (Clauss et al., 2018; Mollick, 2014). Moreover, having a shorter duration also taps into crowdfunders fear of missing out on a good project and encourages them to support the project. In contrast, a project with longer time duration provides crowdfunders ample time to analyze, evaluate and support the projects (Yang et al., 2019). Longer duration also increases the awareness of the project and the likelihood of crowdfunders appreciating the positive features and characteristics of the project (Burtch et al., 2013; Lagazio & Querci, 2018).

Green projects with longer duration can help the green orientation signals to reach a large number of people. Moreover, it also provides the venture team to clarify any doubts and concerns about their environmental focus and contribution, reducing the information asymmetry. The impact of positive word-of-mouth and peer group sharing also increases the spread of positive characteristics and the impact of green orientation. Additionally, longer project duration might also engage the crowdfunders for a longer duration, providing them greater satisfaction, happiness, and pride for their contributions. In contrast, shorter-duration green projects provide less time for crowdfunders to evaluate the ventures, spread word-of-mouth, and share information about the green project's benefits. Therefore, we hypothesize that the positive impact of green orientation on crowdfunding success would be higher for projects with longer project duration than shorter project duration.

*Hypothesis 2: Project duration moderates the relationship between green orientation and crowdfunding success such that the positive relationship between green orientation and crowdfunding success is stronger for projects with longer duration than shorter duration.*

### ***Green orientation and crowdfunding success: Moderating role of project stage***

Crowdfunding projects could be at different stages – early or advanced (Kim & Wilemon, 2002; Mount & Martinez, 2014; Pati & Garud, 2021; Song & Parry, 1992). Early stage crowdfunding projects seek funding and feedback from the crowd to improve their concept solution, develop a proof of concept, and finalize the prototype (Kim & Wilemon, 2002; Mount & Martinez, 2014). In contrast, the projects which have already finalized their prototype and exploring funds for production or distribution are at advanced stages (Mount & Martinez, 2014; Song & Parry, 1992). The advanced stage projects have already gathered the proof of concept and have a tangible prototype, which indicates the legitimacy, trustworthiness, and effectiveness of the entrepreneurial team compared to projects in their early stages (Kim & Wilemon, 2002; Mount & Martinez, 2014; Pati & Garud, 2021). Both early and advanced stages of projects have different objectives and characteristics (Pati & Garud, 2021), which might impact the effectiveness of other strategies, orientations, and actions.

Green orientation motivates the crowdfunders to fund the projects with greater environmental impact by engaging and satisfying both their egoistic and altruistic desires (Allison et al., 2013; Hartmann et al., 2017; Hörisch & Tenner, 2020). Early-stage projects are in the idea or concept stage and provides an opportunity for the crowdfunders to provide feedback and help in co-create the product with the venture team (Pati & Garud, 2021). In contrast, advanced-stage projects have already developed prototypes and proof of concepts, providing limited opportunity to the crowdfunders to contribute towards the advancement of the green solution. Therefore, as the crowdfunders are more engaged in early-stage projects, it would further enhance their happiness, satisfaction and pride that they get by supporting projects with high green orientation. Moreover, early-stage projects also engage with their crowdfunders for a longer duration than advanced-stage projects, providing the crowdfunders the warm-glow effect and satisfying their egoistic and altruistic desires for longer time horizon. Therefore, we hypothesize that the positive impact of green orientation on crowdfunding success would be higher for projects in early stages than projects in advanced stages.

*Hypothesis 3: Project stage moderates the relationship between green orientation and crowdfunding success such that the positive relationship between green orientation and crowdfunding success is stronger for early-stage projects than advanced-stage projects.*

### ***Green orientation and crowdfunding success: Moderating role of innovativeness***

Project innovativeness is the degree of innovation of a crowdfunding idea (Li et al., 2017). Both low and high degrees of innovativeness appeal to different types of funders and investors as they have different characteristics (Chan & Parhankangas, 2017; Chandy & Tellis, 1998; Menguc et al., 2014). Low innovativeness projects are generally incremental in nature and involve introducing small novel changes to the existing product, process, or business model (Callahan & Lasry, 2004; O'Connor, 1998). These innovative solutions engage in cumulative improvements over the existing solutions and gradually enhance them (Callahan & Lasry, 2004). In contrast, high innovativeness projects engage in radical changes to current solutions by introducing major changes to the existing products, processes, and business models (Chandy & Tellis, 1998; Madjar et al., 2011). Therefore, projects with high innovativeness are generally unique and have the potential to bring fundamental improvements to existing solutions.

