HHL LEIPZIG GRADUATE SCHOOL OF MANAGEMENT

Dissertation

An Empirical Analysis of Crowdfunding in Sub-Saharan Africa

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Abstract

The challenge to obtain early-stage funding for small ventures is especially pronounced in Africa, where traditional funding sources are available only to a small extent. This lack, combined with the diffusion of mobile phones and internet access, enabled the unprecedented rise of mobile payments on a personal level in Africa in recent years. On a commercial level, ICT-enabled crowdfunding is given the potential to mitigate the early-stage funding gap for African entrepreneurs. Using exploratory research, the dissertation provides initial empirical evidence on crowdfunding in Sub-Saharan Africa. In particular, it is shown that African entrepreneurs across the continent can raise substantial amounts of money by tapping into the global funding community. Moreover, empirical evidence is provided, that the basic economic constructs, institutions and infrastructure appear to play a decisive role for African crowdfunding and that their effect size depends on the respective institutional setting.

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An Empirical Analysis of Crowdfunding in Sub-Saharan Africa

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„Entscheidend für den Wert einer Idee ist nie, wie sie sich verwirklicht, sondern was sie an Wirklichkeit enthält. Nicht was sie ist, sondern was sie bewirkt.“

(Stefan Zweig, 1931)

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List of Abbreviations

ABAN	African Business Angel Network
AON	All-Or-Nothing
BCEAO	Banque Centrale des Etats de l'Afrique de l'Ouest
BEAC	Banque des Etats de l'Afrique Centrale
CFP	Crowdfunding Platform
CMA	Common Monetary Area
DFI	Development Finance Institution
ECOWAS	Economic Community of West African States
GCI	Global Competitiveness Index
GCR	Global Competitiveness Report
GCS	Global Competitiveness Score
GNI	Gross National Income
GDP	Gross Domestic Product
ICT	Information and Communications Technology
IPO	Initial Public Offering
IMD	International Institute for Management Development
IMF	International Monetary Fund
JOBS Act	Jumpstart Our Business Startups Act
KIA	Keep-It-All
LBSC	Local Business Service Center
MFI	Microfinance Institution
NGO	Non-Governmental Organization
ROSCA	Rotating Savings and Credit Association
SACU	Southern African Customs Union
UNESCO	United Nations Educational, Scientific and Cultural Organization
WAMZ	West African Monetary Zone
WAEMU	West African Economic and Monetary Union
WCY	World Competitiveness Yearbook
WEF	World Economic Forum
WHO	World Health Organization

1. Introduction

In its seminal report on the potential of crowdfunding for the developing world, the World Bank states that "Developing economies have the potential to drive growth by employing crowdfunding to leapfrog the traditional capital market structures and financial regulatory regimes of the developed world" (World Bank, 2013, p.9). In the case of sub-Saharan Africa[1], the World Bank estimates the market potential of crowdfunding to reach 2.5 billion by 2025. Similarly, a report published by order of the UK Department for International Development concludes that "...crowdfunding can positively support development programmes through a number of applications. It can improve access to capital, help manage supply and demand, drive innovation and efficiency and fund new markets." (Gajda & Walton, 2013, p.iii).

The perception that crowdfunding has the potential to mitigate the early-stage funding gap in Africa is not limited to financial organizations, but also established in academia. Berndt (2016) states that "Despite challenges associated with it, crowdfunding has potential for assisting entrepreneurs within the African context." (p.31). Even more notable is the finding of the University of Cambridge together with FSD Africa that "The development of crowdfunding markets has the potential to drive poverty reduction in East Africa (...). There is a great deal of potential for these new forms of finance to provide access to funding, and thereby promote economic development and financial inclusion in developing, emerging and developed countries alike." (FSD Africa, 2017, p.14).

Despite the potential it is given, an empirical assessment of the current usage of crowdfunding in Africa is missing (Berndt, 2016; Gajda & Walton, 2013). Yet, in order to understand if crowdfunding can live up to the promise it is given, it is indispensable to

[1] In the following, sub-Saharan Africa and Africa are used interchangeably. North African countries are not included in the analysis unless mentioned separately.

understand how it is currently used by Africans and how this usage pattern compares to the rest of the world. Furthermore, there is no knowledge about the economic processes that give rise to crowdfunding across different institutional settings (Bruton, Khavul, Siegel, & Wright, 2015). The study aims to address this gap by providing initial empirical evidence on enabling economic factors for crowdfunding in the distinctive, highly heterogeneous African context. The results are used to provide practical advice to policymakers and interested stakeholders and, more generally, to gain a first understanding of the individual roles of economic factors across different institutional settings. In summary, in order to advance theory and practice, the following two research questions are covered:

(1) How is crowdfunding currently used in Africa?

(2) What are the enabling economic factors for crowdfunding in Africa?

Before proceeding, the study is put into general context to establish an understanding of its relevance and introduce the problem to the reader. In addition, an outline for the remainder of the study is provided.

Policymakers and academics around the world highlight the importance of entrepreneurship in developed and developing countries to achieve economic goals (Acs, Desai, & Hessels, 2008). Africa is no exception. Following independence from colonial rule for most African countries in the 1960s the proliferation of large industries was the focus of African policymakers (Adisa, Abdulraheem, & Mordi 2014; Allen, Otchere, & Senbet, 2011; Arvanitis, 2015; Kayanula & Quartey, 2000; Mamman, Kanu, Alharbi, & Baydoun, 2015). However, advancements in technology and the increased globalization of the worldwide economy ended this approach in the late 1990s (Arvanitis, 2015). Today, governments across the African continent recognize entrepreneurship as a potential means for innovation and

economic growth (Adisa et al., 2014; Arvanitis, 2015; Kayanula & Quartey, 2000; Mfaume & Leonard, 2004; Olutunla & Obamuyi, 2008). In particular, entrepreneurship is given the ability to provide (sometimes innovative) goods and services to both consumers and other businesses (Adisa, Abdulraheem, & Mordi 2014; Naudé, 2011), boost employment (Abor & Quartey, 2010; Acz, 2006; Agyapong, 2010; Ayyagari, Demirguc-Kunt, & Maksimovic 2011), intensify competition (Acz, 2006; Brixiova, 2010), increase productivity by technological innovation (Acz, 2006; Agyapong, 2010; de Bell, 2013), achieve wider socio-economic objectives such as poverty alleviation (Adisa et al., 2014; Agyapong, 2010; Beeka & Rimmington, 2011; Nixson & Cook, 2000; Mano, Iddrisu, Yoshino, & Sonobe, 2012), and contribute to the empowerment of women (Minniti & Naudé, 2010). In addition, entrepreneurs are regarded as being more adaptive to different market conditions (Abor & Quartey, 2010) and more flexible in adverse economic conditions (Abor & Quartey, 2010; Kayanula & Quartey, 2000). Yet the nature and purpose of entrepreneurial ventures vary. Therefore, development economics provides a more differentiated understanding of the effect of entrepreneurship on economic development. For that purpose, the differentiation between formal and informal as well as opportunity and necessity-driven entrepreneurship emerged (Acs et al., 2008). In the following, both concepts are briefly introduced as they play a decisive role in the African context.

The informal sector comprises all legitimate, yet unregistered business activities that take place outside formal institutions (Nichter & Goldmark, 2009; Webb, Tihanyi, Ireland, & Sirmon, 2009; Williams & Nadin, 2010). Firms acting in the informal sector are often small and suffer from being unproductive, with no regulatory protection for risks such as health, safety at work and financial losses (Ayyagari et al., 2011; Jütting & Laiglesia, 2009). Unsurprisingly, the majority of economic activity in developing countries takes place in the informal sector (Chuhan-Pole, 2014; de Bell, 2013; Filmer & Fox, 2014; Jütting & Laiglesia,

2009; Nichter & Goldmark, 2009). In the case of Africa, the informal sector comprises more than 80% of the total workforce and is not expected to decrease in size in the nearer future (Chuhan-Pole, 2014; Filmer & Fox, 2014). This high share of informality adversely affects the African economy as it is generally acknowledged that economic growth and development comes from highly productive enterprises that operate in the formal sector (Ayyagari et al., 2011). As put by the much-discussed dual economy view of Harris and Todaro (1970): The informal sector provides a safety net until formal, more productive firms are created that contribute to economic growth and development.

The second distinction between opportunity and necessity-driven entrepreneurship is based on the fact that most developing countries have high rates of mostly replicative entrepreneurship that has only limited effect on economic growth (de Bell, 2013; Naudé, 2011). While an opportunity-driven entrepreneur makes the choice to start a venture based on a recognized opportunity, the necessity-driven entrepreneur has no better option than doing so (Desai, 2009; de Bell, 2013; Reynolds et al., 2005). From an income perspective, opportunity-driven entrepreneurship is dominant in high-income countries, while necessity-driven entrepreneurship prevails in developing countries (Acs, 2006; Brixiova, 2010). Furthermore, empirical studies have shown that opportunity-driven entrepreneurship has a positive effect on economic development while necessity-driven entrepreneurship has none (Acs, 2006). The two classifications are not independent of each other. For instance, one reason for high rates of necessity entrepreneurship is the large size of the informal sector in developing countries (Desai, 2009). As a result, it is no surprise that extant literature confirms the positive relationship between economic growth and entrepreneurship for developed countries where formal, opportunity-driven entrepreneurship prevails (Brixiova, 2010; Wennekers, Van Stel, Thurik, & Reynolds, 2005; Wong, Ho, & Autio, 2005). Therefore, this study focuses on opportunity-based entrepreneurship for the reasons mentioned and because

the various forms of crowdfunding (with the exception of donations) are suited in particular to this kind of entrepreneurship, as will be shown in Chapter 3.

Before those opportunity-driven entrepreneurs can contribute to economic development, they have to overcome major, partly African-specific, obstacles (Abor & Quartey, 2010; Allen et al., 2011; Bruhn, Karlan, & Schoar, 2010; Arvanitis, 2015; Brixiova, 2010; Olawale & Garwe, 2010; Wang, 2016). The generally acknowledged obstacles can be categorized into managerial, environmental and financial ones (Brink, Cant, & Ligthelm, 2003) and are introduced below. Before doing so, it should be noted that the extent of those obstacles differ across countries due to the prevailing institutional heterogeneity on the continent.

First, African entrepreneurs suffer from a lack of management experience and managerial know-how (Abor & Quartey, 2010; Agwu & Emeti, 2014; Brixiova, 2010; Mano et al., 2012; Okpara & Kabongo, 2009). This includes a lack of expertise in areas such as marketing, human resource management and financial planning (Brink et al., 2003). One reason for this lack in management experience is the low levels of education that prevail on the continent (Adisa et al., 2014; Nichter & Goldmark, 2009). Despite recent improvements in the educational sector, only 69% of Africans complete primary education (UNESCO Institute for Statistics, 2016). It is especially that uneducated workforce that starts their own ventures out of necessity and a lack of alternatives (Nichter & Goldmark, 2009). But challenges exist also on higher education levels. 86% of African universities offer courses in entrepreneurship (Kabongo, 2008), however only 25% of African entrepreneurs think that these offerings are sufficient (Omidyar Network, 2013). This rate is even lower in the primary and secondary education sector, where only 14% of African entrepreneurs believe that enough teaching in entrepreneurship is offered (Omidyar Network, 2013). Furthermore, most African entrepreneurs act as working proprietors as they cannot afford to hire external

management expertise (Abor & Quartey, 2010; Adisa et. al, 2014). As a consequence, they are performing too many tasks on their own, so that the success of the venture solely depends on the abilities of the proprietor (Adisa et al., 2014; Tushabomwe-Kazooba, 2006). In addition, there is a lack of available business support services in Africa (Abor & Quartey, 2010; Omidyar Network, 2013) and those offered are often not cost-effective for small ventures (Abor & Quartey, 2010). Consequently, current literature suggests that through the mitigation of the current lack in management know-how and education, African entrepreneurs can improve their productivity and increase the success rate of their enterprises (Mano et al., 2012; Peters, Gensen, Isaacs, Botha, & Naicker, 2014).

Environmental obstacles comprise the access to infrastructure and human resources, regulatory constraints and corruption. Inherently, entrepreneurs have no control over these exogenous factors and must take them as given (Atieno, 2009; Brink et al., 2003). Despite the increased access to Information and Communications Technology (ICT) in recent years (Aker & Mbiti, 2010; Ewing, Chevrollier, Quigless, Verghese, & Leenderste, 2012; Yonazi, Kelly, Halewood, & Blackman, 2012), many parts of the continent still suffer from a poor state of infrastructure (Adisa et al., 2014; Adusei, 2016; Okpara & Kabongo, 2009; Okpara & Wynn, 2007; Omidyar Network, 2013; Tushabomwe-Kazooba, 2006). The unreliable supply of electricity, the poor state of roads and railways as well as communication networks are identified as especially notable obstacles for African entrepreneurs (Agwu & Emeti, 2014; Chuhan-Pole, 2014; Omidyar Network, 2013; Tushabomwe-Kazooba, 2006). For instance, electricity shortages are omnipresent in Africa and entrepreneurs need to purchase costly power generators to avoid a standstill of their operations during outages (Chuhan-Pole, 2014; Omidyar Network, 2013; Tushabomwe-Kazooba, 2006). In the case of human resources, most African education systems prepare their workforce for an employment in large established enterprises (Omidyar Network, 2013). As a result, entrepreneurs have difficulties

to attract and retain managerial talent and skilled workers as they are in fierce competition with large enterprises (Abor & Quartey, 2010; Agwu & Emeti, 2014; Omidyar Network, 2013). Further, regulatory constraints severely affect the operations of African entrepreneurs (Abor & Quartey, 2010; Atieno, 2009; Nichter & Goldmark, 2009; Omidyar Network, 2013). This includes high costs associated with formally registering a firm (Abor & Quartey, 2010; de Bell, 2013; Kayanula and Quartey, 2000), unpredictable policies of the government (Nichter & Goldmark, 2009) and the complexity of legislation and penalties for non-compliance (Brink et al., 2003; Omidyar Network, 2013). In addition, corruption remains an issue throughout the continent and is noted as a severe constraint for business activities (Brink et al., 2003; Okpara & Kabongo, 2009).

Probably the most challenging obstacle for African entrepreneurs is the lack of funding sources for early-stage ventures that is at the focus of this study (Adebayo & Nassar, 2014; Adisa et al., 2014; Atieno, 2009; Ayyagari et al., 2011; Ayyagari, Demirguc-Kunt, & Maksimovic, 2012; Beck & Cull, 2014, Brink et al., 2003). While a lack of access to funding is noticed by entrepreneurs around the world, it is even more pronounced for African entrepreneurs (Beck, 2007; Beck & Cull, 2014; Beck & Demirguc-Kunt, 2006; Stein, Bilandzic, & Hommes, 2013). In particular, it is estimated that around 84% of small and medium sized firms in Africa do not have access to sufficient funding, with an aggregated funding gap between $70 and $170 billion (Omidyar Network, 2013; Stein et al., 2013). Yet this figure also includes medium-sized enterprises, as more granular, small venture based numbers are currently not available for Africa (Quaye, Abrokwah, Sarbah, & Osei, 2014). To gain a thorough understanding of the funding situation for African entrepreneurs, Chapter 2 provides a detailed overview of currently available traditional and innovative funding sources. As will be shown, African financial markets are characterized by a severe underdevelopment. Yet this shortage, combined with the diffusion of mobile phones and

internet access in recent years (GSMA Intelligence, 2015; Manyika et al., 2013), created a unique environment that enabled the unprecedented rise of mobile payments on a private level in Africa. As shown at the beginning of the introduction, crowdfunding is given the potential to fill this gap on a company level. This innovative form of funding is introduced in detail in Chapter 3. Based on a unique dataset of African crowdfunding projects from Kickstarter and Indiegogo, Chapter 4 focuses on the first research question by providing evidence on how crowdfunding is currently used by Africans. Subsequently, Chapter 5 introduces the Global Competitiveness Report as the basis of the economic data that is used for the second research question. Together with the sample of African crowdfunding projects, this data is used in Chapter 6 to provide evidence on the enabling economic factors for crowdfunding on the continent across different institutional settings. Finally, Chapter 7 concludes and provides avenues for future research.

2. Prevailing Forms of Funding for African Entrepreneurs

In order to understand the potential crowdfunding is given by academics and policymakers to mitigate the early-stage funding gap in Africa, it is helpful to have a closer look at the current funding situation for African entrepreneurs. For this situation analysis, the chapter draws on the distinction between traditional and innovative funding sources as suggested by Bruton et al. (2015).

