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# Determinants of Startup Funding: The Interaction between Web Attention and Culture

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## ABSTRACT

*Technology empowers entrepreneurs to pursue alternative funding through platforms like crowdfunding. This research explores significant startup funding factors using Crunchbase. Controlling for common factors (acquisition/funding-rounds/IPO), the research uniquely focuses on web attention - the visibility on social media - and its impact on funding. It also examines the moderating influence of startup's home country culture (individualism/collectivism). Findings show stronger positive impact of web attention on startup funding for collectivist countries. While individualistic investors value personal goals, collectivists value collaborative goals - inclinations that align with crowdfunding behavior. Therefore while increasing web attention, crowdfunding efforts can be targeted towards collectivist countries.*

**Keywords:** Web Attention; Startup; Crowdfunding; Individualistic/Collectivistic Culture; Crunchbase; Funding amount

## INTRODUCTION

Over the past few years, technological advancements have empowered entrepreneurs to pursue microfinancing through online platforms like crowdfunding, which offer opportunities to demonstrate prototypes of their inventions, release initial business plans, and market their projects to interested

investor groups. These have transformed the phenomenon of new venture fundraising (Belleflamme et al., 2014; Mollick, 2014). In order to attract more funding, for start-ups, the features that cater to traditional venture capitalists may not be as effective anymore. Here we use Crowdfunding as our example to illustrate the venture fundraising environment difference, which is facilitated by the prevalence of online platforms.

Crowdfunding refers to using the Internet to collect small contributions from a relatively large number of individuals for the purpose of funding entrepreneurs, organizations, and/or companies without the use of financial intermediaries (Lin and Viswanathan, 2013). In crowdfunding, each donor contributes, via an intermediary platform, a small amount of money to support a project (Belleflamme et al., 2013). In general, crowdfunding can be regarded as, an internet-based open request for provision of financial resources either in the form of donations or as exchange for rewards and/or voting rights (Belleflamme et al., 2010; Mollick, 2014; Schwienbacher and Larralde, 2010).

Particularly when traditional methods of financing are unavailable or their costs are prohibitive, crowdfunding can be a very helpful fundraising channel. In addition to raising capital, crowdfunding can be used as a platform for entrepreneurs to test ideas, develop reputations, and create communities (Mollick, 2014). On a macro level, by providing access to financial resources and services, such platforms open up the prospect for entrepreneurs and organizations to create jobs and enhance economic growth (Samila and Sorenson, 2011). It's no wonder that entrepreneurs, policymakers, and the general public welcome the advent of crowdfunding platforms that connect those who are in need of funds with many others who are willing to contribute a small amount of money to help projects get off the ground. In this manner, crowdfunding facilitates not only institutional investors but also individual backers to invest today in companies that may very well become the market leaders of tomorrow. Examples of successful crowdfunding ventures include Bragi Wireless Headphones, HiberGene Diagnostics, Hopster, Lightpoint Medical, Oculus Virtual Reality Headset, Pebble Wearable Devices, Revolut, Skybell Video Doorbell, and Tile App Locator for Missing Stuff (Kosner, 2012; Robinson, 2018; Whannell, 2018).

Although crowdfunding has many advantages, it remains insufficiently understood. The California Management Review (2016) highlights what is unknown about crowdfunding. These unknowns include understanding of the psychology of reward/donation, the principles of democratization of obtaining money, comparison to other lending mechanisms, the ethics of using crowdfunding, and so on. Topics related to the overview of crowdfunding, its role in the capital market, and

investors' strategies regarding crowdfunding also suggest opportunities for research. Understanding the nature and dimensions of crowdfunding is important for its future continued success.

Prior research on crowdfunding has focused on the characteristics of the startup projects (Ahlers et al., 2015; Bessière et al., 2019; Loher, 2017; Majumdar and Bose, 2018; Sorenson, 2016; Vanacker et al., 2019; Signori and Vismara, 2018; Vismara, 2016); characteristics of the entrepreneurs or project founders (Ahlers et al., 2015; Moritz et al., 2015; Vismara, 2016; Zacharakis and Meyer, 1998); funding trajectory of the projects (Mollick, 2014); and on the characteristics of the investors (Bruton et al., 2015; Mollick, 2014; Signori and Vismara, 2018; Sorenson, 2016; Vanacker et al., 2019).

Our research is different in that we focus on a unique factor that is specific to the Internet - web attention - and explore its role in fundraising of start-ups that may go beyond the context of crowdfunding. Web attention denotes the extent of public online visibility of an entity on social media. In the digital age, social media and social networks play an increasingly important role in entrepreneurial ventures (Banerji and Reimer, 2019; Kang et al., 2017). Entrepreneurs or founders who have a wide social network with multiple interpersonal network connections (Dubini and Aldrich, 1991) enjoy high web attention, which facilitates acquiring better funding for their projects. In the current research, we use empirical startup data from Crunchbase – one of the largest databases with information on startups in various crowdfunding and other microfinancing platforms – and examine the influence that web attention has on the funding potential of startups. Additionally, we incorporate the cultural dimension (individualism or collectivism) (Hofstede, 1980) depending on the country in which the startup is based, and investigate whether cultural differences impact the funding performance. People are embedded in society and draw from their social and cultural norms in making a decision, including investment decisions. People from a collectivistic culture are impacted more by social influence than those from an individualistic culture (Hofstede, 1980). We extrapolate this premise to a crowdfunding context and examine if people from a collectivistic culture are more influenced to perceive an entity (company or founder) highly, if others pay attention to the entity (that is, if there is high web attention), and invest. Our overarching research question is:

*How do online platform characteristics affect start-up funding in the new environment of venture fundraising?*

*Specifically, how does web attention affect the funding? And how does national culture affect the possible impact of web attention on the funding?*

The rest of the paper is organized as follows. Section 2 discusses relevant theoretical foundations from which hypotheses are drawn. This is followed by Section 3, which discusses the research methodology. Section 4 presents the results and analyses. Section 5 focuses on the scope and limitations, while Section 6 identifies future research opportunities. Lastly, Section 7 offers conclusions of the research.