Green orientation signals the potential crowdfunders that the venture emphasizes environmentally sustainable solutions (Bohari et al., 2020; Hong et al., 2009; Keszey, 2020). Therefore, it enhances happiness, satisfaction, community belongingness, and social recognition while funding green ventures, leading to a higher likelihood of crowdfunding success. Crowdfunding green projects with high innovativeness have the potential to make a significantly higher contribution to the environment by introducing unique and radical solutions than projects with low innovativeness, which introduce incremental innovation. Hence, the high innovativeness of crowdfunding projects is likely to further enhance happiness, satisfaction, community belongingness, and social recognition created by green orientation. In contrast, low innovativeness introducing cumulative and incremental innovations might not excite the crowdfunders and limit the effectiveness of green orientation compared to high innovativeness. Therefore, we hypothesize that project innovativeness positively moderates green orientation - crowdfunding success relationship such that the positive relationship between green orientation and crowdfunding success is stronger for high innovative projects than low innovative projects.

*Hypothesis 4: Project innovativeness positively moderates the relationship between green orientation and crowdfunding success such that the positive relationship between green orientation and crowdfunding success is stronger for high innovative projects than low innovative projects.*

## **METHODOLOGY**

We tested our hypotheses using two studies. We analyzed data collected from 151 energy and green

technology ventures from the Indiegogo platform for the first study. To validate the findings from our first study, we conducted our second study, which included three short experiments where potential crowdfunders are asked their likelihood of funding four ventures (for each experiment) with different levels of the dependent variable (green orientation) and one of the moderating variables (i.e., project duration, stage, innovativeness).

### **Study 1 – Sample and Procedure**

For this study, we collected data from all the energy and green technology ventures in the Indiegogo platform, launched between 2017 and 2019. From this list, we removed all the ventures with incomplete or incorrect information. We then removed all the projects that have completed their production phase and only sold their product via the platform as their objectives were very different from projects in the concept or production stage. We also removed very small crowdfunding projects with less than USD 500 as their crowdfunding goal, as they might have higher success due to the support of family and friends. Thus, we got our final sample of 151 energy and green technology crowdfunding projects.

The Indiegogo crowdfunding platform is very popular and well known among the reward-based crowdfunding community. Since its inception in 2008, the Indiegogo platform has grown into a huge community of more than 9 million backers, helping more than 0.8 million innovative ideas across 235 countries till December 2020<sup>1</sup>. Moreover, Indiegogo provides a special focus on energy and green technology projects compared to other crowdfunding platforms. Furthermore, many earlier studies have also used project-level data from the Indiegogo platform (e.g., Butticiè et al., 2019; Lagazio & Querci, 2018). Therefore, we used projects from the Indiegogo platform to test our hypotheses in our first study.

For this study, we collected data using two sources. First, we web scrapped the data from the Indiegogo website, which provided us with objective data about the project such as project goal, project duration, project stage, funding type, number of comments and updates, number of previous crowdfunding projects by the venture team, and country of origin. To collect data on green orientation and project innovativeness which are more subjective in nature, we hired two independent raters (researchers), who would go through each of the projects and rate their degree of green orientation and innovativeness based on the signals and cues presented on the website. During the early stage of this data collection, the raters along with the research team developed a logical coding mechanism by rating the projects together.

Following this, each independent rater coded the data for each of the projects in our sample. The inter-rater reliability between the two raters was high (ICC = 0.832,  $p < 0.001$ ), and we averaged the scores of two independent raters to get our final data for the variables.

### **Study 1 – Measures**

*Dependent variable:* We used crowdfunding success as the dependent variable. We measured crowdfunding success by calculating the percentage of funding goal achieved, i.e., [(Funding received/Project goal) \*100]. Unlike the Kickstarter platform, Indiegogo allows the venture team to receive the collected funding even if the target goal is not achieved (Lagazio & Querci, 2018). Hence, the percentage of funding goals achieved is an adequate measure of crowdfunding project success. Prior studies have also used this measure to capture crowdfunding project success (Boeuf et al., 2014; Lagazio & Querci, 2018).

*Independent variable:* Green orientation provided in the crowdfunding project is our independent variable. After going through each crowdfunding project in detail, the independent raters scored the degree of green orientation for a project on a seven-point scale, where “1” represents low, and “7” highlights high green orientation. We calculated the degree of green orientation for a project by averaging the scores from both raters. Prior studies have also used a similar procedure to collect data from crowdfunding projects (Allison et al., 2017; Colombo et al., 2015).