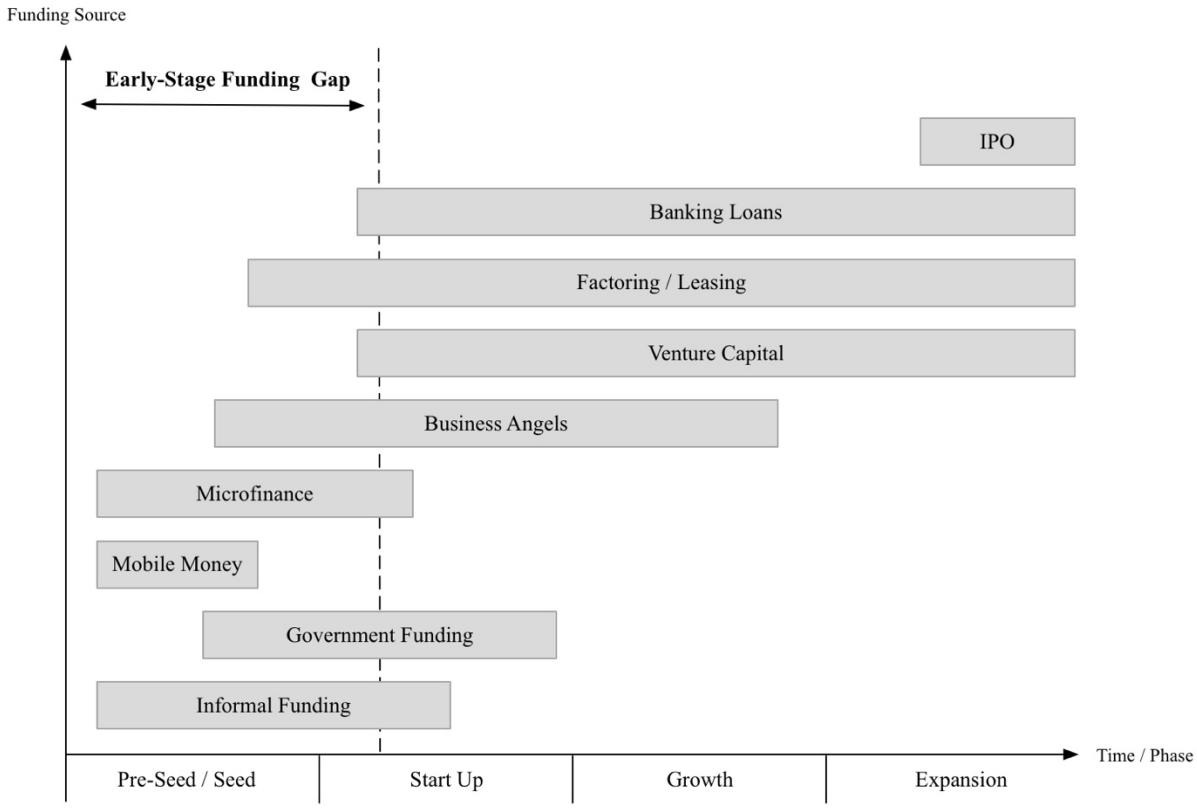

Figure 1. Sources of funding along a venture's continuum. Based on Berger & Udell (1998) and Moritz & Block (2014a).

With an increasing size and age of entrepreneurial ventures, available information and experience expand and so do the funding needs and options, as depicted in figure 1. This relationship is also termed the financial growth cycle (Berger & Udell, 1998). The following analysis is restricted to the pre-seed / seed and start-up phases, as it is especially in those phases that crowdfunding has its potential as an alternative funding source (Agrawal,

Catalini, & Goldfarb, 2015; Hagedorn & Pinkwart, 2013; Kuppuswamy & Bayus, 2015a; Macht & Weatherston, 2014; Moritz & Block, 2014b). In particular, the traditional funding sources covered in this chapter are informal funding, government funding, business angels, venture capital, factoring and leasing, as well as banking loans. In addition, the two innovative funding sources, mobile money and microfinance, are introduced in an African context. Crowdfunding, which is part of the innovative funding sources and at the heart of the study, is discussed separately in Chapter 3.

2.1 Informal Funding

While formal funding services comprise financial institutions such as banks and insurance companies overseen and regulated by the government, informal funding services operate beyond the control and oversight of the government (Gbandi & Amissah, 2014; Olutunla & Obamuyi, 2008; World Bank, 2008). In addition, informal funding sources depend largely on personal relationships (World Bank, 2008). Their most prevalent forms on the African continent are loans from family and friends, moneylenders, deposit collectors (*susu* or *insusu*) and rotating savings and credits associations (ROSCAs) (Aryeetey, 1998; Beck & Demirguc-Kunt, 2006; Beck, Senbet, & Simbanegavi, 2015; Olawale & Garwe, 2010; Robb & Robinson, 2014; World Bank, 2008).

The majority of seed funding for African entrepreneurs is provided by personal savings and loans from family and friends (Beck & Demirguc-Kunt, 2006; Klapper & Singer, 2015; Manyani, 2014; Mensah, 2004; Omidyar Network, 2013; Osano & Languitone, 2016; SAVCA, 2015; Strategic Business Advisors, 2008). In one of the few available surveys, Omidyar Network (2013) reports that 64% of African entrepreneurial funding comes from personal and family sources. This form of funding is sometimes referred to as “love money”, as the decision criteria for the investment is based on the relationship with the founder instead

of objective investment criteria (Hemer, Schneider, Dornbusch, & Frey, 2011; Strategic Business Advisors, 2008). Once exhausted, African entrepreneurs face the challenge of using additional forms of funding that have different requirements and conditions, such as a valid business plan and sufficient collateral, that must be met in order to secure them (Okpara & Kabongo, 2009; Oluntula & Obamuyi, 2008; Omidyar Network, 2013). However, using own savings as well as family and friends as the main funding source to overcome the early-stage funding gap is not exclusive to African entrepreneurs. It is also the main funding source of entrepreneurs in developed countries (Malmström, 2013). Yet, because of the shallow financial system that prevails in large parts of the continent, it is even more important in Africa (Beck & Demirguc-Kunt, 2006).

Another source of informal funding in developing countries is moneylenders (Collins, Morduch, Rutherford, & Ruthven, 2009; Khavul, 2010). Moneylenders provide informal credits that are easily accessible for borrowers and do not rely on the government to enforce contractual obligations (Aryeetey, 1998; Ayyagari et al., 2012). They can occur as professional moneylenders operating a moneylender shop, or part-time moneylenders such as landlords or even wealthy neighbours that provide loans (Aryeetey, 1998). However, credits from moneylenders are highly expensive, with interest rates in the three digits (Aryeetey, 1998; Khavul, 2010). In case a borrower fails to repay his obligation the provided collateral is retained (Ochieng, 2016). As a consequence of these high costs, it is mostly used by persons such as farmers, market women, necessity-driven entrepreneurs or other self-employed individuals that have no other option (Aryeetey, 1998). For instance, farmers might borrow money from moneylenders to pay for their household expenses until the next harvest (Aryeetey, 1998). Although moneylenders provide a way for entrepreneurs to access additional money, this source of funding is limited in both size and subject due to excessively high costs (Allison, Davis, Short, & Webb, 2014; Aryeetey, 1998; Khavul, 2010).

Other forms of informal finance are mostly traditional saving clubs and services that are particulary popular in Africa (Gugerty, 2007; Khavul, 2010). It is estimated that this financing form is used by more than 100 million Africans (Klapper & Singer, 2015). In Liberia, Ivory Coast, Togo, Nigeria and Kenya the participation rates are estimated to be in excess of 50% in rural areas (Gugerty, 2007). For instance, *susu* collectors are one of the oldest financial groups on the continent and mainly located in Ghana (Beck, Maimbo, Faye, & Triki, 2011; Kshetri, 2011). These deposit collectors provide saving and loan services to their members by collecting small funds each day from them, which are then held in a savings account (Aryeetey, 1998; Klapper & Singer, 2015). Subsequently, the savings, less a small fee, are released to the depositor after an agreed time (Aryeetey, 1998). Furthermore, rotating savings and credit associations, like *stokvels* in South Africa and *ekub* in Ethiopia, collect money from their members every month and invest those funds or distribute them to a member in rotation once a certain total amount of money is reached (Berndt, 2016).

Another form of informal funding is provided by business angels (Berger & Udell, 1998; Hemer et al., 2011). However, as they represent a distinct funding source with special characteristics and might take the form of formal funding, they are discussed separately.

2.2 Government Funding

Government funding is put at the second position in figure 1 as the government might choose to establish financial and non-financial programs to mitigate the early-stage funding gap. An example for that practice is the German EXIST program, which provides grants and training to academic spin-offs (Bundesministerium für Wirtschaft und Energie, 2017).

In the African context, the main focus of governments after independence from colonial rule was the proliferation of large state-owned firms (Arvanitis, 2015; Mamman et al., 2015). However, global advancements in technology and the globalization of the

worldwide economy ended this approach. Today, governments across the African continent recognize more than ever entrepreneurs as potential innovators and drivers of economic growth (Abor & Quartey, 2010; Adisa et al., 2014; Arvanitis, 2015; Kayanula & Quartey, 2000; Olunutula & Obamuyi, 2008).

Regarding the provision of funding to entrepreneurs, the government has a two-sided role. On the one hand, it is in a unique position to create and shape an enabling environment to improve access to traditional and innovative funding sources for entrepreneurs (Mago & Toro, 2013). This can be achieved by creating supporting institutions and ensuring macroeconomic stability through robust monetary and fiscal policies, which determine the environmental context in which financial intermediaries operate (Beck et al., 2011; Jones & Mlambo, 2013; Manyika et al., 2013). In addition, the government can create incentives like tax reliefs to stimulate entrepreneurial funding (Jones & Mlambo, 2013; Zindiye, Chiliya, & Masocha, 2012). Because of the continuous funding lack for entrepreneurs, African governments intervened in the past by passing laws that aimed to increase the provision of loans to entrepreneurial ventures (Mensah, 2004). For instance, in 1999 the Nigerian government obliged banks to reserve 10% of their profits for investments in equity of small and medium-sizes businesses (Beck et al., 2011). However, only around a quarter of those reserves had been used by 2005 and the overall performance of the program was rated very low (Abereijo & Fayomi, 2007; Beck et al., 2011). In addition to creating a stimulating environment, the government can improve access to funding by offering training and support services for entrepreneurs on various business related skills, which in turn increases the chance to obtain funding. The South African Ntsika Enterprise Promotion Agency is an example of such a national program. Established in 1996 under the National Small Business Act, it offers South African entrepreneurs non-financial support services, such as consulting and networking (Mago & Toro, 2013). In order to make the services decentralized across

South Africa, they were provided mainly in local business service centers (LBSC) that were accredited by Ntsika (Berry et al., 2002; Rogerson, 2004). However, the experience of the entrepreneurs participating in the LBSC program was negative, as nearly 40% indicated that they did not find the program useful (Berry et al., 2002). The reasons for that failure were mainly a lack of funding for LBSC's and the low quality of business support provided by mentors (Berry et al., 2002; Mago & Toro, 2013). In addition, entrepreneurs were not aware of the Ntsika program or how to access support (Mago & Toro, 2013). This problem is not limited to South Africa as African entrepreneurs state that they are unaware of government programs in general (Omidyar Network, 2013). Further, the perception of government programs is largely negative as those programs are viewed as over bureaucratic with high rates of nepotism (Omidyar Network, 2013).

Besides non-financial support, the government can also provide the necessary funding directly through governmental loans and grants. Again taking the example of South Africa, the Khula Enterprise Finance program was created along with Ntsika to provide financial support for entrepreneurs via financial intermediaries (Rogerson, 2004). By creating different loan schemes, such as business loans and guarantees, the government tried to improve the funding situation for entrepreneurs in South Africa (Berry et al., 2002). This strategy has also been used by governments in Ghana and Zimbabwe (Mensah, 2004; Zindiye et al., 2012). Yet, the same awareness and perceived quality problems as mentioned before apply for the provision of financial services (Berry et al., 2002).

In conclusion, African governments implemented a multitude of programs and laws to improve the funding situation for African entrepreneurs (Mensah, 2004). However, the majority of those programs suffer from mediocre implementation and a lack of awareness from the entrepreneurs to significantly enhance the situation (Mago & Toro, 2013; Mensah, 2004; Omidyar Network, 2013). In addition, African governments have not yet succeeded in

tailoring their support programs and initiatives to the various needs of entrepreneurs throughout the different stages of venture development (Berry et al., 2002; Mago & Toro, 2013; Omidyar Network, 2013).

2.3 Business Angels

A business angel is defined as a "…high net worth individual, acting alone or in a formal or informal syndicate, who invests his or her own money directly in an unquoted business in which there is no family connection and who, after making the investment, generally takes an active involvement in the business, for example, as an advisor or member of the board of directors." (Mason & Harrison, 2008, p. 309). As the definition suggests, business angels mostly act informally, yet there are efforts to formalize angel funding by creating syndicates and angel networks (Berger & Udell, 1998; Hemer et al., 2011).

Academic research on the special topic of African business angels is almost non-existent at the time of writing (Lingelbach, 2016; Strategic Business Advisors, 2008). However, one recently published book chapter by Lingelbach (2016) provides an overview on the topic. In addition, there are some country-specific reports on entrepreneurial funding activity that cover some aspects of regional angel funding. Generally, evidence suggests that business angel activity on the continent is widespread (Lingelbach, 2016). For instance, angel funding has been registered in Angola, Burkina Faso, Cameroon, Ethiopia, Ghana, Kenya, Nigeria, Sierra Leone and South Africa (Lingelbach, 2016; SAVCA, 2015; Venture Capital for Africa, 2015; World Bank, 2015). However, as there is no comprehensive data available regarding business angel activity on the continent, it is difficult to assess its size and impact. As such, angel activity on the continent remains elusive and more research is needed to shed light on this source of funding in the African context (Lingelbach, 2016).

One of the few empirical reports is provided by SAVCA (2015). The report estimates that there have been 55 business angel investments in South Africa between 2011 and 2015, with an average volume of around $60,000 (SAVCA, 2015). By contrast, the GEM defines angel investment in the Ugandan context as "adults who provided funds for new business on the last 3 years" (Namatovu, Balunywa, Kyejjusa, & Dawa, 2010, p.8). Under this definition, 27.2% of adults in Uganda provided funds for new ventures, with only 3.7% of them being larger than $438. In addition, the majority of those funds were from relatives and, hence, belong rather to family and friends represented by the distinct informal funding source introduced earlier. The two cited reports highlight the challenge to disentangle arm's length angel investing from funding by related parties.

Finally, a number of angel networks have been established on the continent. Examples are the Cameroon Angels Network, Ghana Angels Investment Network, Lagos Angel Network, Silicon Cape, South African AngelHub and Venture Capital for Africa (Lingelbach, 2016; World Bank, 2015). In an attempt to connect the various networks and promote angel investing, the African Business Angel Network (ABAN) was established in 2014 (World Bank, 2015).

2.4 Venture Capital

Venture capital is defined as a formal, intermediated form of equity finance that invests in high potential, high growth, high risk small and medium-sized ventures (Ayyagari et al., 2012; Berger & Udell, 1998; Memba, Gakure, & Karanja, 2012; Dagogo & Ollor, 2009). As depicted in figure 1, it is generally provided at a later stage of a venture's financial growth cycle in order to scale operations and marketing once the venture has proven initial market success (Berger & Udell, 1998; Manigart & Struyf, 1997). The investments made by venture capital funds are often medium to long-term in duration, illiquid and deemed successful if the

company is sold or files for an initial public offering (IPO) (Dagogo & Ollor, 2009). However, venture capitalists do not only provide money but also take an active role in their portfolio companies by supporting them in various management fields, such as marketing, equipment and financials (Abereijo & Fayomi, 2007; Berger & Udell, 1998; Memba et al., 2012; Dagogo & Ollor, 2009).

Venture capital is prevalent in developed countries and one of the key funding sources for later stage ventures (Berger & Udell, 1998; Cassar, 2004; Memba et al., 2012). By contrast, the African venture capital market is limited and in its infancy, yet experienced an upward trend in recent years (Ayyagari et al., 2012; Manyani, 2014; Mensah, 2004; Omidyar Network, 2013). Total venture capital funding for technology-focused ventures in Africa reached $414 million in 2014 and is projected to reach a volume of $606 million in 2018 (GSMA Intelligence, 2015). Interestingly, private venture capital firms on the continent comprise both domestic and international funds. Examples for domestic funds include Fanisi Capital, Novastar Ventures and Savannah Fund. Foreign funds include renowned ones such as Hasso Plattner Ventures, Intel Capital and Kinevik.

As a result of its young history, there is currently little evidence available regarding the venture capital market in Africa. In one of the few empirical reports, the AdaPPPt Foundation (2005) conducted a survey among 25 venture capital firms located in Africa and Europe that are active on the African continent, including North Africa. 20 of the 25 venture capital funds in the survey had started operations less than 20 years ago (AdaPPPt Foundation, 2005). Since the beginning of operations, the venture capital funds of the sample invested roughly 3.5 billion € in Africa, of which 70% has been invested in Southern Africa with the remainder being equally distributed over the rest of the continent (AdaPPPt Foundation, 2005).

The majority of venture capital funds are so-called Development Finance Institutions (DFI), which account for roughly 70% of all venture capital investments on the continent (AdaPPPt Foundation, 2005). They take an intermediary place between private investment and public aid programs (Dickinson, 2008). While focusing on profitable investments, they also fulfill the political goal to promote sustainable economic development and improve access to finance in the private sector (Dickinson, 2008). DFIs receive their funds from national and international development funds to support the private sector development (AdaPPPt Foundation, 2005). The high share of DFIs in the African venture capital market can be explained by the fact that venture capital to support development is on the agenda of most African governments (Beck et al., 2011; Mensah, 2004; Osano & Languitone, 2016; Zindiye et al., 2012). An example of a DFI is Khula in South Africa, which was established by the South African government and operates as a venture capital fund (Rogerson, 2004).

As is the case in developed countries, the majority of African venture capital funds focus on large investments with more than 500,000 € in invested capital (AdaPPPt Foundation, 2005). For instance, in Kenya, only 20% of the total venture capital money is targeted on early-stage companies (Beck et al., 2011; Strategic Business Advisors, 2008). As a result, based on the investment focus of venture capital funds that is comparable to that in developed countries, venture capital has only limited potential to mitigate the early-stage funding gap for African entrepreneurs. However, African entrepreneurs that have already secured angel funding, have high scale potential and are in need of expansion money should consider venture capital as a funding source.