## **THEORETICAL FOUNDATIONS AND HYPOTHESES DEVELOPMENT**

### *New Age of Funding: An example of Crowdfunding*

The concept that startup companies can access funding from thousands of smaller investors instead of from traditional giants (risk-averse bankers, commercial loans, or equity capital) is not new. Crowdfunding emerged in response to the challenges and/or failure to attract traditional financing (Zaleski, 2011). In 1985, actors Paul Hogan and John Cornell organized a fundraising campaign and raised about \$5000 each from 1400 investors to fund the production of the movie *Crocodile Dundee* (Gulliarati, 1988). The trend continued through the 1970s and 1980s as a string of multiple small investors initiating about \$2000 per head to finance ventures such as shopping malls, oil and gas exploration, and others. By 1990, a total of \$140 billion was raised by companies using this investment model (Knight and Knight, 1997). Unlike traditional funding mechanisms that necessitate intermediaries such as advertisements and brokers to seek public investments or donations, crowdfunding directly links donors to millions of potential supporters by making full use of the Internet. Examples of crowdfunding platforms include Kickstarter, Indiegogo, and Kiva. In addition to providing a forum to publicize and promote products/services, these platforms also provide services for campaigners to manage and track payments as well as communicate with sponsors, all for a fee which is usually a percentage of the funding amount (Fleming and Sorenson, 2016).

There is a misconception that crowdfunding platforms offer similar crowdsourcing activities. In fact, their approaches vary, and there are several types. The financing methods are quite different from those of investment banks and venture capital companies. For one, crowdfunding has different types of investors and customers (although sometimes they overlap). Second, crowdfunding platforms also serve a wider range of funders and seekers (Fleming and Sorenson, 2016) compared to others. Third, not all crowdfunding platforms offer similar activities - in fact, there

are various approaches and models. Rewards (or donation-based) crowdfunding is the model for platforms such as Kickstarter and Indiegogo in which contributors are given rewards in the form of services, recognition or pre-orders in exchange for a small amount of support. Equity crowdfunding, on the other hand, implies selling equity in the startup, and includes platforms such as Fundrise, Seedrs, AngelList, and FundersClub. Debt crowdfunding offers numerous types of lending such as mini-bonds, peer-to-peer lending and invoice financing, and includes platforms such as Kiva, Prosper, Lending Club, and GoFundMe (Kunz et al., 2017). Fourth, even though crowdfunding investors tend to respond to many of the same indicators as do venture capitalists such as strong founding teams, endorsements, and a well-presented proposal (Mollick and Robb, 2016), there are some notable differences. Crowdfunding investors are more willing to invest in riskier ideas than venture capitalists. It appears, too, that women and people from diverse backgrounds may have an advantage in raising money from the democratic process of crowdfunding. Thus, crowdfunding may in fact allow more people to become entrepreneurs.

Crowdfunding research has typically examined the characteristics of the startup projects as precursors to funding decisions. These relate to financial details of the project in terms of provision of risk information (Loher, 2017), information on ownership retention (Ahlers et al., 2015); levels of human capital for the projects (Vismara, 2016); the potential to attract funding from other sources (Sorenson, 2016; Vanacker et al., 2019; Signori and Vismara 2018) and the funding trajectory following the initial crowdfunding campaign including family and friends, business angels and venture capitalists (Mollick, 2014). The characteristics of entrepreneurs or founders has been a potent area of research and has centered on the personality of the entrepreneur (Moritz et al., 2015), the effectiveness of signaling (Ahlers et al., 2015; Vismara, 2016), and the efforts at reducing information asymmetry with potential investors (Agrawal et al., 2015; Kim and Viswanathan, 2019; Moritz et al., 2015). A few other studies have studied the link between the actors in innovative finance (entrepreneurs) and the governance affecting the various investors (Bruton et al., 2015; Mollick, 2014; Signori and Vismara, 2018; Sorenson, 2016; Vanacker et al., 2019).

Our paper is distinct in that it focuses on a unique characteristic that is specific to the internet namely - web attention - and explores how it affects the funding of the start-ups that can go beyond the context of crowdfunding. We conceptualize web attention as the extent of visibility of a company on the social media. In this way, we emphasize how founders can conceptualize and come up with creative ways to enhance funding by utilizing the connectivity and functionality of the web. Another interesting contribution of our paper is that it investigates the influence of the cultural dimension arising from the home country of the startup, and evaluates its

impact on funding. We see if cultural norms influence the attitude to funding in a crowdfunding context. In the following sections, we describe relevant concepts from which hypotheses are developed.

### *Web Attention*

Over the last few years, research has examined the importance of social networks for entrepreneurial activity (Banerji and Reimer, 2019). Entrepreneurs who are well-connected in interpersonal social networks are more likely to have access to significant resources (Dubini and Aldrich, 1991). These connections in turn improve the probability of venture success. The social network of company founders has been shown to be an important factor in the success and total funding amount of a venture (Banerji and Reimer, 2019). In fact in a study, the average number of followers on LinkedIn for a founder was the strongest predictor of the total amount of money raised such that it relates positively to the funding amount raised each year (Banerji and Reimer, 2019). In other words, a good social network increases the chances that a startup founder will be successful. In short, well-connected and well-known founders and organizations are more likely to access valuable resources such as knowledge, expertise, human resources, and market information (Davidsson and Honig, 2003). Venture capitalists consider the relationship between founders and investors in making their decision (Beaulieu et al., 2015; Fried and Hisrich, 1994).