*Moderating variables:* We included three moderating variables – project duration, project stage, and project innovativeness. Project duration was calculated by subtracting the start date of the project from its end date, thus, capturing the number of days that the project is open for funding. The project stage was captured using a dummy variable with “0” representing early-stage and “1” representing advanced-stage crowdfunding project. Indiegogo platform provides the project’s stage, and we used the concept stage as early stage and the prototype and production stage as the advanced stage for our study. Finally, each project’s innovativeness was calculated by averaging the innovativeness score by two independent raters who coded project innovativeness using a seven-point scale, where “1” represents low, and “7” indicates high project innovativeness.

### **Study 1 - Analysis and Results**

Table 1 presents hierarchical regression analysis using funding goal achieved (in percentage) as the dependent variable in all our models. The F-statistics of all our models were significant, indicating a good fit between our data and models. Model 1 includes

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<sup>1</sup> <https://www.indiegogo.com/about/our-story>

all control variables. Model 2 adds the independent variable and moderating variables to Model 1. Supporting our hypothesis 1, our finding clearly suggested that green orientation ( $\beta = 0.48, p < 0.001$ ) positively influenced crowdfunding success among green projects. Model 3 – Model 5 add interaction term between green orientation and the three moderators (i.e., project duration, project stage, and project innovativeness) independently. Model 6 (final model) included all the three moderators simultaneously to Model 2. Supporting our hypothesis 2 and hypothesis 4, we found project duration ( $\beta = 0.23, p < 0.001$ ) and project innovativeness ( $\beta = 0.21, p < 0.01$ ) positively moderate the relationship between green orientation and crowdfunding success. In contrast to our expectation, projects in advanced stages were able to leverage greater benefits from green orientation than projects in early stages ( $\beta = 0.50, p < 0.05$ ). Therefore, our hypothesis 3 is not supported.

In addition to our main analysis, we performed multiple tests to ensure the robustness of our findings. First, instead of averaging the green orientation and product innovativeness scores from the two ratters, we analyzed them separately and found the results consistent with our original results. Second, instead of using the percentage of funding goal achieved, we used the amount of funding raised by crowdfunding project as an alternate dependent variable. These findings were also consistent with the above results.

### **Study 2 - Sample and Procedures**

In study 2, we designed three short experiments to validate our findings from study 1. In each of the three experiments, potential crowdfunders are provided with four hypothetical crowdfunding projects for which they share their likelihood of funding. Experiment 1 included four projects with two levels of green orientation (low vs. high) and two levels of project duration (short vs. long). Similarly, experiment 2 and experiment 3 included 4 projects, each with two levels of green orientation (low vs. high) and two levels of moderating variables, i.e., project stage (early vs. advanced) for experiment 2 and project innovativeness (low vs. high) for experiment 3. Additional filler tasks were introduced between the experiments to create psychological separation between experiments. We also included additional questions to check crowdfunder's understanding and experience of crowdfunding green projects. Appendix I highlights the instructions and experimental tasks of study 2.

We collected data using US crowdfunders using Amazon mTurk. Amazon mTurk is one of the most popular crowdsourcing platforms that enable outsourcing tasks to the crowd (distributed workforce) who perform these tasks. Many scholars have also used mTurk for collecting data on crowdfunding research studies using experiments

(Allison et al., 2017; Chan & Parhankangas, 2017). We collected data from 136 crowdfunders on each of the three experiments. Responses from 17 crowdfunders were removed as they provided incomplete responses or did not clear the validity checks indicating limited knowledge and experience about crowdfunding. Thus, our final sample included a total of 1428 crowdfunding decisions, i.e., 476 decisions for each experiment, provided by 119 crowdfunders.

### **Study 2 – Measures**

*Dependent variable:* Dependent variable for all our experiments was the likelihood of funding. We captured the likelihood of funding using a percentage scale, i.e., 0 to 100.

*Independent variable:* Independent variable for all three experiments was green orientation. We captured green orientation using a dummy variable, where each of our hypothetical crowdfunding projects either had high (coded as 1) or low (coded as 0) levels of green orientation.

*Moderating variables:* We captured the three moderators using three separate experiments. Project duration was our moderator for experiment 1, where each hypothetical project was open for funding for either 60 days (long - coded as 1) or 30 days (short - coded as 0). In experiment 2, the project stage was the moderator, with each project classified as advanced (coded as 1) or early stages (coded as 0). Finally, each of the hypothetical crowdfunding projects in experiment 3 had either high (coded as 1) or low (coded as 0) levels of project innovativeness.