2.5 Factoring and Leasing

Entrepreneurs that cannot secure banking loans find an alternative in asset-based factoring and leasing (Beck et al., 2011). Those two alternative financing instruments in the African context are introduced in the following.

Factoring is defined as "a type of supplier financing in which firms sell their credit-worthy accounts receivable at a discount (generally equal to interest plus service fees) and receive immediate cash." (Klapper, 2006, p.1). It is used in developed and developing countries and had a global market volume of 2 trillion € in 2012 (Oramah, 2014). The providers of factoring services comprise financial institutions and, to a large extent, specialized factoring companies (Techmoran, 2017). The main advantage of factoring is that it is not based on a venture's combined creditworthiness but rather on the specific accounts receivable (Klapper, 2006), hence the terminology asset-based financing. As a result, it offers a possibility for high-risk ventures to gain access to financing that might not be available otherwise. Specifically, the African factoring market grew from 5.86 billion € in 2001 to 23.93 billion € in 2012 (Oramah, 2013; Tomusange, 2015). However, compared to the global market, the African factoring market is small as it represents only around 1% of the global market (Oramah, 2013; Tomusange, 2015). In addition, there is a high concentration of factoring activity as South Africa alone processed 21 billion € in 2012, representing more than 91% of the total African volume (Oramah, 2013). Oramah (2013) mentions four obstacles that prevent factoring from being more popular on the African continent:

(1) A limited knowledge of factoring across a large part of the African continent and a lack of interest from governments to promote it. As a result, foreign factor companies did not enter the African market until the mid 2000s.

(2) A lack of interest by African businesses in using factoring as a financial instrument.

(3) Limited interest from banks due to a lack of perceived demand and no support from

the government.

(4) The absence of an enabling environment for factoring consisting of an appropriate regulatory framework and credit information services.

As a result, while factoring is in its infancy in Africa, it represents a valid alternative to loans from banks. However, except for South Africa, governments accross the continent need to actively support factoring as a valid financing tool and provide an enabling environment in order to increase its relevance on both the demand and supply side (Beck & Cull, 2014; Klapper, 2006). In the special case of small ventures, it should be mentioned that accounts receivables might be limited, especially in their early-stage. This is further intensified by the fact that in ordinary factoring the factor acquires the entire portfolio of accounts receivables (Klapper, 2006). Yet early-stage ventures might not have a portfolio of accounts receivables that is large enough to account for the transactions costs borne by the factor.

Specific assets such as machinery and equipment can also be financed directly in the form of leasing (Beck et al., 2011). Specifically, leasing is defined as "a contractual arrangement whereby one party (the lessee) can use, for a defined period of time, an asset owned by a second party (the lessor) in exchange for periodic payments." (Beck et al., 2011, p. 132; IFC, 2009). Hence, compared to bank loans, leasing directly provides the asset. This reduces the probability of misusing funds. As leasing is backed by its underlying asset, applications are mostly evaluated based on the estimation of cash flows from the asset rather than the generally available collateral of a business (Beck & Cull, 2014). However, the African leasing market is small and in its infancy. While the global leasing market stood at $944.31 billion in 2014, the combined African market (including North Africa) represented only 0.7% or $6.8 billion in volume (White, 2016). Specifically, the only sub-Saharan African countries that belong to the Top 50 leasing countries are South Africa and Nigeria

(White, 2016). The prevalence of financial leasing on the continent is another sign of the infancy of the leasing market on the continent, as conventional wisdom suggests that operational leasing is only offered once the leasing market has reached a certain maturity (Beck et al., 2011; IFC, 2009). As in the case of factoring, the main obstacle for growth of the African leasing industry is a lack of regulation (Beck et al., 2011; IFC, 2009). This includes leasing-specific legislation, such as the enforcement of leasing contracts, the question of ownership and repossession rights in case of default.

2.6 Banking Loans

As indicated in figure 1, conventional wisdom suggests that formal banking loans for entrepreneurs are available almost exclusively at a later stage of the financial growth cycle (Berger & Udell, 1998; Cassar, 2004; Hemer et al., 2011). In particular, as a venture becomes bigger and builds up tangible assets, it is more likely to receive a banking loan (Berger & Udell, 1998; Cassar, 2004). While this is true for all countries, the situation is worse for African entrepreneurs, where the usage of formal banking loans is at the lowest level in worldwide comparison and throughout all firm sizes (Beck & Cull, 2014; Nyantakyi & Sy, 2015). Yet, Africa is special, as the development of financial systems is highly heterogeneous on the continent. While South Africa and Mauritius have relatively well developed banking systems, poor countries such as Central African Republic or South Sudan are highly underdeveloped (Beck & Cull, 2013).

After independence from colonial rule, the African banking sector was dominated by state-owned banks and subject to restrictive regulations (Beck et al., 2015; Derreumaux, 2013). In the past decades, however, it experienced crucial transformations (Beck & Cull, 2013). Driven by financial liberalization, regulatory improvements and globalization, state-owned banks have continually lost market share in the African banking sector (Beck & Cull,

2013; Klapper & Singer, 2015). Nowadays, private commercial banks prevail on the continent and have changed its banking landscape (Klapper & Singer, 2015). In particular, African banking groups expand on the continent through the acquisition of existing banks and lead the sector in many countries (Derreumaux, 2013; Enoch, Mathieu, & Mecagni, 2015). Those so called Pan-African banks are much more important today than the prevailing European and US banks that controlled the African banking sector in previous decades (Derreumaux, 2013; Enoch et al., 2015). As a result, the majority of African countries today have deeper and more stable financial systems, yet its banking system still suffers from being costly, shallow and with limited inclusion (Beck & Cull, 2014; Derreumaux, 2013; Nyantakyi & Sy, 2015). Based on the standard indicators of banking and capital market development, the level of financial development remains low in Africa and differs structurally from the rest of the world (Allen, Carletti, Cull, Qian, Senbet, & Valenzuela, 2012). For instance, only about 24.4% of the population in Africa has access to a formal bank account, with Southern African countries having the highest share (Nyantakyi & Sy, 2015). Furthermore, in contrast to other developing countries, the quality of the macroeconomic environment, measured by inflation and current account balance, is not linked to the financial development in Africa (Allen et al., 2012).

In order to explain those idiosyncrasies, Beck et al. (2011) mention four African specific characteristics that make banking more difficult than in the rest of the world:

(1) Low income levels and the small size of countries prevent economies of scale.

(2) The large informal sector, characterized by a lack of necessary formal documentation such as enterprise registration, increases the costs and risks for African banks.

(3) High volatility and thus risk on an individual and aggregate level. On the individual level, fluctuations of the income level of small firms and households

lead to a high volatility. On the aggregate level, volatility prevails especially in exporting countries whose economies are vulnerable to external commodity price shocks. Further, social and political instability lead to additional volatility on an aggregate level.

(4) Finally, widespread and diverse government problems such as the general political stability and the partly missing rule of law severely affect the banking sector.

As already mentioned, the use of bank loans in Africa is even smaller than in other countries in the world (Beck & Cull, 2014). In addition, the smaller the size of the firm, the less likely the firm is to get a banking loan (Bigsten, 2003). Further, as mentioned before, there are differences between individual countries. While 53% of businesses in Mauritius have a formal banking loan, only 3% do so in Guinea-Bissau (Beck & Cull, 2014). In general, the share of loans for small and medium sized businesses in the banking portfolios ranges between 5 and 20 percent in Africa (Berg & Fuchs, 2013). Although this figure comprises also medium-sized companies, it provides an initial indication of the distribution of formal loans by banks on the continent.

To explain this general lack in banking loans, a look at the empirical evidence is helpful. A specific feature of the African banking landscape is that a large number of banks invest in government securities, especially treasury bills (Allen et al, 2011; Berg & Fuchs, 2013). This leads to a situation where African banks have high liquidity but low levels of private lending, which directly affects access to bank loans (Allen et al., 2011; Berg & Fuchs, 2013). Further, African entrepreneurs often view bank loans as unsuitable (Omidyar Network, 2013). The reasons for that are manifold. First, high interest rates are associated with taking a formal banking loan (Bigsten, 2003; Omidyar Network, 2013). The resulting costs of capital are perceived as too high to maintain the profitability of the investments (Beck et al., 2011; Omidyar Network, 2013). Second, high collateral requirements are often a

main obstacle when applying for a formal bank loan (Adisa et al., 2014; Aryeetey, 1998; Beck et al., 2011; Beck & Cull, 2014; Bigsten, 2003; Gray, Cooley, & Lutabingwa, 1997; Osano & Languitone, 2016). This seems to be even more the case in Africa compared to other developing countries (Beck & Cull, 2014). Some banks require as much as 150% of the loan in collateral, which is impossible to meet for the majority of African entrepreneurs (Omidyar Network, 2013). Further reasons that prevent entrepreneurs from applying for and taking formal banking loans are the complex and cumbersome application procedures imposed by the banks, informal payments that need to be made to secure a loan and the impression of entrepreneurs that an application will not be approved by the bank (Beck et al., 2011; Bigsten, 2003; Wang, 2016). Finally, from a banking perspective, the most important factors that prevent them from providing loans are macroeconomic factors and small venture specific factors (Berg & Fuchs, 2013). On the macroeconomic level, it is especially inflation and exchange rate volatility that are mentioned as obstacle of doing business (Berg & Fuchs, 2013). On the venture level, the lack of fundable projects (Aryeetey, 1998; Omidyar Network, 2013), insufficient quality of financial statements and business plans (Omidyar Network, 2013), as well as a lack of collateral (Berg & Fuchs, 2013) are mentioned as the main obstacles. Again, heterogeneity prevails on the continent. While for banks in South Africa the legal framework for banks is a main obstacle, banks in Rwanda and Nigeria bemoan that entrepreneurs are reluctant to make transactions through banks (Berg & Fuchs, 2013).

In order to gain a better insight into the special characteristics of the African banking sector, the following paragraph provides a short overview on the prevailing banking systems in Africa. For this, Africa is categorized into three main regions: Western Africa, East and Central Africa, and Southern Africa.

Western Africa can be divided into the French speaking and English speaking countries that together form the Economic Community of West African States (ECOWAS) (Allen et al., 2011; Ouedraogo, 2013). More than 30% of the African population live in a member state of ECOWAS (Ouedraogo, 2013). The French speaking countries consist of Benin, Burkina Faso, Guinea, Code d'Ivoire, Mali, Niger, Senegal and Togo. Except for Guinea but together with Guinea Bissau, those countries form the West African Economic and Monetary Union (WAEMU), which promotes economic integration among those countries (International Monetary Fund, 2016). For instance, businesses in the WAEMU are eligible to take a loan in any of its member countries and banks that have a license to operate in one WAEMU country can operate in all of the countries of the WAEMU (Valdovinos & Gerling, 2011). Further, the members of the WAEMU share a common currency, the CFA Franc BCEAO (Banque Centrale des Etats de l'Afrique de l'Ouest), that is fixed to the Euro (Allen et al., 2011). Historically, the region has low inflation rates, which is partly a result of its fixed exchange rate regime (Azam, 2004). The banking sector is dominated by foreign and national banks such as Société Générale, BNP Paribas, Citibank, Bank of Africa and Ecobank (Allen et al., 2011). By contrast, the English speaking countries, Gambia, Ghana, Liberia, Nigeria and Sierra Leone, do not yet have a common monetary union. However, together with French speaking Guinea they form the West African Monetary Zone (WAMZ) and have plans to introduce a common currency, the Eco (Adam, Agyapong, & Gyamfi, 2010). In the future, the CFA Franc BCEAO and the Eco will be merged into one single currency for West Africa (Allen et al., 2011).

In East and Central Africa, the majority of countries have their own central bank and currency (Allen et al., 2011). Exceptions are Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea and Gabon, which together form the currency union of the Banque des Etats de l'Afrique Centrale (BEAC) (Banque des Etats de l'Afrique Centrale,

2017). The currency of the union is the CFA Franc BEAC, which is pegged to the Euro (Banque de France, 2010). The banking sector in East and Central Africa is slightly different in each country and the number of banks ranges from 4 in Congo to around 45 in Kenya (Allen et al., 2011).

Southern Africa countries do not have a common monetary union as is the case in West Africa. As a result, all countries have their own central banks that operate individually (Allen et al., 2011; Dincer & Eichengreen, 2014). Botswana, Lesotho, Namibia, South Africa and Swaziland form the Southern African Customs Union (SACU) and, except for Botswana, also the Common Monetary Area (CMA) (Aziakpono, 2005; Grandes, 2003; Wang, Masha, Shirono, & Harris, 2007). The CMA establishes the free money float between the four member countries and the currencies of Lesotho, Namibia and Swaziland are linked to the South African Rand (Aziakpono, 2005; Grandes, 2003; Wang et al., 2007). Unsurprisingly, the ultimate objective of all central banks in the countries is the maintenance of low inflation levels and individual country goals, such as the stability of the currency in case of floating exchange rate regimes (Wang et al., 2007). Regarding the banking system, the south of Africa is highly fragmented. While countries such as South Africa, Botswana, Namibia and the Seychelles have elaborate banking systems, these are small and underdeveloped in countries such as Swaziland, the Comoros and Sao Tome and Principe (Allen et al., 2011).

2.7 Mobile Money

In the following, mobile money services refer to all sorts of financial transactions that are conducted via a mobile phone. As such, it belongs to the group of innovative, non-traditional financial services that bears a high potential of financial inclusion for those that are otherwise excluded from the formal banking system in developing countries (Asongu & Nwachukwu, 2016; Klapper & Singer, 2015; Mirzoyants-McKnight & Attfield, 2015). While it serves

primarily as a means to pay bills and transfer money, other services that are built on top of this infrastructure extend its usage towards more sophisticated services such as saving and borrowing (Klapper & Singer, 2015).

Africa offers a unique environment for such a financial innovation. The diffusion of internet access throughout the continent, in combination with an underdeveloped financial system, creates a unique environment for financial innovations. Indeed, according to GSMA Intelligence (2015), there were 386 million unique mobile phone subscribers in Africa with a penetration rate of 41% in 2015. This figure is expected to rise to around 518 million unique subscribers and a penetration rate of 49% by 2020 (GSMA Intelligence, 2015). One of the countries with the highest mobile phone penetration rate is Kenya. While at the end of the 1990s only 3% of Kenyan households owned a telephone, 93% of Kenyan households owned a mobile phone by 2011, thus leapfrogging traditional landline telephones (Demombynes & Thegeya, 2012; Jack & Suri, 2011). This massive increase in mobile connectivity set the stage for technology-enabled financial services (Jack & Suri, 2011; Mbiti & Weil, 2011).

Probably the best known example is Kenyan M-Pesa. Started in 2007 by mobile network operator Safaricom, the service had 15 million registered users and a monthly transaction volume of around $665 million in early 2012, accounting for up to 20% of Kenyan GDP (Beck & Cull, 2013; Demombynes & Thegeya, 2012; Mbiti & Weil, 2011; Yonazi et al., 2012). The service allows users to deposit money into a virtual account on their cellphones, send money to other users of the service and exchange deposits into real money (Jack & Suri, 2011; Mbogo, 2010). It is used to process payments by both private individuals and small businesses (Mbogo, 2010). Research shows that M-Pesa was initially adopted especially by affluent Kenyans, however there has also been an increase in the usage of the service by the unbanked population, where it now serves as a substitute for a traditional bank account (Asongu & Nwachukwu, 2016; Beck & Cull, 2013; Jack & Suri, 2011). Besides M-

Pesa, which is the largest such service, there are competing offers from other network operators in Kenya, such as yuCash and Orange Money (Demombynes & Thegeya, 2012). With this success, mobile money has become a fixture in the life of Kenyans, with currently 73% of them being mobile money customers (Demombynes & Thegeya, 2012).

The rise of mobile money is not limited to Kenya. Based on the high growth of mobile phones throughout the continent previously mentioned, financial services via mobile phones are more accessible than traditional banking services (Klapper & Singer, 2015). Indeed, Africa accounted for more than half of all mobile money services worldwide and has the highest rate of mobile money penetration (GSMA Intelligence, 2015). By the end of 2014, about a quarter of all African mobile connections had been linked to a mobile money account (GSMA Intelligence, 2015). Comparing the mobile money penetration of Africa with the OECD countries confirms the lead position. While only 2.3% of adults in OECD countries used mobile money, this number stands at 8.8% in Africa, with East Africa leading the continent with a penetration rate of 21.8% (Nyantakyi & Sy, 2015). In particular, there are now more registered mobile money accounts than bank accounts in Burundi, Cameroon, the Democratic Republic of the Congo, Gabon, Guinea, Kenya, Lesotho, Madagascar, Republic of the Congo, Rwanda, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe (GSMA Intelligence, 2015).