In addition to founders, the employees' connections in social networks have also been associated with the success of crowdfunding projects (Muller et al., 2016). The attention and time of the audience are scarce resources. The crowdfunding provider needs to attract the audience within the first 5 to 15 seconds in order to grasp the attention and incite the motivation to invest (Jääskeläinen et al., 2008; Steinberg and DeMaria, 2012). Human attention is inherently limited and bounded, and so ways to influence investor perceptions and identify effective investment criteria are of paramount importance in the crowdfunding context. Virtala (2017) applied the framework of Hirshleifer and Teoh (2003) that signifies the role of web attention and explored the effect of limited investor attention on equity crowdfunding success.

The ultimate goal of fundraising activities is, of course, to raise funds. Public attention and awareness regarding the idea or project is integral to funding. Public attention indicates whether funders are interested in creation or invention and have sufficient market potential (Schwienbacher and Larralde, 2010; Zheng et al., 2014). The concept of limited attention originated in psychology literature and is directly applicable to a crowdfunding scenario. People, by nature, have limited attention

spans. Therefore, any event or entity that manages to attract lots of attention is probably more likely to be successful. As an example, stock market literature posits that companies that get more attention display higher price volatility than those that receive less attention. Along these lines, we propose that companies that manage to attract more attention tend to receive more funding. Therefore, we hypothesize:

***Hypothesis 1 (H1):***

*Web attention is positively associated with a company's funding amount.*

***National Culture***

Culture is defined as the “interactive aggregate of common characteristics that influence a group’s response to its environment” (Hofstede, 1980, p. 19). Culture has an influence on an individual’s decision making through the system of norms and values that the individual absorbs being embedded in a group/community (Perry et al., 2015).

Culture relates to various levels - group, organizational and national. At a national level, the Cultural Dimension Theory of Hofstede (1980) categorizes countries on the basis of six dimensions namely, uncertainty avoidance, individualism-collectivism, uncertainty avoidance, power distance, masculinity-femininity, long-term orientation and indulgence-restraint - which can reflect the strength of social forces. Many researchers focus on the one dimension, individualism-collectivism in identifying cross-cultural impacts. Individualism emphasizes individual personal goals while collectivism focuses on group goals. Individualism has a broad meaning as a value system, which is that all values should be individual-centered and that the individual itself has the highest value (Perry et al., 2015). Collectivism, on the other hand, focuses on the interdependence of people and advocates that individuals and their interests should be subordinate to society and nations (Hofstede, 1980; 2011; Vadi and Buono, 1997)

Cultural individualism and collectivism suggest different attitudes towards events in different societies. For example, in a country that advocates individualism, people need only consider their own interests; they make independent decisions freely (Hofstede, 1980; 2011). However, in a society where collectivism prevails, people consider the interests of others in their decisions.

Many researchers conducted studies to explore individualistic and collectivist cultures, their differences, and their general roles. Kim (2008) examined the impact of culture on trust determinants in ecommerce transactions and found that the



collectivist culture has a stronger influence on trust determinants than individualist culture. Perry et al. (2015) found that collectivism culture moderates the effects on hierarchical relationship, anonymity, and social reference on donation behavior. The intensity of relationships is weaker for people with collectivism tendency than for individuals who have individualism tendency; the intensity of relationships between social reference and the amount of planned donation is stronger for collectivist than for the individualists (Perry et al., 2015).

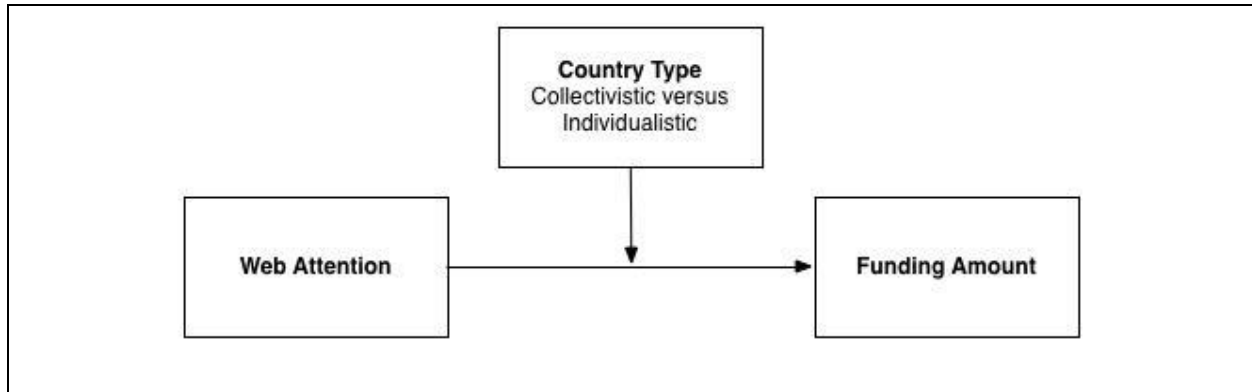
Based on existing studies, while the different roles of collectivism and individualism in funding outcomes are clear, only limited research has focused on the impact of cultural differences on amount of funding. This research proposes that individualism and collectivism may have moderating impacts on the final funding amount. It also discusses how individualistic culture and collectivistic culture affect the relationship of web attention and entrepreneurship funding amount.