### **Study 2 – Analysis and Results**

Table 2 presents the hierarchical regression analysis results for all three experiments in study 2 (Models 7-8 for experiment 1, Models 9-10 for experiment 2, and Models 11-12 for experiment 3). Likelihood of funding and green orientation are the dependent and independent variables, respectively, in all our models. Model 7, Model 9, and Model 11 include the direct effect of the project duration, project stage, and project innovativeness, respectively (i.e., moderators) along with the independent variable. Model 8, Model 10, and Model 12 add the interaction term between the independent variable and respective moderators to Model 7. Model 9, and Model 11. The F-value for all our models was significant, indicating a fit between our data and models.

## **DISCUSSIONS AND CONCLUSIONS**

Recent years have seen a rise in green ventures that could help reduce environmental degradation (Boons et al., 2013; Mrkajic et al., 2019). As green ventures focus more on environmental sustainability than financial returns, they struggle to get funding from traditional sources (Mrkajic et al., 2019; Patten et al., 2018). Therefore, it is essential to understand

the ways and means by which green ventures can secure funding for their venture. We contribute to this stream of literature by suggesting crowdfunding as an alternate source of funding for these green ventures (e.g., Bento et al., 2019; Calic & Mosakowski, 2016; Hörisch & Tenner, 2020) and exploring ways by which they can enhance their likelihood of crowdfunding success. Our study investigates the impact of green orientation on crowdfunding success and moderating effect of project characteristics (i.e., duration, stage, innovativeness) on this relationship. Results from both our studies clearly indicate that signaling green orientation to the potential crowdfunders significantly benefits green ventures. However, the positive impact of green orientation is stronger for (1) projects with longer duration than the shorter duration; (2) projects in advanced stages than in early stages; and (3) high innovative projects than low innovative projects.

### **Research Implications**

Our study adds to the extant literature in multiple ways. First, contributing to the growing field of research in green entrepreneurship, our finding highlighted the importance of signaling green orientation for securing crowdfunding among green ventures. Although many scholars advocated the benefits and importance of green orientation (Hörisch, 2015; Testa et al., 2020), only a few studies explored its impact on crowdfunding. Moreover, the results of these studies were also contradictory, with some studies highlighting positive (Bento et al., 2019; Calic & Mosakowski, 2016; Hörisch & Tenner, 2020), while others suggested no significant impact (Chan et al., 2019; Hörisch, 2015) of green orientation on crowdfunding success. Our study clearly support the positive influence of signaling green orientation on crowdfunding success among green projects.

Our study also contributes to green orientation literature by highlighting the importance of three additional contingent variables (i.e., project duration, project stage, and project innovativeness) that significantly moderate the relationship between green orientation and crowdfunding success. Therefore, while emphasizing green orientation, the venture team also has to consider the impact of project characteristics such as duration, stage, innovativeness.

Third, our study also adds to this growing literature on crowdfunding by highlighting the importance of green orientation as an essential antecedent of crowdfunding success, especially among green ventures. Moreover, findings from our study also suggest the importance of project duration, stage, and innovativeness as essential moderators, which might influence the impact of other key variables on crowdfunding success.

### **Managerial Implications**

In addition to the theoretical contribution, our findings provide critical insights and suggestions for both green venture team and potential crowdfunders of green ventures. First, our finding informs venture team about the importance of signaling green orientation and encourage them to continuously enhance green orientation of their venture and communicate them effectively to the potential crowdfunders. Second, the venture team should also provide adequate attention to project level characteristics such as project duration, stage and innovativeness, to leverage maximum potential of the green orientation. Finally, we suggest potential crowdfunders to contribute to green ventures which signal high green orientation as they have higher chances of success and avoid funding projects which signal low green orientation as they are likely to fail. Thus, enhancing their likelihood of supporting successful green ventures providing them greater happiness, satisfaction and pride.

### **Limitations and Future Research**

In this research, we used multiple studies using different measures and samples to test our hypothesis and found consistent results, indicating strong reliability and validity of our findings. However, our study has few limitations which should be acknowledged and addressed in future research studies. First, the findings of study 1 were limited by the choice of the sample (i.e., energy and green technology ventures from the Indiegogo platform). Future studies should explore if our findings are consistent across other online reward-based crowdfunding platforms such as Kickstarter. Although we focused on reward-based crowdfunding, future research should explore the impact of green orientation on crowdfunding success among other types of crowdfunding such as equity crowdfunding or debt crowdfunding. Moreover, receiving capital only focuses on the short-term impact of green orientation on crowdfunding success. We encourage future studies to explore the impact of green orientation on the crowdfunded project in a longer time horizon, such as survival and growth of a venture after a few years of crowdfunding.

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