Yet, mobile money services are not restricted to paying bills and transferring money. Additional services are built on top of the basic service to offer additional financial products that broaden the scope of its application. Taking again the example of Kenyan M-Pesa, a digital savings and loan service called M-Shwari that is layered on the mobile wallet M-Pesa account was introduced in late 2012 (Mirzoyants-McKnight & Attfield, 2015). Since its inception it saw an impressive growth, with more than 9.2 million accounts opened by the end of 2014 (Cook & McKay, 2015). While the M-Pesa service is not classified as a bank

account, M-Shwari is and is thus subject to full banking regulations (Cook & McKay, 2015; Klapper & Singer, 2015). Users of the service can earn interest on depositing money from their M-Pesa to their separated M-Shwari account (Cook & McKay, 2015; Mirzoyants-McKnight & Attfield, 2015). In addition, based on a credit scoring algorithm, users can also access loans through the service for different usages, ranging from private consumption to business needs (Cook & McKay, 2015; Klapper & Singer, 2015; Mirzoyants-McKnight & Attfield, 2015). The loan limit is calculated based on a user's savings activity, use of M-Pesa and other related services (Mirzoyants-McKnight & Attfield, 2015). Thus, the service offers to its users a secure and cheap basic banking service that is accessible at anytime from everywhere. An empirical study by Cook & McKay (2015) showed that the primary reasons for taking a loan on M-Shwari are "Short-term ups and downs in cash flow" followed by "Business investment". As the average loan size through the service is very small, with an estimated $12.4 on average and a short loan term of 30 days (Cook & McKay, 2015), those business (micro-) loans are especially suited for short-term cash flow improvements instead of long-term business investments. One of the main identified advantages is the immediate availability of the loans, making it a valuable everyday tool for African business owners to overcome the critical problem of short-term cash flow problems (Cook & McKay, 2015). As a result of the currently very small available loan sizes, it is placed at the same position as informal funding sources in figure 1. However, due to its very small amounts and short loan terms, it is almost exclusively suited at the very beginning of a venture to cover short-term cash flow problems.

Based on the success of M-Shwari in Kenya, other countries on the continent are trying to establish similar services. One example is Tanzanian M-Pawa, operated by Vodacom, which was established in 2014 but had a lower adoption rate in the first months of its operation (Cook & McKay, 2015). The reasons for the lower success rate might be

especially due to the lower market share of Vodacom compared to Safaricom and the lack of a central national ID system in Tanzania, making it more difficult to comply to banking regulations (Cook & McKay, 2015).

2.8 Microfinance

As the poor often live in rural areas and operate in the informal economy, agency and transaction costs arise for traditional funding institutions (Khavul, 2010; Yunus, 2007). Those costs emerge from information problems about the creditworthiness of potential borrowers, as tools such as credit scores similar to those used in developed countries are not available (Khavul, 2010). In addition, there are multiple sources of risk that are too costly to evaluate relative to the loan amount. For instance, ex ante moral hazard, describing the risk that the borrower is not taking enough effort to realize his investment projects, and ex post moral hazard, regarding the risk that the borrower is not repaying the loan after the completion of the project (Armendáriz de Aghion & Morduch, 2005). Microfinance offers innovative solutions to those problems (Khavul, 2010; Yunus, 2007).

Introduced by the Grameen Bank in Bangladesh in the 1970s, the main goal of microfinance is to provide loans to those in poverty in order to drive endogenous economic growth by increasing entrepreneurial activity (Armendáriz de Aghion & Morduch, 2005; Duvendack et al., 2011; Khavul, 2010; Yunus, 2007). Today, microfinance is an umbrella term for a set of microfinancial services, such as microcredit, microsaving and microinsurance, which are denominated in small amounts (Duvendack et al., 2011; Khavul, 2010). All of those services are explicitly designed to serve the poor in developing countries, who are otherwise excluded from traditional financial services (Armendáriz de Aghion & Morduch, 2005). Specifically, its most popular form is the provision of very small loans to mostly necessity-driven entrepreneurs without the need for collateral, a prior credit history or

a bank approval (Armendáriz de Aghion & Morduch, 2005; Khavul, 2010). With the growing popularity of microfinance in recent years, the forms of microfinance organizations (MFI) became more diverse (Khavul, 2010; Duvendack et al., 2011). Today, the majority of them are non-governmental, private, for-profit organizations (Khavul, 2010). Among them are institutional funds set up by banks, investors and foundations that channel money to MFIs as well as individual investors that use online platforms like kiva.org and MicroPlace (Khavul, 2010). Those platforms aggregate the individual small loans and transfer them to the corresponding MFIs (Bruton et al., 2015). In contrast to traditional finance institutions, MFIs use direct contact with poor individuals in their immediate community (Khavul, 2010, Yunus, 2007). By building on the concept of group lending practices, such as joint liability group lending and regular local borrower group meetings, microfinance offers solutions to the prevailing challenges of traditional finance institutions as mentioned before (Khavul, 2010, Yunus, 2007). By relying on the local communities of the borrowers, the individual projects can be observed and the behavior of the borrower can be monitored by the group (Armendáriz de Aghion & Morduch, 2005; Yunus, 2007). As a result, potential moral hazard problems are reduced (Khavul, 2010; Yunus, 2007).

Microfinance is highly successful in Africa, where it grew by 1,300% between 2002 and 2012, by which time it had around 21.6 million depositors and 7.8 million borrowers (Njiraini, 2015). Data on the average amount borrowed in Africa range between $150 and $475 (Njiraini, 2015). This is higher than loans from mobile money services but still small compared to other forms of entrepreneurial funding.

The concept of microcredit experienced high levels of enthusiasm and growth throughout the world in the last decades, culminating in the Nobel Prize for Peace that was awarded in 2006 to the Grameen Bank and its founder Mohammed Yunus (Ahlin, Lin, & Maio, 2011). With the increasing number of microfinance institutions, the concept of

microcredits evolved into the concept of microfinance, encompassing a wider range of financial services such as providing means for savings, insurance, mortgages or retirement plans to the poor on a basic level (Armendáriz de Aghion & Morduch, 2005; Khavul, 2010; Duvendack et al., 2011). Despite the higher diversity of services, the most widely used concept of microfinance remains the provision of small loans (Odell, 2010). It is estimated that the number of families with a microcredit has expanded from 7.6 million in 1997 to 137.5 million in 2010 (Banerjee et al., 2015).

However, in recent years doubts have been raised about the effectiveness of microfinance for poverty alleviation (Van Rooyen, Stewart, & De Wet, 2012). Despite the numerous success stories, there is yet no clear evidence that microfinance programs have positive impacts (Armendáriz de Aghion & Morduch, 2005; Banerjee et al., 2015; Duvendack et al., 2011). For instance, van Rooyen et al. (2012) found that microfinance can do good but can also cause harm on various financial and non-financial dimensions.

2.9 Summary

The preceding analysis of the current funding situation for African entrepreneurs showed that the early-stage funding gap in Africa is more pronounced than in the rest of the world. While informal funding is available to African entrepreneurs in different variations, it is limited in size and scope. Once exhausted, traditional funding sources are only available to a limited extent. Based on this shortage and driven by the diffusion of ICT, innovative funding sources such as microfinance and mobile money emerged and gained popularity on the continent. They provide the means for Africans to overcome financial constraints and create financial inclusion for the poor. However, as the provided loans are small in size and have short loan terms they are targeted at individuals and necessity-driven entrepreneurs rather than opportunity-driven ventures. At best, they might be used to overcome lack of cash flow for

business operations. Nevertheless, another innovative funding source called crowdfunding is given the potential to fill this gap on the continent as illustrated in figure 2. It is discussed in detail in the next chapter.

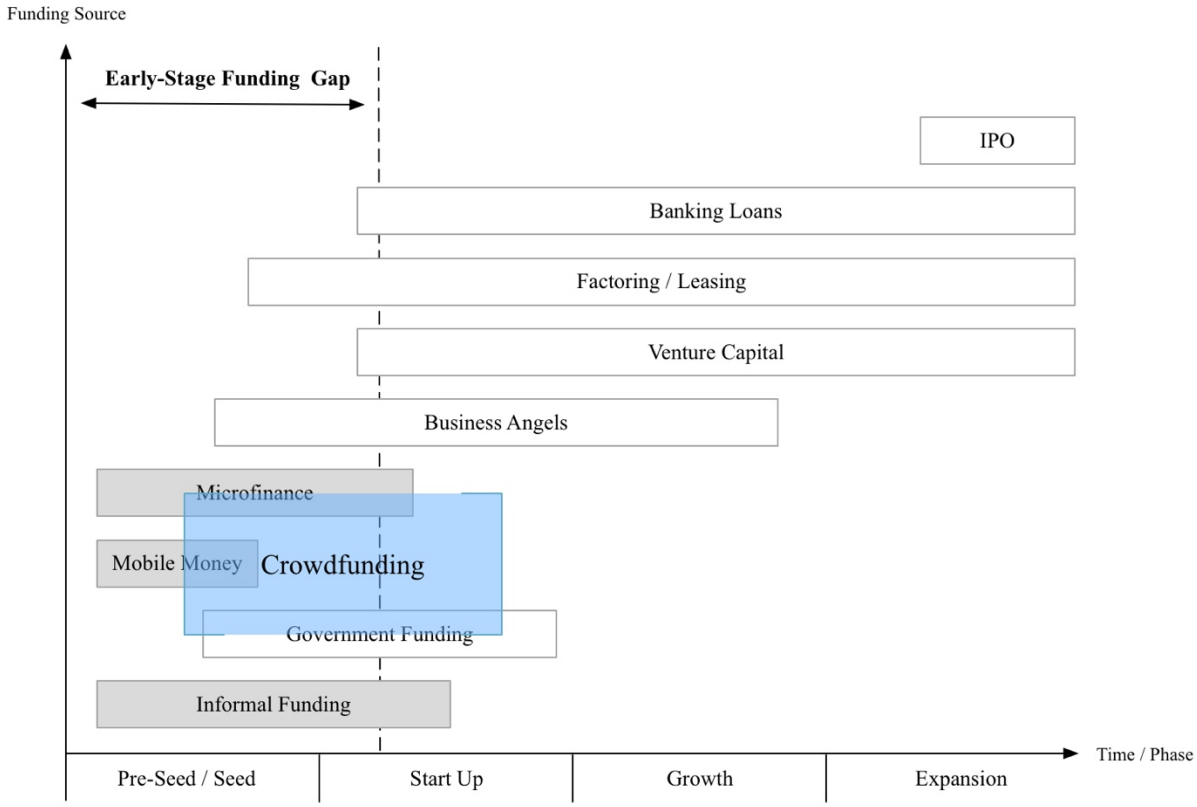

Figure 2. The potential role of crowdfunding within a venture's continuum to fill the early-stage funding gap. Based on Berger & Udell (1998) and Moritz & Block (2014a).

3. Crowdfunding

Crowdfunding is a new form of funding for a wide range of projects, including for-profit, cultural and social endeavours (Bruton et al., 2015; Kuppuswamy & Bayus, 2015a; Macht & Weatherston, 2014; Mollick, 2013; Moritz & Block, 2014a). It allows project initiators to solicit money from many individuals (the "crowd") instead of professional investors through internet-based crowdfunding platforms (CFPs) (Schwienbacher & Larralde, 2010). In return, the crowd often receives future products, interest payments or equity (Belleflamme, Lambert, & Schwienbacher, 2014). While most projects seek small amounts of money for one-time opportunities, it is also a valid source for entrepreneurial seed funding (Bruton et al., 2015; Fleming & Sorenson, 2016; Mollick, 2013; Schwienbacher & Larralde, 2010).

Historically, crowdfunding is not a new phenomenon and there are numerous examples of the use of the crowd to finance projects in a collective manner (Fleming & Sorenson, 2016; Macht & Weatherston, 2015). Yet the renaissance of crowdfunding is directly linked to the diffusion and advancement of the web that gave rise to CFPs that connect those seeking funds with those willing to provide small amounts of money (Fleming & Sorenson, 2016). The advent of CFPs drastically reduced transaction costs and increased the potential geographic reach for project initiators (Agrawal, Catalini, & Goldfarb, 2011; Fleming & Sorenson, 2016; Ordanini, Miceli, Pizetti, & Parasuraman, 2011; Pekmezovic & Walker, 2015).

The remainder of this chapter proceeds as follows. First, a review of the current definitions of crowdfunding is given. Next, the prevailing taxonomy of crowdfunding is introduced and the four forms of crowdfunding are discussed in detail, with their respective characteristics, platform examples and recent research results. Thereafter, the emergence of crowdfunding is presented and an overview of the worldwide crowdfunding market is given.

The chapter closes with a look at the specific characteristics of the African crowdfunding market.

3.1 Definition of Crowdfunding

The increasing popularity of crowdfunding among entrepreneurs to overcome the early-stage funding gap in recent years has attracted the interest of academic scholars and policymakers (Belleflamme et al., 2014; Kuppuswamy & Bayus, 2015a; Mollick, 2014; Moritz & Block, 2014a; Vulkan, Astebro, & Fernandez, 2016; World Bank, 2013). Yet there is no universally accepted definition of crowdfunding in this emerging field of entrepreneurship research (Mollick, 2014; Tomczak & Brem, 2013). In the following, the root of the notion of crowdfunding is derived, prevailing definitions of crowfunding are presented and a definition for the remainder of the study is introduced.

Crowdfunding emerged in the US and is derived from the broader concept of crowdsourcing (Belleflamme et al., 2014; Hemer, 2011; Meyskens & Bird, 2015; Mollick, 2014; Moritz & Block, 2014a). The term "crowdsourcing" was created by US author Jeff Howe in the computer magazine *Wired* and became the standard notion for the process of outsourcing tasks to the general public (Howe, 2006; Kleemann, Voß, & Rieder, 2008). Probably the most widespread definition of crowdsourcing stems from Kleemann et al. (2008), who define crowdsourcing as a process that "takes place when a profit oriented firm outsources specific tasks essential for the making or sale of its product to the general public (the crowd) in the form of an open call over the internet, with the intention of animating individuals to make a contribution to the firm's production process for free or for significantly less than the contribution is worth to the firm" (p.6). Here, the crowd is used by firms for various tasks, ranging from the design and configuration of new products and the creation of entirely new products to the solving of specific tasks or problems (Hemer, 2011;

Kleemann et al., 2008). The internet plays a decisive role in that context as it serves as faciliator between firm and crowd (Kleemann & Voß, 2008). In the case of crowdfunding, the crowd is used for the purpose of funding various kinds of projects. It thereby represents a specific form of crowdsourcing (Macht & Weatherston, 2014; Moritz & Block, 2014a). Yet definitions for crowdfunding vary among academics (Tomczak & Brem, 2013; Valanciene & Jegeleviciute, 2013). Some of the prevailing definitions are presented in the following.

Taking a process perspective and focusing on the commercialization aspect of crowdfunding, Ramsey (2012) defines crowdfunding as a "process of raising money to help turn promising ideas into business realities by connecting investees with potential supporters" (p.54). Powers (2012) emphasizes startups as receivers of the funds raised through crowdfunding by defining it as "A financial mechanism that allows startup companies to solicit funds from the general public through website intermediaries" (p.1). By contrast, Wheat, Wang, Byrnes, and Ranganathan (2013) focus on the individual that can raise money through crowdfunding in defining it as "A new internet-based method of fundraising in which individuals solicit contributions for projects on specialized crowdfunding websites" (p.1). Sigar (2012) does not specify the receiver of the funds and, as a result, provides a wider definition of crowdfunding by defininig it as a "capital formation strategy that raises small amounts of funds from a large group of people through online means" (p.474). The definition of Voorbraak (2011) adds the possibility that contributions to crowdfunding projects can be of a non-financial nature by defining crowdfunding as "the process of one party requesting and receiving money and other resources from many individuals for financing a project, in exchange for a monetary or non-monetary return on investment" (p.1). For Mollick (2014), crowdfunding is a new form of funding for different forms of ventures that allows individuals who seek funding for their for-profit, cultural or social projects to request funding from many individuals often in return for rewards or equity. However, he states that a general and broad

definition of crowdfunding is elusive as this new form of financing covers many current and prospective usages and disciplines. He suggests a wider definition by defining crowdfunding as "the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries" (Mollick, 2014, p.2). Finally, in reference to the crowdsourcing definition of Kleemann et al. (2008), Lambert & Schwienbacher (2010) propose the currently most widely used definition of crowdfunding by defining it as an "open call, essentially through the internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes" (p.6). Table 1 summarizes the currently prevailing crowdfunding definitions. Generally, there seems to be consent that crowdfunding refers to soliciting money from the general public through a CFP. The study adopts the definition of Lambert & Schwienbacher (2010) as it provides a clear distinction between the currently prevailing forms of crowdfunding. In addition, the study defines crowdfunding in its wider sense, encompassing all sorts of micro-finance and co-funding (Hagedorn & Pinkwart, 2013).