In the current study, we assess the culture of the home country in which the startup is based and distinguish between individualistic and collectivist culture. People in a collectivistic culture are generally more susceptible to social influence than those in an individualistic culture. Individualistic culture suggests that individuals should prioritize personal values rather than adhere to group values or opinions (Gorodnichenko and Ronald, 2012). Therefore, we infer that people in the collectivistic culture are more likely than those in an individualistic culture, to think highly of a company if everyone else is paying attention to this company (that is, if web attention is high). By this logic, we hypothesize:

***Hypothesis 2 (H2):***

*The positive association between web attention and funding amount of a company is stronger when the company's home country is collectivistic than when the country is individualistic.*

**Figure 1** depicts our research model that illustrates both hypotheses.

**Figure 1. Research Model**

## RESEARCH METHODOLOGY

### *Data Source - Crunchbase*

Crunchbase is a large online platform-based database developed by TechCrunch, a leading blog about online technology innovations. Crunchbase provides an array of information on the ecosystem of startups including the details of the company, founders, the reported funds raised, the year of establishment, industry, number of employees, number of financing rounds received, amount of funds raised per round of financing, and types of financing received (angels, seed series A venture capital, private equity).

Crunchbase has been used in various research studies such as for predicting venture capital funding, collecting company equity issuance data for projects (such as transaction type and investor status) (Signori and Vismara, 2018), analyzing initiation and exit phenomena of startups (Pisoni and Onetti, 2018), investigating the performance of startups along with factors that influence angel financing (Croc et al., 2018); facilitating angel investment decisions (Croc, 2018; Cumming et al., 2019); acquiring assistance in market research, sales, and other startup-related services (e.g., finding office space, legal counsel etc.) (Ghezzi et al., 2014).

In this research, we use Crunchbase ([www.crunchbase.com](http://www.crunchbase.com)) as the data source to explore the relationship between web attention and entrepreneurship funding at an early stage and, identify whether more web attention will have a positive or negative impact on fundraising for startup companies.

The Crunchbase website was crawled 580 times, with 1000 records retrieved per round, making a total of 580,000 records in our original dataset. The original dataset has 56 variables from 1968 to 2018, a period of 60 years. The timestamp indicated the date of the last funding contribution of each company. We explain our variables below.

### ***Dependent Variable***

In most crowdfunding studies, the total amount of funds raised is the goal of the model, and is often used as a metric to assess the success of crowdfunding activities. In this research also, the total funding amount is used as the dependent variable. Since different countries have different currencies, based on the currency exchange rate, we converted all the currencies into US dollars for the variable and used *Total Funding Amount Converted* as the dependent variable.

### ***Independent Variable***

The independent variable for the research was *web attention*. The appeal of successful crowdfunding brings the focus on how important it is to publicize and gain visibility for the company/startup from social media and other digital channels - particularly considering the online nature of the phenomenon. In this study, we operationalized the concept of social media attention into web (digital) attention by measuring traffic on the startup company website. Web traffic is a manifestation of the appeal of the company and/or the product to visitors. We measure the total amount of time visitors spend monthly on each company's website as a calculated composite from the two variables: monthly visit and visit duration.

### ***Moderating Variable***

Crowdfunding platforms make fundraising highly accessible by disregarding geographic constraints such as dispersion, and/or location. Therefore, it is natural to investigate if cultural differences may have an influence on the amount of fundraising. In the current study, we specifically explore the differential impact of web attention on total funding amount when cultural indicators are incorporated into the model. Drawing from extant literature the study utilizes the dimension of individualistic versus collectivistic tendencies of countries in which the company is founded to represent the cultural influence indicator. Therefore, *Country Type* was used as a variable to identify whether the home country of a company is culturally collectivistic or individualistic. We categorized each country as belonging to collectivist or individualist cultures ([https://psychology.wikia.org/wiki/Collectivist\\_and\\_individualist\\_cultures](https://psychology.wikia.org/wiki/Collectivist_and_individualist_cultures)).

Specifically, we have confirmed our coding of the individualism versus collectivism construct based on the individualism dimension of the following link: <https://www.hofstede-insights.com/product/comparecountries/>, which quantifies the traits of countries.

### ***Control Variables***

The sector for each company is treated as a control variable. We crawled the Bloomberg website for sector information for companies. Using the sector classification proposed by the World Bank, for each company we assigned one of three types of *Economic Sector*: primary, secondary and tertiary.

The variable of *Economic Status* is another control variable. We use income-level as a proxy. Using World Bank classifications, all countries were assigned to one of four different income-levels: 0 for low; 1 for medium; 2 for upper medium; and 4 for high (<https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>).

In order to gain further insight, additional variables were considered. Mergers and acquisitions are essential activities for a company's development. If a company made a prior acquisition, we coded the variable of *Made Acquisition Status* as '1'; otherwise it was coded as '0'. The variable of *Closed* represents the operation status: if the company closed down, we coded it as '1'; if not, it was coded as '0'. The other control variable is the *Number of Funding Rounds*, that is, how many rounds of funding a company has launched. Table 1 shows a list of variables with definitions.

**Table 1. Variables in the Research**

<b>Variable</b>	<b>Explanation</b>
Total Funding Amount Converted	Total Funding Amount in US dollars
Web Attention	Total visit duration of all visitors per month for each company
Acquisition Status	Whether the company made acquisitions (coded as 1) or not (coded as 0)
Closed	The operation status of the company: 1 if the company closed; 0 if not
Number of Funding Rounds	The number of rounds of financing the company has launched

Income Level Index	Countries are assigned to one of four income levels (as identified by the World Bank): 0=low; 1=middle; 2=upper middle; 4=high.
Country Type	Cultural dimension for the home country of startup: 1 for individualistic; 0 for collectivistic
Economic Sector	Economic sector of the company identified as Primary; Secondary; Tertiary

This study used Python to process data, including data cleaning, adding or removing variables, and calculating variables. Considering missing values for all nine variables, the project consisted of 24,154 records for analysis.