Table 1

Prevailing Definitions of Crowdfunding

Author	Year	Definition
Ramsey	2012	"Crowdfunding: the process of raising money to help turn promising ideas into business realities by connecting investees with potential supporters." (p.54)
Powers	2012	"Crowdfunding is a financial mechanism that allows startup companies to solicit funds from the general public through website intermediaries." (p.1)
Wheat et al.	2013	"Crowdfunding is a new internet-based method of fundraising in which individuals solicit contributions for projects on specialized crowdfunding websites." (p.1)
Sigar	2012	"Crowdfunding is a capital formation strategy that raises small amounts of funds from a large group of people through online means." (p.474)
Voorbraak	2011	"Crowdfunding is the process of one party requesting and receiving money and other resources from many individuals for financing a project, in exchange for a monetary or non-monetary return on investment." (p.1)
Mollick	2014	"Crowdfunding refers to the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries." (p.2)
Lambert & Schwienbacher	2010	"Crowdfunding involves an open call, essentially through the internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes." (p.6)

3.2 Taxonomy of Crowdfunding

Generally, the academic literature distinguishes between four types of crowdfunding. They differ regarding the usage of the received contributions and incentives given to the funders (Ahlers, Cumming, Günther, & Schweizer, 2015; Gajda & Walton, 2013; Giudici, Nava, Rossi-Lamastra, & Verecondo, 2012; Kuppuswamy & Bayus, 2015a; Mollick, 2014; Moritz & Block, 2014a). While donation-based and reward-based crowdfunding offer non-financial incentives, debt-based and equity-based crowdfunding offer financial incentives (Hemer, 2011; Mollick, 2014). In particular, the four prevailing forms of crowdfunding are:

1) *Donation-based*: Crowdfunding projects can take the form of altruistic donations without any obligation for the project initiators to give some sort of reward or repayment to the funders (Gajda & Walton, 2013; Hemer, 2011; Mollick, 2014).
2) *Reward-based*: Are legally recognized as donations, yet they provide rewards to their funders (Fleming & Sorenson, 2016; Gajda & Walton, 2013; Hemer, 2011; Mollick, 2014). In particular, the pre-selling of products has been extensively used by entrepreneurs (Ahlers et al., 2015; Fleming & Sorenson, 2016; Kuti & Madarász, 2014; Mollick & Kuppuswamy, 2014).
3) *Debt-based*: This form of crowdfunding is characterized by offering funds in the form of a loan (Kuti & Madarász, 2014; Mollick & Kuppuswamy, 2014; Moritz & Block, 2014b). Specifically, funders may provide loans to individuals (peer-to-peer lending) or to companies (Hemer et al, 2011; Moritz & Block, 2014a).
4) *Equity-based*: Finally, crowdfunding can take the form of equity investments by giving the funders a legal share in the project (Fleming & Sorenson, 2016; Kuti & Madarász, 2014; Mollick, 2014).

Those four forms of crowdfunding currently dominate the market, yet other forms and variations exist and might further evolve in the future, as expressed in the wider definition of

Mollick (2014). Indeed, new CFP concepts such as US based Patreon offer funders the possibility to contribute regulary to projects via subscriptions.

In the following, the four forms of crowdfunding are discussed in detail by looking at their specific characteristics, providing practical insights into the mechanisms of individal platforms and presenting recent empirical research findings.

3.3 Donation-based Crowdfunding

3.3.1 Characteristics

Crowdfunding projects that do not provide any financial or non-financial rewards to their funders are classified as donation-based crowdfunding (Bretschneider, Knaub, & Wieck, 2014; Kuti & Madarász, 2014; Mollick, 2014; Schwienbacher & Larralde, 2010). Typical examples comprise charitable, creative, cultural and research projects (Hemer, 2011; Kuti & Madarász, 2014). Still, even the funders of donation-based crowdfunding might receive some form of reward, for instance by being mentioned as a donor, invited to an event or receiving a thank-you letter (Hemer, 2011). Yet compared to reward-based crowdfunding there is no legal obligation to provide such rewards (Gajda & Walton, 2013; Hemer, 2011; Mollick, 2014). As a consequence, the main motivation of funders to participate in donation-based projects are of an intrinsic nature (Bretschneider et al., 2014; Gajda & Walton, 2013; Hemer, 2011; Kuppuswamy & Bayus, 2015a). Funders donate money based on altruistic motives with the reward being based on emotional benefits such as the contribution to the realization of a project that matters to the funder (Gajda & Walton, 2013; Kuti & Madarász, 2014).

The main difference between traditional donations for non-governmental organizations (NGOs) and donation-based crowdfunding is that, in case of the latter, donations are collected for a specific project (Gajda & Walton, 2013). This helps to raise higher amounts as the funders can relate to the project and, as a result, know what their donations are being used

for (Gajda & Walton, 2013). Most donation-based crowdfunding projects do not offer the possibility for funders to actively participate in the project, making it a passive investment (Schwienbacher & Larralde, 2010). Thus, the initiators of the projects are primarily interested in raising money and do not want to give up control over the project (Schwienbacher & Larralde, 2010).

3.3.2 Platforms

In the following, two of the currently biggest donation-based CFPs, GoFundMe and Crowdrise, are described. If not mentioned otherwise, the source of references is the respective website of the platform.

GoFundMe (www.gofundme.com) is a for-profit donation-based CFP based in the US that was founded in 2010 and allows individuals to raise money for personal events such as travelling, graduation or medical bills, as well as for established charity organizations. To do so, initiators can create their own campaign website where they describe the cause they are raising money for and add additional images or videos. Once created, initiators can share their campaign website through the various forms of social media to solicit family, friends and other users to donate to their cause. In case of raising money for a personal cause, the money goes to the project initiator, whereas funds raised for a charity organization are directly transfered to the charity by the platform. There are no campaign deadlines and the project initiator can keep all the money raised independent from the previously set funding goal (so-called flexible funding). At the time of writing, GoFundMe generates revenue by deducting a 5% fee for every donation made in addition to a payment processing fee depending on the payment method choosen by the funder.

Crowdrise (www.crowdrise.com) is a US based, for-profit donation-based CFP, founded in 2010 and specializing in charitable and personal fundraising. Similar to

GoFundMe, there are two types of crowdfunding campaigns on Crowdrise. First, individuals can raise money for personal events such as medical bills, trips or pets. The funds raised in these personal campaigns go directly to the campaign initiator. Second, individuals can choose to raise money for a charity organization. In this case, the project initiator sets up a campaign that is to the benefit of a charity organization, such as the Red Cross or UNICEF, and the raised money is transfered directly to the charity organization. To start a campaign for a personal cause or a charity organization, users create a campaign website where they describe the cause they are raising money for and add additional images or videos. As in the case of GoFundMe, crowdfunding campaigns on Crowdrise have no campaign deadlines and offer a flexible funding model. At the time of writing, Crowdrise charges a maximum transaction fee of 3% for personal campaigns and between 3% and 5% for charity organizations. In contrast to GoFundMe, Crowdrise integrates gamification elements such as impact points that are collected whenever a user participates in donating or raising funds. These impact points can then be used for charitable causes, exposure on the platform site or the purchase of merchandise.

3.3.3 Empirical Research

As donation-based crowdfunding involves getting no financial or non-financial rewards, the main motivations of funders are of an altrusitic nature (Gajda & Walton, 2013). Because of this motive, research for this type of crowdfunding builds on the literature of philanthropy and public goods (Kuppuswamy & Bayus, 2015a). For instance, Burtch, Ghose, and Wattal (2013) study the behavior of funders in a public good setting by looking at the contributions to online journalism crowdfunding projects. They find evidence for substitution effects. That is, the marginal utility gained from contributing to journalistic projects decreases with the number of contributions by others, leading to a crowding-out effect (Burtch et al., 2013).

Bog, Harmgart, Huck, and Jeffers (2012) find that early contributions to a project become the benchmark for later contributions, thus suggesting peer effects. Smith, Windmeijr, and Wright (2014) confirm those results by finding evidence for peer effects, showing that higher donations for a project increase future donations. Focusing on completing contributions, Wash (2013) finds that funders make significantly higher donations in order to complete a funding.

Table 2

Empirical Research Results for Donation-based Crowdfunding

Author	Year	Empirical Finding
Bog et al.	2012	Peer effects: Donations are positively correlated with prior donations.
Burtch et al.	2013	Substitution effects: Donations are subject to crowding-out by prior donations.
Meer	2014	Charity efficiency: Higher costs of donations are associated with a lower chance of getting funded.
Saxton & Wang	2013	Democratization effect: Success of fundraising is correlated with social network size but not financial capacity.
Smith et al.	2014	Peer effects: Amount of donations is positively correlated with amount of prior donations.
Wash	2013	Completion Effect: Donations that complete a funding are significantly higher.

Looking at the impact of social capital on the likelihood of project success at an organizational level, Saxton & Wang (2013) find that the success of fundraising is not related to the financial capacity of an organization, but rather to its social network size and website reach. These results provide evidence of democratization effects in access to funding through crowdfunding. Further, when looking at the efficiency of a charity organization, that is how much of a donation ends up going to the cause, Meer (2014) finds that the higher the price of giving the lower the likelihood of getting funded.

3.4 Reward-based Crowdfunding

3.4.1 Characteristics

Project funders in reward-based crowdfunding receive non-financial rewards in exchange for their funding (Kuppuswamy & Bayus, 2015a; Mollick, 2014). For instance, funders might be credited in a movie, appear as a hero in a comic, visit a film set, receive a personal thank-you call from the artist or meet the project founders (Mollick, 2014; Kuppuswamy & Bayus, 2015b). However, rewards can also take the popular form of pre-purchasing a product or service (Fleming & Sorenson, 2016; Gajda & Walton, 2013; Hemer, 2011; Kuti & Madarász, 2014; Mollick, 2014). In this specific form, funders are becoming the first customers of a product or service and the projects are often of an entrepreneurial nature (Ahlers et al., 2015; Fleming & Sorenson, 2016; Kuti & Madarász, 2014; Mollick, 2014; Mollick & Kuppuswamy, 2014). Depending on the contribution, the funders receive different rewards ranging from the standard to special versions of the product or service (Kuti & Madarász, 2014). As in the case of donation-based crowdfunding, reward-based projects do not offer the possibility for funders to actively participate in the project and as a consequence the initiators of the projects are mainly interested in raising money and do not want to give up control in their project (Schwienbacher & Larralde, 2010).

3.4.2 Platforms

In the following, the current two biggest reward-based CFPs, Kickstarter and Indiegogo, are described. If not mentioned otherwise, the source of references is the respective website of the platform.

Kickstarter (www.kickstarter.com) is a for-profit, reward-based CFP based in the US. Established in 2009, projects on the site had raised more than $2.6 billion by the end of 2016. Kickstarter has hosted some of the most famous crowdfunding projects, such as the Pebble E-Watch, which raised more than $20 million, or OUYA, a video console that raised more than $8.5 million. Currently, Kickstarter projects can be started by users living in Austria, Australia, Belgium, Canada, Switzerland, Germany, Denmark, Spain, France, the UK, Hong Kong, Ireland, Italy, Luxembourg, the Netherlands, Norway, New Zealand, Sweden, Singapore, or the US. Nevertheless, projects from other countries are also found on the platform, such as the African crowdfunding campaign BRCK, which is based in Kenya. In contrast, there are no geographical restrictions for project funders. Kickstarter projects can be launched in 15 different categories, ranging from art and comics to journalism or technology. However, charitable projects are not allowed on the site. In order to start a Kickstarter project, the initiator must create a project website on the platform that describes the project, explains how the project will be realized, how the raised funds will be used and what rewards will be given to the funders. In addition, the project initiator can upload pictures and videos. Kickstarter uses the so-called “All-Or-Nothing” (AON) approach, meaning that a project must be fully funded in order to receive the contributions. As a result, project initiators must be very careful when setting their funding goal. Once the funding goal is reached, the project can receive additional funds from the crowd until the deadline of the project. The duration of raising funds for the project can be set between 1 and 60 days. In order to ensure a high quality of projects, Kickstarter reviews every project before it is publicly shown on the

platform. Potential funders visiting the project's website can see the current funding status, the funding goal and the number of days remaining until the project expires. At the time of writing, Kickstarter charges a 5% fee on the amount raised for successful projects, excluding additional payment processing fees ranging from 3% to 5%.

Indiegogo (www.indiegogo.com) was founded in the US in 2008 with a focus on film projects, but has quickly become one of largest for-profit reward-based crowdfunding platforms in the world. By late 2016, Indiegogo projects had raised around $1 billion in funding. In contrast to Kickstarter, Indiegogo pursues a more flexible and open strategy. For instance, there is no restriction with regard to who can start a crowfunding campaign. Further, there are 24 different categories for projects of any nature, with no approval process before a project can start raising funds. The process of starting a campaign is quite similar to Kickstarter. The project initiator creates a website for his project on the platform, including a description of the project with additional photos and videos and the rewards being offered to funders. However, in addition to the AON funding method, Indiegogo also offers the "Keep-It-All" (KIA) funding method, which allows the project initiator to keep the contributions even in cases when funding goal is not met. The maximum project duration is 60 days, including the option of a one-time extension. As in the case of Kickstarter, potential funders can visit the project's website and see the current funding status, the funding goal and the number of days remaining until the project expires. At the time of writing, Indiegogo charges a 5% fee on the amount raised for successful projects, excluding additional payment fees ranging from 3% to 5% depending on the payment method choosen by the funders.

3.4.3 Empirical Research

Generally, empirical research on reward-based crowdfunding focuses on the effects of project and founder quality, the role of language and gender, contribution dynamics and social

capital.

Founders that demonstrate a history of success by listing relevant projects or employments from the past are more likely to reach their funding goal than those not making such indications (Mollick, 2013). Besides these founder qualities, the overall project quality, measured by including a video, avoiding spelling errors, showing a prototype or making frequent updates, is also predictive of project success (Mollick, 2013, 2014).

Marom & Sade (2013) find that the language used in project descriptions has an effect on the funding success. Projects that substantially mention the name of the entrepreneur enjoy higher rates of success, with the effect being stronger for art projects (Marom & Sade, 2013). Notably, the findings show that technology related projects are less sensitive to the mentioning of the entrepreneur compared to artistic projects (Marom & Sade, 2013). Gorbatai & Nelson (2015) evaluate the influence of linguistic patterns on the success of reward-based crowdfunding campaigns. They find that specific female lingusitic patterns, such as the use of a more inclusive and emotional language, are beneficial to the success of a campaign (Gorbatai & Nelson, 2015). They conclude, that crowdfunding helps to reduce gender inequalities (Gorbatai & Nelson, 2015). Using a sample from Kickstarter, Marom, Robb, and Sade (2016) confirm these results by finding that women are more successful than men in raising capital through crowdfunding. These differences are especially pronounced in categories where women have a higher than average share (Marom et al, 2016).

Focusing on the dynamics of reward-based crowdfunding, Kuppuswamy & Bayus (2015b) find that the number of individual contributions are non-linear over a project's time. Instead, a u-shaped pattern exists, where funders contribute the majority of funds in the early stage and in the later stage of a project's lifetime (Kuppuswamy & Bayus, 2015b). These findings are consistent for all types of projects across different categories, independent of having large or small goals or being successful or unsuccessful (Kuppuswamy & Bayus,

2015b). The rationale behind this pattern is that in the early and in the final days of projects, support from family and friends occurs (Kuppuswamy & Bayus, 2015b). In addition, they find that herding behavior plays a decisive role, as potential contributors are influenced by how much of the funding goal has already been reached (Kuppuswamy & Bayus, 2015b).

Taking the number of Facebook friends of the project creators as proxy for external social networks, a larger size is associated with a higher chance of getting funded (Mollick, 2014). Further, the more quotes a project can generate from outside media and organizations the higher the likelihood of getting fully funded (Mollick, 2013). Specifically, Qiu (2013) shows that being featured on the platform homepage increases the amount of contributions. While Mollick (2014) finds that the external social network size predicts the funding success, Colombo, Franzoni, and Rossi-Lamastra (2015) show that internal capital is a decisive factor during the start of a campaign. In this regard, internal social capital is defined as the social capital within the crowdfunding platform (Colombo et al., 2015). It is build up by participating in the internal communities of the respective crowdfunding platforms (Colombo et al., 2015). The authors find that high internal social capital is not only correlated with funding success, but also a predictor of the amount of early contributions in a project, which in turn mediates the overall funding success (Colombo et al., 2015).

Comparing the funding decisions of the crowd and experts, Mollick & Nanda (2015) find that for theatre projects on Kickstarter there is significant agreement between the two groups. In particular, however, disagreement arises in cases where only the crowd is willing to fund a theatre project (Mollick & Nanda, 2015). Regarding the results of the projects, there are no significant differences between projects funded by the crowd alone and those funded by both, suggesting that the crowd is able to perceive quality projects and thus that crowdfunding democratizes access to funding (Mollick & Nanda, 2015).

Considering the funding method, Cumming, Leboeuf, & Schwienbacher (2015) find

that AON projects pursue higher funding goals and are more likely to achieve their funding goal. By contrast, small, scalable projects make higher use of the KIA funding method (Cumming et al., 2015).

Table 3

Empirical Research Results for Reward-based Crowdfunding

Author	Year	Empirical Finding
Colombo et al.	2015	Social capital: Internal social capital is correlated with funding success and early contributions.
Cumming et al.	2015	Funding method: Small, scalable projects are more likely to use the KIA method, while large, non-scalabale projects are more likely to use the AON method.
Gorbatai & Nelson	2015	Linguistic patterns: Specific female linguistic patterns are positively related to funding success.
Kuppuswamy & Bayus	2015b	Funding dynamics: Contributions are non-linear with the most contributions being made at the beginning and at the end of a project.
Marom & Sade	2013	Linguistic patterns: Funding success is related to the language used in a project's description.
Mollick	2013, 2014	Project quality: Funding success is related to founder and project quality.
Mollick & Nanda	2015	Wisdom of the crowd: Funding decisions of the crowd and experts show high overlap.
Qiu	2013	Funding success: Being featured on a CFP is positively related to a project's funding success.