## RESULTS AND ANALYSES

Table 2 shows the descriptive statistics for all numeric variables. All other variables (listed in Table 1) are either dummy variables or categorical variables. The standard deviations of some variables, such as *Total Funding Amount Converted* and *Web Attention*, are too large. In this case, we standardized all variables before building models.

**Table 2. Descriptive Statistics**

	Min.	Max.	Mean	Std
Total_Funding_Amount_converted	1275	23,421,108,403	40,940,150	295,123,370
Number of Funding Rounds	1.00	27.00	2.64	2.05
Web Attention	18.00	31,100,000,000,000	4598004179	298,108,297,247

Before using variables to build models, we calculated Variance Inflation Factors (VIFs) for all numeric variables to test for multicollinearity (Table 3) and Pearson Correlations (Table 4). We included all the independent variables and control variables in the model and ran the VIFs to see if any of the variables is highly correlated with any other variable. As shown in Table 3, all VIF values of numeric

variables are lower than 5, indicating the absence of multicollinearity. Therefore, these variables could be included in the models.

**Table 3. VIF Values**

Variables	VIF
Total Funding Amount converted	1.039
Number of Funding Rounds	1.036
Web Attention	1.004

**Table 4. Correlations**

		Total Funding Amount Converted	Number of Funding Rounds	Attention
Total Funding Amount converted	Pearson Correlation	1	0.153 ***	0.027***
	Sig. (2-tailed)		0.000	0.000
	N	41319	41319	41319
Number of Funding Rounds	Pearson Correlation	0.153***	1	0.018***
	Sig. (2-tailed)	0.000		0.000
	N	41319	41319	41319
Web Attention	Pearson Correlation	0.027***	0.018***	1
	Sig. (2-tailed)	0.000	0.000	
	N	41319	41319	41319
Note: ***p < 0.001				

Because the dependent variable is not normally distributed, we conducted log transformation for this variable of *Total Funding Amount Converted*. We ran linear regressions to test the two hypotheses (Table 5). Across all three models, we included our control variables. All models demonstrate that *Made Acquisition Status*, *Number of Funding Rounds*, *IPO Status*, *Economic Sector*, and *Income Level* have a significant effect on *Total Funding Amount Converted*. Specifically,

we found that if a startup has been acquired or is being readied for an IPO, its funding total is greater than if it has not (0.254 and 0.752,  $p < 0.001$ ; 0.325 and 0.751,  $p < 0.001$ ; 0.325 and 0.745,  $p < 0.001$  in three models, respectively). It also shows that the more the number of funding rounds, the higher is the funding total (0.198,  $p < 0.001$ ; 0.221,  $p < 0.001$ ; 0.221,  $p < 0.001$  in three models, respectively). If a startup has closed, then the total funding will drop significantly (-0.554,  $p < 0.05$ ; -0.483,  $p < 0.05$ ; -0.483,  $p < 0.05$  in three models, respectively). The results on income level and economic sector suggest that if a startup is in a high-income country or is from the primary sector, it tends to receive a higher amount of total funding.

**Table 5. Regression Results**

	Model 1		Model 2		Model 3	
	Coeff.	P-value	Coeff.	P-value	Coeff.	P-value
Intercept	-0.878	**	-0.827	**	-0.823	**
Made Acquisition Status [Yes]	0.254	***	0.325	***	0.325	***
Closed [Yes]	-0.554	*	-0.483	*	-0.483	*
Number of Funding Rounds	0.198	***	0.221	***	0.221	***
IPO Status [Public]	0.752	***	0.751	***	0.745	***
Income Level [1]	-1.142	***	-0.501	.	-0.527	.
Income Level [2]	-0.757	*	-5.123		-0.427	
Income Level [3]	-1.069	***	-0.668	*	-0.684	*
Economic Sector [Secondary]	-0.527	***	-0.540	***	-0.540	***
Economic Sector [Tertiary]	-0.331	**	-0.398	***	-0.402	***
Web Attention			1.32E-13	*	3.51E-12	***
Country Type [Individualistic Culture]			-0.784	***	-0.759	***
Web Attention * Country Type [Individualistic Culture]					-3.39E-12	***
Adjusted R-squared	0.07702	***	0.1045	***	0.1068	***
Note: .p<0.1; *p<0.05; **p<0.01; ***p<0.001						



In Model 2, we added the independent variable to Model 1. Model 2 shows that *Web Attention* has a significant positive association with *Total Funding Amount Converted* ( $p < 0.05$ ). Therefore, *Hypothesis 1* is supported. Meanwhile, the coefficient of *Country Type* of Individualistic Culture is negative. This shows that compared with companies launching IPOs in collectivistic culture countries, companies launching IPOs in individualistic countries received less funding.

In Model 3, we added the interaction between *Web Attention* and *Country Type* ( $-3.39E-12$ ,  $p < 0.001$ ). This interaction is negative and significant. Thus, *Hypothesis 2* is supported. The positive association between *Web Attention* and *Total Funding Amount Converted* is stronger when companies launching IPOs are in collectivistic cultures than when they are in individualistic cultures. Overall, both hypotheses are supported. Also across the three models, the adjusted R-squared has increased, which suggests that our choice of variables is valid adding more explanatory power of the dependent variable. Table 6 shows a summary of the results.

**Table 6. Summary of Results**

Hypotheses		Results
H1	Web attention is positively associated with a company's funding amount.	Supported
H2	The positive association between web attention and funding amount of a company is stronger when the company's home country is collectivistic than when the country of the company is individualistic	Supported

## DISCUSSION

This research makes significant contributions to both research and practice. First, the research demonstrates the importance of web attention in the fundraising process. It confirms that web attention is an influential factor in the total funding amount (in US dollars). We show that investor perception and attention will impact positively the ability of startups to raise funds. In this research, we use website traffic and monthly-visit duration to measure web attention. The result suggests that startups are more likely to be successful in fundraising if they are popular and if they can, with design and other “attractions,” hold their audience to extended visits to the website.

Our study explains why well-known companies have a higher probability of receiving more funding. It demonstrates the importance of having high quality content and design in a corporate website so as to attract and retain visitors. This pattern is consistent with other findings that well-known founders with higher numbers of LinkedIn followers are also likely to raise more money (Banerji and Reimer, 2019). Further, social connectedness of a founder was the best predictor of funds raised annually by a founder. This implies that founders can use online platforms (e.g., social media, LinkedIn, etc.) not only to build their social connections but to communicate their social capital to investors.

Second, the study also confirms that the more mature a startup, the higher the probability for it to receive more funding, indicating that the number of funding rounds is a key influencer for crowdfunding investors. Although crowdfunding investors are less risk-averse than traditional investors, they still prefer mature and promising startups that have gone through several rounds of funding successfully. Finally, the culture dimension of the startup is associated with the funding amount when companies have launched IPOs. Compared to collectivism, which encourages embeddedness of individuals in a larger group, individualism emphasizes the independence of the individual and applauds their achievements. Since crowdfunding is a type of social activity involving large groups of people in a collaborative environment, it goes against the paradigm of individualism of a 'lonely' and 'solitary' pursuit of fund raising. This circumstance makes it difficult to gain the trust of potential investors who may have a different outlook (Liang et al., 2019). For example, some organizations are tech savvy and innovative. Others are traditional and more conservative about the role of technology. Perry et al. (2015) had a similar finding: that donation behavior is relatively stronger for the individual who is a collectivist than for one who is an individualist. Thus, our results highlight the challenges inherent in the individualistic culture in the context of crowdfunding.

Moreover, when the study combines the influences of web attention and national culture, the results shows that, in collectivistic countries, when companies launch IPOs, web attention has a stronger positive relationship to the total funding amount. In other words, the collectivistic culture can amplify the positive impact of web attention on the total funding amount that a startup receives.

Other variables that have influence on total funding amount include *Acquisition Status*, (if the company has made an acquisition), *Closed* (if the company is closed), the *IPO Status* (if the company is Public), and *Number of Funding Rounds* (number of rounds of financing).

## SCOPE AND LIMITATIONS

The research suggests that web attention has a stronger impact on funding for companies in collectivistic cultures than for those in individualistic cultures. However, there are several areas that can benefit from additional study. Our research does not include the company category in the model; a business category may, in fact, be a key consideration for investors. Given the macro economic environment and the nature of industries, a business category may indicate differential potential for development. Put another way, startups in different industries likely will receive different amounts of exposure to and preference by investors. For example, in terms of investment opportunity, e-commerce was a particularly popular one in the 1990s, while in current times AI and Machine Learning have become are the more popular ones.

## DIRECTIONS FOR FUTURE RESEARCH

To improve research coverage and draw general conclusions, further research direction can be conducted in the following aspects. First, in addition to web attention, it is possible to include and analyze more variables and indicators that may help better understand the relationship between web attention and funding performance. The additional information can be in the form of structured data such as appearance in online news and articles, search frequency on search engines, and frequency on social media; or unstructured data such as sentiment of online news, comments on social media, and n-grams of search patterns. These will be valuable components of studies that not only measure, but also understand the direction (whether positive or negative) of web attention. Second, alternative measures of web attention can be deployed. Although web traffic is a representative indicator for measuring web attention, this method poses some challenges because many web browsers provide tabs that allow users to keep pages open indefinitely, even when they are not actively looking at them. This function increases visit durations and times and creates misleading representations of traffic. As alternative or supplemental measures, data from social media sites (e.g., # of likes, etc.) or LinkedIn search frequency (e.g., counts, etc.) can be incorporated for web attention of startups.

Other influential factors, company category among them, may play a direct or intermediary role in impacting funding performance. The macro economic environment, industrial investing preference, policies, founder team structure and

leadership, and type of rewards or products are all potential factors worth considering in future research.

In terms of data source selection, while our research uses the Crunchbase platform, future research can incorporate different datasets and measurements of web attention are needed to test the result. Depending on different targets and the preferences of investors on various crowdfunding platforms, the result may differ, and the reasons for those differences will be an interesting objective. It is also possible that comparison of different types of crowdfunding platforms may yield different results.

## CONCLUSIONS

The current research demonstrates the positive relationship between web attention and the total amount of funds that a startup receives in individualistic and collectivistic cultures. Our results contribute to the literature on crowdfunding, the functionality of Crunchbase, and the phenomenon of web attention (measured by visit duration and monthly visits).

The following theoretical contributions fill a gap in existing research. By demonstrating the positive influence of web attention in fundraising, we encourage startups to focus their efforts in this direction. To attract more venture capital, companies can incorporate sophisticated design and functionality of the web interface for investors. In addition to online efforts, offline activities such as road shows will draw more in-person attention, which will ultimately translate into actionable investment decisions. Therefore, a hybrid approach of online content improvement and offline promotional activity will lead to greater web attention and higher probability of increased funding.