3.5 Debt-based Crowdfunding

3.5.1 Characteristics

In the case of debt-based crowdfunding, money is borrowed from a large group of people instead of a bank (Gajda & Walton, 2013). In particular, funders may provide loans to individuals (peer-to-peer lending) or to companies (Hemer et al., 2011; Moritz & Block, 2014a). In contrast to banks, which serve as intermediaries between savers and borrowers, debt-based CFPs directly connect these two parties (Fleming & Sorenson, 2016). Here, the main motivation of funders is the financial return on the provided loan (Gajda & Walton, 2013; Hemer, 2011; Mollick, 2014). By omitting the bank, funders can earn more interest on their savings and project initiators pay less interest on their loans (Fleming & Sorenson, 2016; Gajda & Walton, 2013). Debt-based CFPs are subject to banking regulations (Hemer et al., 2011). This limits the eligible participants to citizens in those countries where the CFP is active, as can be seen in the examples below. As is the case with donation-based and reward-based crowdfunding, debt-based crowdfunding projects typically do not offer the possibility to actively participate in the project (Schwienbacher & Larralde, 2010). Founders are interested in raising money but do not want to give up control or for the crowd to be actively involved in the project (Schwienbacher & Larralde, 2010).

3.5.2 Platforms

In the following, two of the current biggest debt-based CFPs, Prosper.com and Funding Circle, are described. If not mentioned otherwise, the source of references is the respective website of the platform.

Prosper.com (www.prosper.com) is a for-profit, debt-based CFP based in the US. The platform offers individuals the possibility to either borrow money from the crowd or to invest in personal loans. Only US citizens can apply for a loan through Prosper.com. Since its

inception in 2005, the platform has helped individuals to raise more than $7 billion in personal loans. Potential borrowers can apply for a loan of a maximium of $35,000 by submitting basic personal information, the desired loan amount, a category the money is used for and information on personal income. The loans are always issued to a person but can also be used for a business. Next, the platform suggests terms for the loan based on the provided information. In a final step the potential borrower needs to verify his provided information by submitting various documents in order to be legally eligible to raise funds over the platform. Investors who wish to invest in Prosper.com loans need to be US residents and are subject to various requirements, such as a certain net worth, depending on the state they are living in. Approved investors can invest in loans and filter them by criteria such as credit rating, term of the loan and category. At the time of writing, Prosper.com charges two sorts of fees. First, an origination fee between 1% and 5% depending on the borrower's Prosper.com rating is deducted from the loan. Second, investors pay a 1% annual servicing fee based on the outstanding loan principal.

Funding Circle (www.fundingcircle.com) is a for-profit, debt-based CFP based in the UK, but also active in the US. Germany, Spain and the Netherlands. The platform is exclusively focused on small businesses and has raised around $2.5 billion since its inception in 2010. Depending on the country, businesses can borrow between $5000 and $1 million. Only businesses that are registered in the US, Germany, Spain and the Netherlands can apply for loans. In order to receive a loan, potential borrowers need to fill out an online application, providing some basic personal information and the desired loan amount. Supporting documents then need to be submitted to the platform to finish the application process. Depending on various parameters, each approved business gets a rating ultimately determining its creditworthiness. While in the US only accredited investors can lend money on the platform, in Germany all citizens with a bank account are eligible. At the time of

writing, Funding Circle charges two types of fees. First, an origination fee between 1% and 6% is collected from the borrower depending on the assigned rating. Second, investors pay a 1% annual servicing fee based on the outstanding loan principal.

3.5.3 Empirical Research

Research on debt-based crowfunding focuses on the understanding of contribution dynamics, the role of the narrative of a project and discrimination effects.

Herzenstein, Dholakia, and Andrews (2011) study the role of herding behavior using a sample from Prosper.com. They find that strategic herding behavior exists in lenders, such that the likelihood of bidding on a loan with more bids is higher until the loan is fully funded. In addition, they find that herding is positively associated with the subsequent performance of a loan, measured by loan repayments of the borrowers. Zhang & Liu (2012) confirm the results of strategic herding, highlighting that lenders infer the creditworthness of a borrower by peer lending decisions. Interestingly, apparently unfavorable loan characteristics such as a low credit score further increases herding, as the lenders infer incremental quality. They also find that large bids on the first day are associated among others with a higher credit score, lower debt-to-income ratio and signals of a lower probability for default of the borrower.

Looking at the effect of narratives in debt-based crowdfunding, Allison et al. (2014) find that the probability of getting funded in a microlending environment is higher when the narratives are addressed to the intrinsic motivations of lenders to help others. By contrast, emphasizing business aspects are associated with lower probabilities of reaching the funding goal. However, and as noted by the authors, the platform under study, kiva.org, focuses on alleviating poverty. As a result, self-selection of lenders to this specific platform might prevail, questioning the external validity of the results. Taking a different perspective on the narrative, Herzenstein, Sonenshein, and Dholakia (2011) study the effect of identity claims in

narratives. Specifically, they find that an increase in identity claims leads to a higher probability of funding success, yet at the same time is associated with a lower loan performance. Gao and Lin (2015) confirm that narratives matter. They find that loans whose narratives are less readable, less optimistic, less objective and have more deception cues are more likely to default.

When studying the effect of personal characteristics on the funding success, Ravina (2012) shows that observable values such as beauty, race and self presentation impact the decisions of lenders. Beautiful people are more likely to get a loan despite the fact that they have a higher probability to default. Black people have the same chances of securing a loan but pay more interest on them, despite having an equal default rate. Focusing on the pictures in loan listings, Pope and Sydnor (2011) show that there is a discrimination in favor of listings from women and with military affiliations. In contrast, they find a dicrimination against loan listings that have no picture, are from black people, older people and individuals that do not seem to be happy.

Other research on debt-based crowdfunding has shown that internal social capital, and specifically the role of members in that social network, is positively related to funding success (Lin, Prabhala, & Viswanathan, 2013). Further, and in contrast to the findings for reward-based crowdfunding, Burtch, Ghose, and Wattal (2014) show that cultural differences and geographical proximity matters to lenders. Funders prefer to lend to culturally similar people that are at close distance.

Table 4

Empirical Research Results for Debt-based Crowdfunding

Author	Year	Empirical Finding
Allison et al.	2014	Linguistic patterns: The probability of getting funded is higher when addressing intrinsic motivations.
Burtch et al.	2014	Proximity & culture bias: Funders prefer geographically proximate and culturally similar project initiators.
Gao & Lin	2015	Linguistic patterns: Less readable, less optimistic, less objective narratives are more likely to default.
Herzenstein, Dholakia, & Andrews	2011	Herding behavior: Herding behavior exists and is positively related to prior contributions and subsequent performance of a loan.
Herzenstein, Sonenshein, & Dholakia	2011	Linguistic patterns: Increase in identity claims leads to higher probability of getting funded but lower performance of the loan.
Lin et al.	2013	Social networks: Probability of getting funded is positively correlated with the internal social network size and quality.
Pope & Sydnor	2011	Discrimination: Loan funding success is related to the personal characteristics of the project initiator.
Ravina	2012	Discrimination: Loan funding success is related to beauty and race.
Zhang & Liu	2012	Herding behavior: Herding behavior exists as funders infer creditworthness of project initiator by peer lending decisions.

3.6 Equity-based Crowdfunding

3.6.1 Characteristics

In equity-based crowdfunding, companies raise money by selling shares to the crowd (Gajda & Walton, 2013; Hagedorn & Pinkwart, 2013; Hemer, 2011; Kuti & Madarász, 2014; Mollick, 2014; Moritz & Block, 2014a). The rewards for the funders are future cash flows and in some cases voting rights (Hemer, 2011; Hornuf & Schmitt, 2017). Therefore, some authors, especially in German-speaking countries, refer to it as crowdinvesting (Hagedorn & Pinkwart, 2013; Moritz & Block, 2014a). As equity crowdfunding is subject to complex capital market and banking regulations, its usage in terms of raising money, number of funders or marketing activities is limited (Gajda & Walton, 2013; Hemer, 2011; Schwienbacher & Larralde, 2010; Mollick, 2014). As a result, only a small fraction of crowdfunding activity has taken place in the form of equity crowdfunding (Bruton et al., 2015; Fleming & Sorenson, 2016; Mollick, 2014). However, due to the increased awareness of equity crowdfunding in recent years, regulators and policymakers around the world have issued regulations permitting this forms of crowdfunding. Probably the most famous regulation in this regard is the Jumpstart Our Business Startups Act (JOBS Act) that legalized equity crowdfunding in the US and passed the U.S. Congress in 2012 (Bayus & Kuppuswamy, 2015b; Bradley III & Luong, 2014; Mollick, 2014). Before the passing of the JOBS Act, SEC regulations would not allow equity crowdfunding unless the companies registered for an expensive public offering or if funders were accredited (Fleming & Sorenson, 2016). In contrast to the other forms of crowdfunding discussed above, some forms of equity crowdfunding represent an active investment by investors (Schwienbacher & Larralde, 2010). Depending on the specific form and structure of the equity crowdfunding campaign, it may introduce a large number of new shareholders with voting rights to the company (Bruton et al., 2015; Schwienbacher & Larralde, 2010).

3.6.2 Platforms

In the following, two of the current biggest equity-based crowdfunding platforms, AngelList and crowdfunder, are described. If not mentioned otherwise, the source of references is the respective website of the platform.

AngelList (www.angel.co) is a for-profit, US based platform founded in 2010. It is not a typical crowdfunding platform but rather a social network that connects startups with business angels and job seekers. Besides the social networking features of the platform, it also serves as an equity crowdfunding site that has helped startups to raise around $450 million in equity funding since its inception. The main feature of AngelList is syndicates, which allow accredited investors as defined by the SEC to participate in equity fundings with a minimum investment of $1,000. Legally, a syndicate is a special purpose fund that is created for each investment. Every syndicate has a syndicate lead, typically an experienced investor, and is legally managed by AngelList. Startups listed on the platform can apply to be introduced to syndicates by AngelList. Successful investments on the platform are generally free of charge. However, in case an investment makes an exit, investors pay a deal carry typically in the range of 20-40% to the lead investor and a 5% deal carry to AngelList.

Crowdfunder (www.crowdfunder.com) is a US based equity CFP connecting accredited investors with startups. Since its inception in 2011, it has helped startups to raise around $160 million in funding through its platform. Besides raising money through the sell of equity, startups can also raise money through selling debt, convertible notes and revenue share. In order to do so, they need to create a company profile on the platform, including an executive summary, a term sheet and a pitch deck. To invest in startups, investors need to be accredited as definied by the SEC. As such, they can make non-binding reservations on the proposed deal of a startup. However, the actual closing of a deal is not made over the platform. This is further reflected in the fact that Crowdfunder defines itself only as a marketing and

engagement tool for startup deals. Startups raising funds on Crowdfunder need to pay a monthly fee between $399 and $1999, depending on the set of features and exposure they choose to receive on the platform. Crowdfunder does not take any fees from the investors.

3.6.3 Empirical Research

Compared to other forms of crowdfunding, research on equity-based crowdfunding is limited, yet evolving. This might be attributed to the fact that this form of crowdfunding emerged only recently as a result of removing legal constraints in some countries (Gajda & Walton, 2013; Hemer, 2011; Schwienbacher & Larralde, 2010; Mollick, 2014).

Examining the relative importance of signals in equity-based crowdfunding, Ahlers et al. (2015) find that signals about venture quality and the level of uncertainty are positively related to venture funding success. Specifically, human capital, amount of equity offered and the provision of financial projection increase the chances of getting funded. By contrast, social (alliance) capital and intellectual capital are not found to be related to venture funding success. Confirming the importance of human capital, Bernstein, Korteweg, and Laws (2017) show that while information on human capital is important to the average investors on AngelList, information on firm traction and lead investors is not. There is however a difference between experienced and inexperienced investors in the way that the latter respond to all three, namely human capital, firm traction and lead investors, while the former responds only to human capital. Looking at the role of updates, Block, Hornuf, and Moritz (2016) find that the posting of certain content in updates has a significant positive effect on the number of investments.

Considering the role of geography, Agrawal et al. (2011) find that crowdfunding investments are independent of geographical distance compared to what existing theory for traditional venture funding would suggest. This result is confirmed in a recent paper by

Hornuf and Schmitt (2017) on a firm-level. Further, Agrawal et al. (2015) find evidence for the existence of herding behavior in equity crowdfunding. However, only distant investors are responsive to the level of funds already raised whereas local investors are not, which is explained by the social ties of the local funders to the project. In addition, local investors are found to invest early in the fundraising cycle as they mainly consist of family and friends.

Table 5

Empirical Research Results for Equity-based Crowdfunding

Author	Year	Empirical Finding
Agrawal et al.	2011	Proximity: Contributions are independent of geographical distance.
Agrawal et al.	2015	Herding behavior: Herding behavior exists for distant funders but not for local funders.
Ahlers et al.	2015	Signaling: Funding success is related to financial transparency, amount of equity offered and human capital.
Bernstein et al.	2017	Signaling: Information on human capital is important, while information on firm traction and lead investors is not.
Block et al.	2016	Updates: Posting certain content in updates is positively related to funding success.
Hornuf & Schmitt	2017	Proximity: Contributions are independent of geographical distance.

3.7 The Emergence of Crowdfunding

Crowdfunding is not a new phenomenon and history provides many examples of using the crowd to fund projects (Fleming & Sorenson, 2016; Macht & Weatherston, 2015; Qiu, 2013). For instance, a very early form of reward-based crowdfunding dates back to the seventeenth century, when the poet John Taylor convinced hundreds of readers to contribute money to his trip to Scotland in order to write his new book. In return, Taylor promised the funders a copy of the book (Poyntz, 2011). Other popular examples include Mozart and Beethoven, who financed their concerts and new compositions with money they received from patrons, and the Statue of Liberty, which was funded by small donations from American and French people (Hemer, 2011; Massolution, 2015). Furthermore, charities and churces have used the method of crowdfunding to collect funds for centuries (Fleming & Sorenson, 2016; Massolution, 2015; Ordanini et al., 2011).

What is new is the emergence of CFPs enabled by the diffusion and advancement of the web, which decreased the transaction costs in performing such crowdfunding initiatives (Agrawal et al., 2011; Fleming & Sorenson, 2016; Gajda & Walton, 2013; Macht & Weatherston, 2014; Ordanini et al., 2011; World Bank, 2013). Combined with the shortfall in providing early-stage finance during the financial crisis of 2008, crowdfunding gained popularity as a new way of funding for entrepreneurs in developed countries (Belleflamme et al., 2014; Bruton et al., 2015). Today, there are more than a thousand active CFPs worldwide (Massolution, 2015).

As donation-based and reward-based crowdfunding is not subject to capital market and banking regulations, they were the initial focus of CFPs in developed countries (Bruton et al., 2015; Hemer, 2011; Mollick, 2014; World Bank, 2013). One of the first CFPs was the US based ArtistShare, founded in 2000, which enables musicians to finance their production costs for albums by raising funds from their fans (Bradley III & Luong, 2014; Massolution,

2015). Another example that helped make this new form of funding popular is Dutch-based Sellaband, founded in 2006, allowing musicians to connect with their fans and receive financial contributions via selling shares on a future album (Burtch et al., 2013; Hemer, 2011; Ordanini et al., 2011; Schwienbacher & Larralde, 2010). With the success of those CFPs, crowdfunding models began to expand and further differentiate, for instance with the incorporation of the two biggest reward-based CFPs, Indiegogo (2008) and Kickstarter (2009) (Bruton et al., 2015; Massolution, 2015; Younkin & Kashkooli, 2016). Debt-based and equity-based crowdfunding offer financial rewards and are therefore subject to complex capital market and banking regulations (Bruton et al., 2015; Hemer, 2011; Mollick, 2014; World Bank, 2013). In most cases, these stricter regulations limit participation on those CFPs to individuals who are citizens of the country were the CFP is located and hence has a licence to operate. As a result, their emergence on a country-level coincides with the adaptation of the local legislation (Bruton et al., 2015; Hemer, 2011; Mollick, 2014; World Bank, 2013).

3.8 The Worldwide Crowdfunding Market

The research and advisory firm Massolution provides the standard crowdfunding market data used in academic research (Burtch et al., 2013; Fleming & Sorenson, 2016; Kuppuswamy & Bayus, 2015a; Mollick 2014; Moritz & Block, 2014a; Vulkan et al., 2016). Data for Massolution's report is based on a survey from worldwide active CFPs. In 2014, 463 CFPs participated in that survey. The following numbers represent the crowdfunding volume that was processed by domestic CFPs. Hence, it does not consider cross-border crowdfunding activity. As of February 2017, its most recent report is the "2015CF – The Crowdfunding Industry Report" (2015). If not mentioned otherwise, the following market information is extracted from this report.

The worldwide crowdfunding market, in terms of total paid-out volume, reached $16.2 billion in 2014. This represents an increase of 166% over the $6.1 billion in 2013. For 2015, the worldwide crowdfunding market is expected to reach a combined volume of $34.4 billion.

Since 2010, debt-based crowdfunding has the highest volume in the crowdfunding market. In 2014, its share of the total market reached 68.3%, with a volume of $11.08 billion, representing an increase of 223% over 2013. The growth in debt-based crowdfunding was primarily driven by the individual growth of big US based platforms such as LendingClub and Prosper.com, which alone contributed around $6 billion in loans issued. Another reason for the high growth in debt-based crowdfunding is attributed to the growing Chinese market. It is important to note that debt-based crowdfunding comprises loan to both individuals and companies. Donation-based crowdfunding has the second highest market share, with a total funding volume of around $1.94 billion. However, year over year growth was below the market average at 45% and, as a result, total market share dropped to just below 12% in 2014. Similarily, the market share of reward-based crowdfunding dropped to around 8.2% in 2014. This represents a volume of $1.33 billion at an annual growth rate of 84%. The main contributor to this growth was the US market, which is home to the five biggest reward-based crowdfunding platforms. The total market share of equity-based crowdfunding slightly increased to 6.8% in 2014. In absolute values, the equity crowdfunding market reached $1.11 billion for 2014 at an annual growth rate of 182%. The remaining total market share is split between two emerging forms of crowdfunding, namely hybrid (3%) and royalty (1.7%) crowdfunding, which represented a combined volume of around $0.76 billion in 2014. Figure 3 summarizes the 2014 crowdfunding market in absolute and relative values.

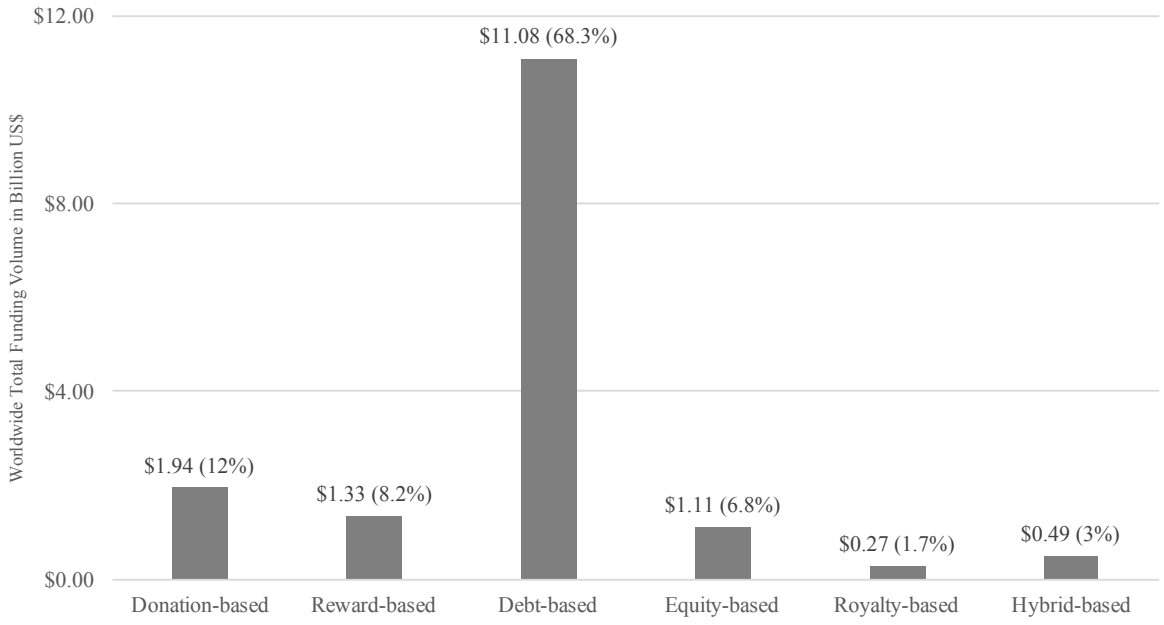

Figure 3. Worldwide total crowdfunding volume by crowdfunding model for 2014 in billion US$.

Generally, North American, Asian and European CFPs dominate the crowdfunding market. The total funding volume for North American CFPs stood at around $9.47 billion, for Asian CFPs at around $3.4 billion and for European CFPs at around $3.3 billion in 2014. Interestingly, Asia's annual growth rate outperformed that experienced in Europe (141%) and North America (145%), with a 320% increase between 2013 and 2014. South American, Oceanian and African CFPs contributed less than 1% to the worldwide total crowdfunding volume in 2014. Looking specifically at African CFPs, the crowdfunding volume that orginated on domestic CFPs is small in size, yet doubled in volume from $6 million for 2013 to $12 million for 2014. Figure 4 summarizes the total crowdfunding volume by region for 2014.

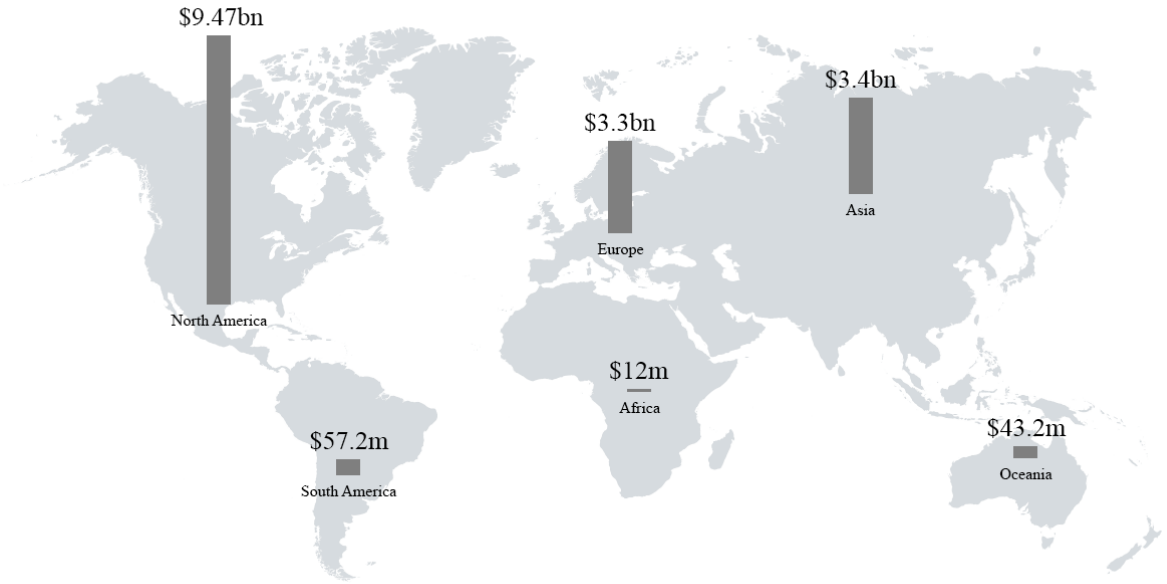

Figure 4. Crowdfunding volume by region for 2014 in US$.

The worldwide average funding amount per successful campaign across the different crowdfunding models shows clear differences. Starting with donation-based crowdfunding, the average campaign size reached $3,363 in 2014, a 42.5% increase over 2013. Similarly, reward-based crowdfunding projects reached an average funding value of $3,189 in 2014, however representing a decline of 11% compared to 2013. Regarding debt-based crowdfunding, there are significant differences between peer-to-peer and business loans. While peer-to-peer loans reached an average funding value of $3,399, in 2014, this value stood at $103,618 for business loans in 2014. For equity-based crowdfunding, there are considerable differences between regions. While the average funding size in North America was $175,000, equity campaigns in Europe yielded an average of around $309,124, while the value was $307,474 for Oceania. Interestingly, the highest average was reached on Asian CFPs, with around $342,260. From a worldwide perspective, the average campaign size for equity-based crowdfunding projects increased by 11% compared to 2013 to reach $275,461 in 2014. Figure 5 summarizes the average funding amout by crowdfunding model for 2014.

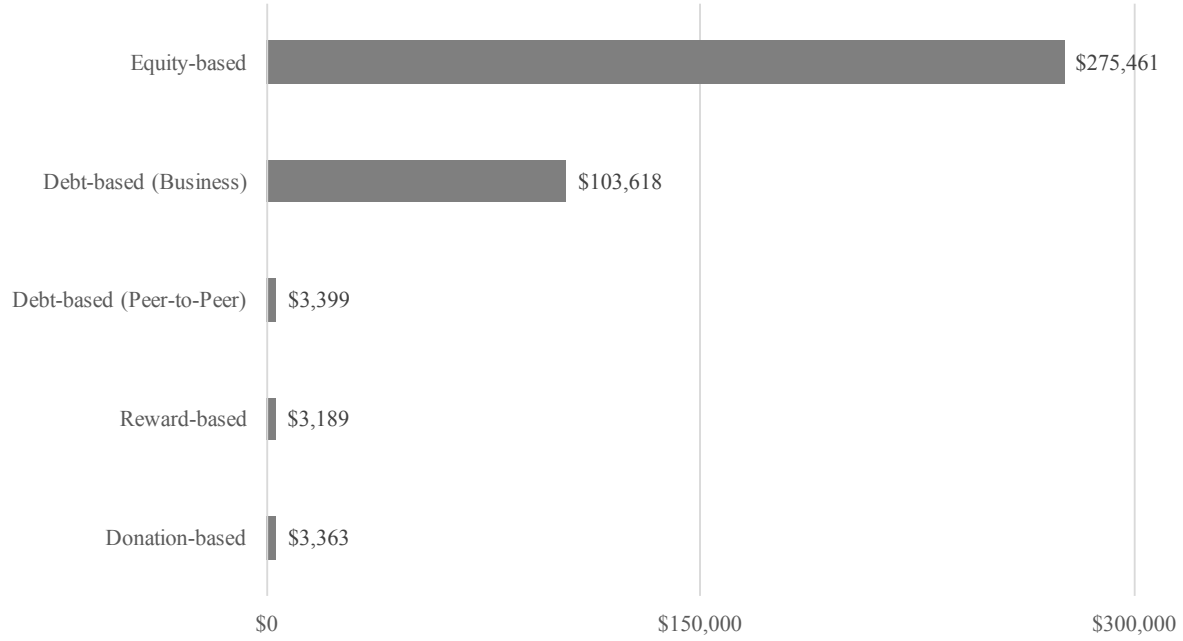

Figure 5. Average worldwide funding volume by crowdfunding model for 2014 in US$.

Finally, looking at the worldwide most active crowdfunding categories measured by funding volume, there has been an interesting trend. Since 2013, the category "Business & Entrepreneurship" has surpassed "Social Causes", which was the leading category previously. This trend was even further pronounced in 2014, with "Business & Entrepreneurship" now representing 41.3% of the worlwide crowdfunding activity. This shift empirically confirms the evolution of crowdfunding from rather artistic projects to entrepreneurial funding, as discussed above. Figure 6 depicts the relative funding volume by category for 2014.

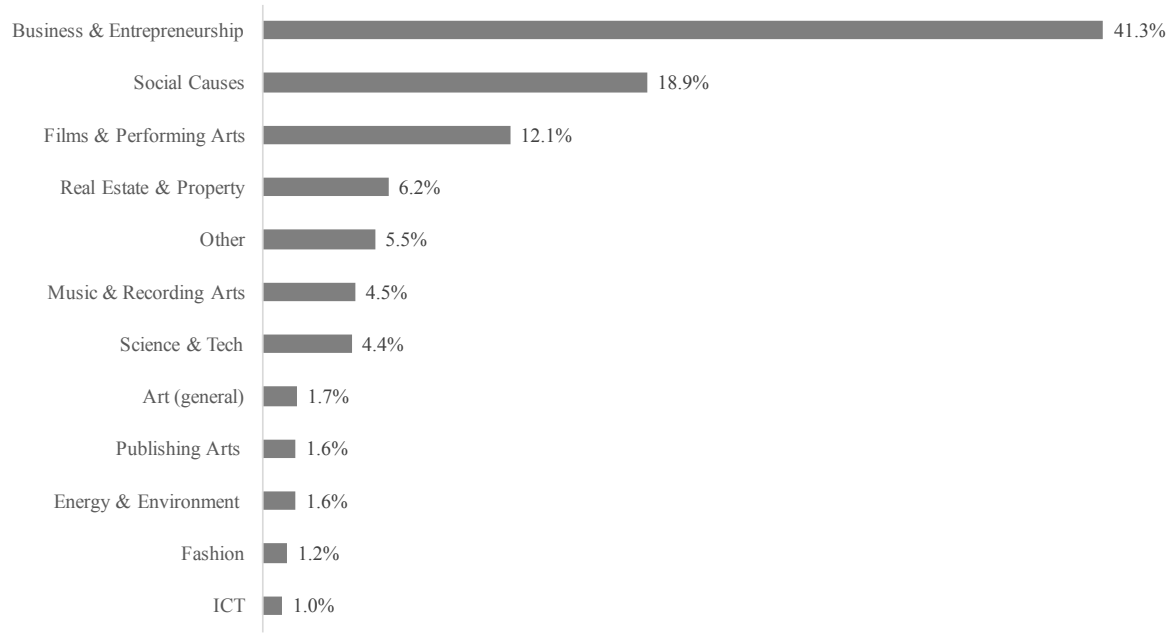

Figure 6. Worldwide relative funding volume by crowdfunding category in 2014.

3.9 The African Crowdfunding Market

Figures for the number of African CFPs vary. While Afrikstart (2016) reports 39 active CFPs in Africa for 2014, Massolution (2015) reports only 19 for 2014. Conducting independent analysis, it is estimated that there were at least 25 active CFPs in Africa by March 2017 (Appendix A). Virtually all of those African CFPs operate only in their respective countries, such that Pan-African crowdfunding platforms remain an exception. The majority of African CFPs are based in South Africa, followed by Nigeria and Egypt (Afrikstart, 2016). When looking at the crowdfunding models pursued, donation-based and reward-based models dominante, with a share of around 60% in 2015 (Afrikstart, 2016). However, the domestic African crowdfunding market is currently very small in size, with a combined market size of only $12 million in 2014. As such, funds raised on African CFPs represent less than 0.1% of the total worldwide crowdfunding market. Even with an expected growth to around $24 million for 2015, African CFPs will remain at low levels (Massolution, 2015). As a consequence, there is only a limited number of participants on both the demand and supply

side, making domestic CFPs unattractive for Africans. Indeed, the majority of African crowdfunding activity is not taking place on domestic CFPs but on international CFPs. Afrikstart (2016) reports that around $95 million has been raised by Africans through foreign platforms. AlliedCrowds (2016) estimates the total amount raised, including through foreign platforms, to be as high as around $180 million. As a result, the domestic crowdfunding market represents only 20.2% or 13.3% of the combined African crowdfunding activity, depending on the source. Foreign CFPs seem to promise higher investment amounts and success rates compared to domestic CFPs, due to a more sophisticated crowdfunding market and overall higher national income levels. Despite the fact that international donation-based crowdfunding is widely used by Africans, its main focus is on charity and, to some extent, necessity-driven entrepreneurship. As such, it is inappropriate to capture opportunity-driven entrepreneurial intention. By contrast, foreign debt-based and equity-based crowdfunding is inaccessible for Africans because of legal restrictions that limit the participation, as described in this chapter.

In order to provide evidence for how crowdfunding is currently used in Africa and if it can live up to the potential it is given, the empirical analysis focuses on international platforms where the majority of African crowdfunding is taken place, as noted above. In particular, international reward-based crowdfunding is used, as it is of an entrepreneurial nature (Fleming & Sorenson, 2016; Gajda & Walton, 2013; Hemer et al., 2011; Mollick, 2014; Vulkan et al., 2016; World Bank, 2013) and dominates (together with donation-based crowdfunding) the overall crowdfunding activity in Africa (FSD Africa, 2017).

4. Evidence on the Use of Reward-based Crowdfunding in Africa

Driven by the high growth of the crowdfunding market in North America and Europe, empirical research has focused almost completely on these regions. However, academics are increasingly calling for more research on crowdfunding in developing countries. Specifically, Gajda and Walton (2013) state that "An analysis of primary and secondary data, in-depth assessments of live projects and statistical analysis could provide more insight (…) how to make crowdfunding more accessible to entrepreneurs in the developing world" (p. iii). Further, Hagedorn and Pinkwart (2013) call for research on the economic impact of crowdinvesting in countries with less developed financial systems, while Bruton et al. (2015) ask "How do alternative financing mechanisms in developing and developed economies differ?" (p.16).

The first research question addresses the above mentioned research gaps by providing empirical evidence on how reward-based crowdfunding is currently used in Africa. In particular, the study provides an in-depth statistical analysis of African reward-based crowdfunding projects on Kickstarter and Indiegogo, adresses the call to understand its current economic impact and gives insight on how the use of African crowdfunding differs compared to the rest of the world.

4.1 Research Objective

The ultimate goal of the first research question is to depict and describe the current situation of African reward-based crowdfunding in order to gain empirical insights on a project, category and country level. By revealing the special characteristics of African crowdfunding, it can be compared to those of the rest of the world. Understanding those characteristics is no end it itself; rather, it allows practioners and policymakers to better understand the use cases for African crowdfunding and, thus, act upon this insight to foster its access and use. First, it

sensitizes the different stakeholders about this new form of financing that is technically largely independent from traditional funding sources and, as a result, appropriate in the African context. Second, it provides practical and actionable insight by showing empirically how crowdfunding is currently used in Africa. Finally, it advances theory building in the young field of crowdfunding research in the context of developing countries.

As a result, policymakers will find evidence on how crowdfunding is currently used on the continent, African entrepreneurs will find information about the expected outcome when raising funds over crowdfunding and finally, other stakeholders, such as domestic and foreign CFP owners that wish to adapt their offerings to the local requirements, will find valuable information on the specific characteristics of African crowdfunding.

4.2 Research Design and Methodology

As crowdfunding research is in its infancy, little is known about the specifics of the special topic of crowdfunding in developing countries (Kuppuswamy & Bayus, 2015a; Macht & Weatherston, 2014; Mollick, 2014). As a result, the research conducted is of an exploratory nature. Instead of formally testing hypotheses, the ultimate goal of the study is to develop initial evidence about crowdfunding in a developing region. This is an established method for an emerging topic in the new field of entrepreneurship and common in peer-reviewed crowdfunding research (Busenitz et al., 2003; Mollick, 2014). Specifically, the first research question is of a descriptive nature as it seeks to understand how crowdfunding is currently used in Africa. Here, the study does not try to capture any cause and effect relationships but rather aims to describe the prevailing situation.