The second contribution is an understanding of the influence of individualistic and collectivistic culture on web attention in fundraising of venture capital. Individualists pursue a personal goal and maintain an independent, unique, and minimal relationship with their investors. In contrast, collectivists value teamwork and common goals - inclinations that align with crowdfunding behavior. This research identifies cultural influences in crowdfunding, offering an innovative way to analyze factors influencing startup funding success.

As we anticipated, when the home country culture is considered with the company's IPO launch and fundraising, web attention produces a differential impact on the total funding amount. In other words, when potential traditional investors are more likely to be engaged in the individualistic founder's network, the impact on the

funding amount raised will be lower than expected. Therefore, when companies increase their web attention, they should simultaneously consider targeting their crowdfunding efforts in countries with the collectivist culture. And they should compare costs across different countries and cultures.

## REFERENCES

- Agrawal, A., Catalini, C., and Goldfarb, A. (2015). "Crowdfunding: geography, social networks, and the timing of investment decisions," *Journal of Economics & Management Strategy* Vol. 24, No. 2 pp. 253-274.
- Ahlers, G. K., Cumming, D., Günther, C., and Schweizer, D. (2015). "Signaling in equity crowdfunding," *Entrepreneurship Theory and Practice*, Vol. 39, No. 4, pp. 955-980.
- Banerji, D., & Reimer, T. (2019). "Startup founders and their LinkedIn connections: Are well-connected entrepreneurs more successful?" *Computers in Human Behavior*, Vol. 90, pp. 46–52.
- Beaulieu, T., Sarker, S., & Sarker, S. (2015). "A Conceptual framework for understanding crowdfunding," *Communications of the Association for Information Systems*, Vol. 37, pp. 1-31.
- Belleflamme, P., Lambert, T., & Schwienbacher, A. (2010). *Crowdfunding: An industrial organization perspective. Digital business models: Understanding strategies*, Paris, Frankreich.
- Belleflamme, P., Lambert, T., & Schwienbacher, A. (2013). "Individual crowdfunding practices," *Venture Capital*, Vol. 15, No. 4, pp. 313–333.
- Belleflamme, P., Lambert, T., & Schwienbacher, A. (2014). "Crowdfunding: tapping the right crowd," *Journal of Business Venturing*, Vol. 29, No. 5, pp. 585-609.
- Bessière, V., Stéphanie, E. & Wirtz, P. (2019) "Crowdfunding, business angels, and venture capital: an exploratory study of the concept of the funding trajectory," *Venture Capital*, pp. 1-26.
- Bruton, G., S. Khavul, D. Siegel, and Wright, M. (2015). "New financial alternatives in seeding entrepreneurship: microfinance, crowdfunding, and peer-

to-peer innovations,” *Entrepreneurship Theory and Practice*, Vol. 39, No.1, pp. 9-26.

California Management Review-Special Issue on Crowdfunding. (2016). Retrieved from <https://cmr.berkeley.edu/documents/press/crowdfunding/>

Croce, A., & Guerini, M., & Ughetto, E. (2018). “Angel financing and the performance of high-tech start-ups,” *Journal of Small Business Management*, Vol. 56, No. 2, pp. 208-228.

Cumming, D., Vanacker, T., & Zahra, S. (2019). “Equity crowdfunding and governance: toward an integrative model and research agenda,” *Academy of Management Perspectives*, forthcoming.

Davidsson, P., & Honig, B. (2003). “The role of social and human capital among nascent entrepreneurs,” *Journal of Business Venturing*, Vol. 18, No. 3, pp. 301-331.

Dubini, P., and Aldrich, H.E. (1991). “Personal and extended networks are central to the entrepreneurial process,” *Journal of Business Venturing*, Vol. 6, pp. 305-313.

Fleming, L., & Sorenson, O. (2016). *Financing by and for the Masses: An introduction to the special issue on crowdfunding*.

Fried, V. H., & Hisrich, R. D. (1994). “Toward a model of venture capital investment decision making,” *Financial Management*, pp. 28-37.

Ghezzi, A., Cortimiglia, M.N., and Frank, A.G. (2014). “Strategy and business model design in dynamic telecommunications industries: a study on Italian mobile network operators,” *Technological Forecasting & Social Change*, Vol. 90, pp. 346-354.

Gorodnichenko Y., & Roland, G. (2012). “Understanding the Individualism-Collectivism Cleavage and Its Effects: Lessons from Cultural Psychology,” In: Aoki M., Kuran T., Roland G. (eds). *Institutions and Comparative Economic Development*. International Economic Association Series. Palgrave Macmillan, London.

Gulliarati, R. (1988). “Australian Dealmaker: John Cornell, The man who sold Hollywood on Crocodile Dundee,” *The New York Times*.

Hirshleifer, D., & Teoh, S. H. (2003). “Limited attention, information disclosure, and financial reporting,” *Journal of Accounting and Economics*, Vol.36, No. 3, pp. 337-386

Hofstede, G. (1980). *Culture's consequences: international differences in work-related values*. SAGE Publications.

Jääskeläinen, M., & Maula, M., & Seppä, T. (2008). "Allocation of attention and the performance of venture capitalist," *Entrepreneurship Theory and Practice*, Vol. 30, No.2, pp. 185-206.

Kang, L., Jiang, Q., Tan, C. (April 2017). "Remarkable advocates: An investigation of geographic distance and social capital for crowdfunding," *Information & Management*, Vol. 54, No.3, pp. 336-348.

Kim, D. J. (2008). "Self-perception-based versus transference-based trust determinants in computer-mediated transactions: a cross-cultural comparison study," *Journal of Management Information Systems*, Vol. 24, No. 4, pp. 13-45.

Kim, K. and Viswanathan, S. (June 2019). "The experts in the crowd: The role of experienced investors in a crowdfunding market," *MIS Quarterly*, Vol. 43, No. 2, pp. 347-372.

Knight, L., & Knight, R. (July 1997). "What happened to limited partnerships?" *Journal of Accountancy*, Vol. 184, No. 1, pp. 37-42.

Kosner, W, A. (2012). "For a more complete story behind the Pebble and its founders, "who needs venture capital? Pebble Smart Watch raises over \$5 Million on Kickstarter," *Forbes*.

Kunz, M., & Bretschneider, U., & Haas, P., & Blohm, I., & Leimeister, J. M. (2017). "Crowdfunding: outlining the new era of fundraising," In *Crowdfunding in Europe*, pp. 7-23.

Liang, T., Wu, S.P. & Huang, C. (Jan 2019). "Why funders invest in crowdfunding projects: role of trust from the dual-process perspective," *Information & Management*, Vol. 55, No. 1, pp. 70-84.

Lin, M., & Viswanathan, S. (2013). "Home bias in online investments: an empirical study of an online crowdfunding market," *SSRN Electronic Journal*.

Loher, J. (2017). "The interaction of equity crowdfunding platforms and ventures: an analysis of the preselection process," *Venture Capital*, Vol. 19, No. 1-2, pp. 51-74.

Majumdar, A., & Bose, I. (Sept 2018). "My words for your pizza: An analysis of persuasive narratives in online crowdfunding," *Information & Management*, Vol. 55, No. 6, pp. 781-794.

Mollick, E. (2014). "The dynamics of crowdfunding: an exploratory study," *Journal of Business Venturing*, Vol. 29, No.1, pp. 1–16.

Mollick, E., & Robb, A. (2016). "Democratizing innovation and capital access: the role of crowdfunding," *California Management Review*, Vol. 8, No. 2, pp. 72-87.

Moritz, A., Block, J., and Lutz, E. (2015). "Investor communication in equity-based crowdfunding: a qualitative-empirical Study," *Qualitative Research in Financial Markets*, Vol. 7, No. 3, pp. 309–342.

Muller, M., & Keough, M., & Wafer, J., & Geyer, W., & Alvarez Saez, A., & Leip, D., & Viktorov, C. (2016). "Social ties in organizational crowdfunding: benefits of team-authored proposals," *IBM Research*.

Perry, J., Chand, M., and Ring, K. (2015). "Cultural influences in the decision to invest in new ventures: an exploratory study," *Venture Capital*, Vol. 17, No. 3, pp. 237-262.

Pisoni, A., & Onetti, A. (2018). "When startups exit: comparing strategies in Europe and the USA," *Journal of Business Strategy*, Vol. 39, No. 3, pp. 26-33.

Robinson, R. (Sep 17, 2018). "5 Crowdfunded Side Projects That Became Million-dollar Companies," available at: <https://www.forbes.com/sites/ryanrobinson/2017/09/18/crowdfunded-side-projects-that-became-million-dollar-companies/#49f6086d3f1d>, Retrieved Oct 13, 2019

Samila, S., & Sorenson, O. (2011). "Venture capital, entrepreneurship, and economic growth," *The Review of Economics and Statistics*, Vol. 93, No. 1, pp. 338-349.

Schwiebacher, A., & Larralde, B. (2010). "Crowdfunding of small entrepreneurial ventures," *SSRN Electronic Journal*, Vol. 10, pp. 1-23.

Signori, A., and Vismara, S. (2018). "Does success bring success? The post-offering lives of equity-crowdfunded firms," *Journal of Corporate Finance*, Vol. 50, pp. 575–591.

Sorenson, O. (2016). "Expand innovation finance via crowdfunding: crowdfunding attracts venture capital to new regions," *Science*, Vol. 354, pp. 1526–1528.



Steinberg, S., & DeMaria, R. (2012). *The Crowdfunding Bible: How to Raise Money for any Startup, video game or project*. In Ed: J. Kimmich.

Vadi, M., & Buono, A. F. (1997). "Collectivism and individualism in Estonia: an exploratory study of societal change and organizational orientation," In *Transition in the Baltic States*, pp. 62-79. Palgrave Macmillan, London.

Vanacker, T. R., Vismara, S., and Walthoff-Born, X. (2019). "What happens after a crowdfunding campaign?" Forthcoming chapter in the *Handbook of Research on Crowdfunding*, Edited by Annaleena Parhankangas, Colin Mason & Hans Landström.

Virtala, J. (2017). "Spell it out! Limited attention and equity crowdfunding success," Aalto University School of Business.

Vismara, S. (2016). "Equity retention and social network theory in equity crowdfunding," *Small Business Economics*, Vol. 46, No. 4, pp. 579–590.

Whannell, J. (Jan 11, 2018). "The 5 most successful crowdfunding campaigns in 2017," available at: <https://born2invest.com/articles/5-successful-crowdfunding-campaigns-2017/>. Retrieved Oct 13, 2019.

Zacharakis, L. A., & Meyer, D. G. (1998). "A lack of insight: do venture capitalists really understand their own decision process?" *Journal of Business Venturing*, Vol. 13, No.1, pp. 57-76.

Zaleski, A. P. (2011). "Start-ups and external equity: the role of entrepreneurial experience," *Business Economics*, Vol. 46, No. 1, pp. 43-50.

Zheng, H., Li, D., Wu, J., Xu, Y. (2014). "The role of multidimensional social capital in crowdfunding: a comparative study in China and US," *Information & Management*, Vol. 51, pp. 488–496.