As explored in Chapter 3, the majority of African crowdfunding activity takes place on international platforms. As international reward-based crowdfunding is both accessible for Africans and of an entrepreneurial nature, it serves as the data basis for the study (Fleming &

Sorenson, 2016; Gajda & Walton, 2013; Hemer et al., 2011; Mollick, 2014; Vulkan et al., 2016; World Bank, 2013). Specifically, the study focuses on African projects on the two biggest reward-based crowdfunding platforms worldwide, Kickstarter and Indiegogo. In order to avoid sampling error and to obtain a holistic set of data, the entirety of African crowdfunding projects on both platforms was collected for the years 2014 and 2015. Based on this quantitative sample, descriptive statistics are used to address the first research question.

4.3 Data Sample

The two international crowdfunding platforms that serve as sources for the data have been introduced in detail in Chapter 3. With a combined global fundraising volume of almost $4 billion since their inception, they represent the two biggest reward-based crowdfunding platforms worldwide and serve as a proxy for the foreign crowdfunding activity of Africans (Kickstarter, 2016; Indiegogo, 2016). In the following, the sample for the study is described and the main variables for the analysis are introduced.

4.3.1 Data Set Construction

The pooled sample consists of 4,264 African crowdfunding projects on Kickstarter and Indiegogo for the years 2014 and 2015. This represents the entirety of projects that originated in Africa for 2014 and 2015 on both platforms. As the end date of the latest crowdfunding projects in 2015 fall into 2016, the data used in the analysis is based on their end date in order to avoid bias.

In particular, the sample size for Kickstarter comprises 372 projects, while the sample for Indiegogo comprises 3,892 projects for the two years. In the year 2014, a total of 1,990 African crowdfunding projects were launched, with 167 on Kickstarter and 1,823 on

Indiegogo. For 2015, a total of 2,274 African crowdfunding projects were launched, with 205 on Kickstarter and 2,069 on Indiegogo. This represents an increase of 14.3% compared to 2014. For the analysis on a project level, two Kickstarter projects that have outlying funding rates of 7429% and 3322% were removed from the sample for the calculation of the funding rates. The allocation of the projects over the two years is depicted in figure 7. It shows that the total African crowdfunding activity has been stable in the past two years with a recent upward tick in the last quarter of 2015 on both platforms.

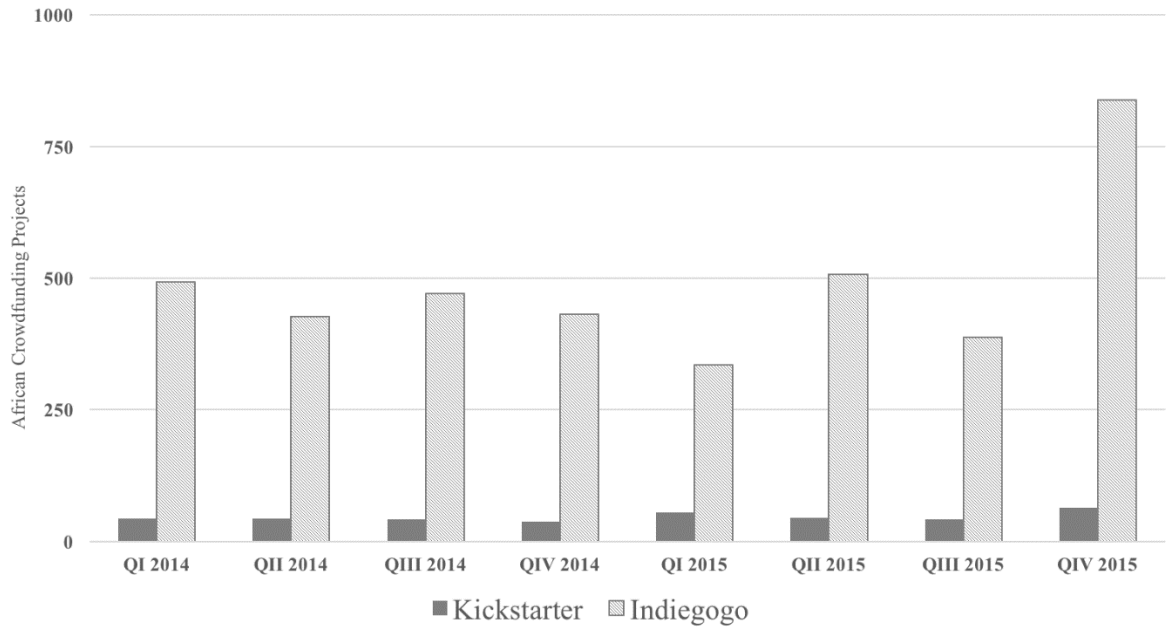

Figure 7. Distribution of African crowdfunding projects on Kickstarter and Indiegogo by quarter for 2014 and 2015.

4.3.2 Variables

Defnitions for the key variables obtained from the sample are provided in the following.

Category: Each crowdfunding project started on Kickstarter or Indiegogo must be categorized into a certain platform-specific category. At the time of writing, Kickstarter allows the user to select from 15 different categories, ranging from rather creative ones such as art, comics and music, to more product-related ones such as crafts and technology. By

contrast, Indiegogo has 25 categories at the time of writing. While also offering a range of creative categories, such as art, comics and music, as well as product related ones such as design and technology, there are additional categories such as community, education and small businesses.

Funding amount: The funding amount is the sum of all monetary contributions to a single crowdfunding project in US$ at the end of a project's lifetime. It is independent of the funding success of a project. In case the project was started in a different currency, which is possible on both Kickstarter and Indiegogo, the US$ value for those projects was calculated based on the value of the foreign currency at the end of the project.

Funding goal: This measure indicates the total amount of money that the project initiator wants to raise for the project.

Success rate: The success rate is the share of successfully funded projects. As Kickstarter and Indiegogo pursue different funding models, success rates are not comparable. Kickstarter solely offers the AON model, so that only projects that reach their funding goal receive the money and hence are considered a success. By contrast, on Indiegogo, project initiators can choose between the AON and KIA method, making all projects a success that receive at least one contribution under the KIA method. For the Indiegogo sample, the total number of KIA projects is 3,701, representing a share of 95.1%.

Funding rate: The funding rate is the percentage amount of funding reached by a single project indepedent of its success. It represents how much of the funding goal has been raised by the end of a project's lifetime.

Fully funded rate: The fully funded rate is the percentage of all projects that have reached or surpassed their funding goal. As Kickstarter only offers the AON model, every project that is successfully funded is by definition fully funded. However, in the case of

Indiegogo, a project can be successful, yet not fully funded, which is the case for all KIA projects that have at least one contribution and did not meet their funding goal.

Zero funding rate: The zero funding rate is the share of projects that have raised a funding amount of $0 by the end of the project.

Number of funders: The number of funders is the total amount of funders that contributed to a single project.

Amount contributed: The variable measures the dollar value of a single contribution to a project.

4.4 Results

The result section is divided into three parts. First, descriptive statistics on a project and platform level are presented for the sample. As Kickstarter and Indiegogo differ considerably regarding their platform mechanics, the majority of the analysis is done separately for the two platforms. In addition, this makes it possible to compare the obtained results and detect platform-specific patterns. Second, analysis is conducted for the platform-specific categories. Again, this is done separately for Kickstarter and Indiegogo. The specific patterns of the crowdfunding use are analysed for Africa and compared to those worldwide. Finally, African crowdfunding activity is analysed based on country groups and geographically for the 49 African countries and four African regions.

4.4.1 Project and Platform Results

The summary statistics for Kickstarter and Indiegogo can be found in table 6. In 2014 and 2015, a total of 4,264 African crowdfunding projects were launched on Kickstarter and Indiegogo. Specifically, 372 projects were launched on Kickstarter and 3,892 projects were launched on Indiegogo during that time. In comparison, on a global level, the amount of

projects on both platforms was almost at the same level with about 167,000 started on Kickstarter and about 176,000 started on Indiegogo (TheCrowdDataCenter, 2016). Hence, African project initiators use Indiegogo on a substantially higher ratio compared to Kickstarter than is the case on a global level. Two reasons might cause this difference. First, it is much more difficult for Africans to create a Kickstarter project, as only citizens from Austria, Australia, Belgium, Canada, Switzerland, Germany, Denmark, Spain, France, the UK, Hong Kong, Ireland, Italy, Luxembourg, the Netherlands, Norway, New Zealand, Sweden, Singapore, or the US can initiate a project on the platform. In practice, this challenge is overcome by having at least one team member in the project from the above-mentioned countries or by using an organization that creates the project on behalf of the project initiators. Examples include Cameroon-based video game "Aurion: Legacy of the Kori-Odan" or Nigerian-based fashion brand "KEEXS" (Kickstarter, 2015a; Kickstarter, 2015b). Second, in contrast to Kickstarter, Indiegogo pursues a more open and flexible strategy by having no country restrictions for the initiation of projects, providing a wider range of categories, having no approval process for projects and by offering the KIA funding method in addition to the AON funding method.

The total funding volume of the 4,264 African projects for the years 2014 and 2015 amounts to $5,306,710, with a total of $1,686,914 for Kickstarter and $3,619,796 for Indiegogo. This compares to a combined wordwide funding volume for Kickstarter of $1,215,264,691 for the same period of time (ICO Partners, 2016). While there is no precise data available for Indiegogo, the total amount raised since the inception of the platform in 2008 until the end of 2015 was around $800 million worldwide (Indiegogo, 2015). As a result, the use of reward-based crowdfunding in Africa on Kickstarter and Indiegogo is on a low scale, yet relatively higher on Indiegogo, where access is much easier for Africans. Consequently, while it might be more difficult for Africans to start a Kickstarter project, the

access to start an Indiegogo project is the same as for the rest of world, which directly translates into a higher overall use.

Table 6

Summary Statistics for Kickstarter and Indiegogo

	Observations	Mean	SD	Min	Max
Kickstarter					
1. Funding amount	372	$4,536	$10,759	0.00	$108,893
2. Funding goal	372	$31,908	$139,142	$50	$2,500,000
3. Success rate	372	0.33	0.47	0.00	1.00
4. Funding rate	370	0.53	0.70	0.00	3.38
5. Funders per project	372	52.76	138.76	0.00	1310
Indiegogo					
1. Funding amount	3892	$930	$2,993	0.00	$52,161
2. Funding goal	3892	$894,129	$35,876,328	0.00	$2,000,000,000
3. Success rate	3892	0.53	0.50	0.00	1.00
4. Funding rate	3892	0.14	36.06	0.00	4.73
5. Funders per project	3892	10.87	30.89	0.00	806

Note. The table shows the mean, standard deviation (SD), minimum value (Min), and maximum value (Max) for all variables.

Despite the number of projects and the total funding volume being higher for Indiegogo, the same is not true for the average funding amount. While the average African Kickstarter project raised $4,536, the average Indiegogo project in 2014 and 2015 raised $930. On a worldwide level, an average Kickstarter project raised $8,473 over the same period of time (ICO Partners, 2016). While there is no data available for Indiegogo for that specific timeframe, the worldwide average Indiegogo project raised around $1,538 between 2008 and 2016 (Indiegogo, 2016). By contrast the Gross National Income (GNI) per capita in current US$ for 2015 was at $10,548 for the world while it stood at $1,637 for Africa, resulting in a multiple of 6.44 (World Bank Data, 2016). Hence, despite the fact that the average funding amounts are 87% and 65% lower for African Kickstarter and Indiegogo projects respectively, the average raised amounts are on high levels compared to the GNI per capita values. When taking only fully funded projects into account, the average Kickstarter

projects from Africa raised $11,179 while the worldwide average for fully funded Kickstarter projects amounts to $24,142 for the years 2014 and 2015 (ICO Partners, 2016). Again, despite being around 116% lower than the worldwide average, a successful African project on Kickstarter raises substantial amounts. For Indiegogo, where the average fully funded project raised $5,778 (AON only projects) and $1,712 (AON and KIA projects), there is no data available for the worldwide average funding amount for successful projects.

When looking at the average funding rates and the zero funding rates, there are considerable differences between the two platforms. While Kickstarter has an average funding rate of 53%, Indiegogo has only a 14% average funding rate. A similar gap can be obeserved for the zero funding rates, which stand at 16% for Kickstarter but 45% for Indiegogo. Unfortunately, worldwide data for those two metrics are not available. Again, the different platform policies explain those differences. When looking at the average funding goals of African projects, this value stands at $31,908 for Kickstarter but at an immense $894,130 for Indiegogo. This might be directly attributable to the fact Indiegogo offers the KIA approach, so that the project goal does not have to be met for the project to be successfully funded. This incentivizes project initiators to set high goals as they are (at first sight) not related to the ultimate funding success. However there is no incentive to set unrealistic goals with Kickstarter's AON approach, and in addition Kickstarter also pre-approves every individual campaign, ensuring unrealistic goals are not accepted. As a result, the overall quality of the project presentation appears to be higher in the moderated Kickstarter environment.

The success rate for an African project on Kickstarter is at around 33%. For Indiegogo, the average succes rate depends on the funding model. While it is at 53% including both AON and KIA projects, it stands at 12% when considering only AON projects and at around 6% when considering only fully funded projects. To compare both platforms,

the fully funded value is considered for Indiegogo. In this regard, the average success rate is more than 5 times higher for Kickstarter projects compared to Indiegogo projects. Interestingly, the worldwide success rate for Kickstarter is at 31% and, as a result, even slightly lower than for the average African Kickstarter project (ICO Partners, 2016). For Indiegogo, the fully funded rate between 2014 and 2016 was at 11.5% worldwide and, as a result, nearly twice as high as for African projects only (TheCrowdDataCenter, 2016; ICO Partners, 2016).

Finally, when looking at the average amount per contribution, it shows that the individual values for both platforms are nearly equal. While the average amount per contribution to an African Kickstarter project was $85.95, the same value stood at $85.6 for an African Indiegogo project. Interestingly, at the time of writing, the worldwide average amount per contribution on Kickstarter is nearly $80 (Kickstarter, 2016). While there is hardly any data available for Indiegogo, one platform blog post from 2011 points to a worldwide average contribution of $76 on the platform (Indiegogo, 2011). As a result, the average contribution for African projects do not differ considerably from the worldwide values. This result suggests that the money raised on both international platforms for African crowdfunding projects is raised from the international community rather then from Africans living on the continent. Additionally, the diaspora community might use international crowdfunding platforms to channel money back to their respective home countries by contributing to African crowdfunding projects.

4.4.2 Category Results

Each crowdfunding project that is started on Kickstarter and Indiegogo must be assigned to a platform-specific category. At the time of writing, Kickstarter has 15 different categories, while Indiegogo has 25. As a consequence, the categories are not equal across the platforms.

While the categories art, comics, dance, design, fashion, film, food, music, photography, technology and theatre are shared on both platforms, the rest is platform-specific. For that reason, the two platforms are analysed separately regarding their respective categories. Further, both African samples are compared to worldwide data. For Kickstarter, the worldwide data was obtained from UK-based consulting firm ICO partners (2016). For Indiegogo, the worldwide data was taken from TheCrowdDataCentre (2016), a platform that collects worldwide crowdfunding data and works together with several universities such as Portsmouth Business School.

4.4.2.1 Kickstarter

Table 7 shows the descriptive statistics for the 372 African crowdfunding projects that started on Kickstarter between 2014 and 2015 across the platform-specific 15 categories. The category "comics" has not been included in the table, as no African project was started in this category during that time. The relative distribution of African crowdfunding projects on Kickstarter across categories in comparison to the worldwide totals is depicted in figure 8.

Table 7

Descriptive Statistics for African Kickstarter Projects by Category

	Observations	Total Funding Amount	Average Funding Amount	Average Funding Goal	Average Success Rate	Average Funding Rate	Zero Funding Rate	Average Amount of Funders	Average Contribution of Funders
1. Art	15	$15,748	$1,050	$6,425	0.27	0.48	0.07	16.33	$64
2. Crafts	4	$2,798	$700	$6,613	0.50	0.94	0	13.50	$52
3. Dance	11	$42,692	$3,881	$12,959	0.55	1.02	0	37.82	$103
4. Design	11	$110,837	$10,076	$18,270	0.64	1.07	0	68.91	$146
5. Fashion	20	$211,123	$10,556	$22,437	0.45	0.74	0.10	105.50	$100
6. Film	102	$521,667	$5,114	$35,189	0.35	1.28	0,16	53.02	$96
7. Food	31	$120,746	$3,895	$124,407	0.16	0.27	0.19	38.97	$100
8. Games	11	$132,835	$12,076	$46,136	0.36	0.62	0.18	299.27	$40
9. Journalism	2	$363	$182	$8,250	0	1.97	0	3.00	$61
10. Music	26	$47,260	$1,818	$26,062	0.42	1.78	0.15	24.04	$76
11. Photography	54	$140,051	$2,594	$6,003	0.37	0.54	0.20	27.59	$94
12. Publishing	58	$122,165	$2,106	$17,445	0.19	0.36	0.21	30.83	$68
13. Technology	21	$153,182	$7,294	$41,559	0.14	0.32	0.19	73.10	$100
14. Theatre	6	$65,447	$10,908	$16,417	0.67	0.91	0.17	115.17	$95

The highest number of African projects on Kickstarter are started in the categories film, publishing and photography, while on an international level, the categories film, music and technology dominate. When comparing African with international projects on Kickstarter, it shows that 4 out of the 15 categories have higher amounts for African projects, namely dance, film, photography and publishing. Those categories are of a creative nature. Two reasons might explain this pattern. First, when considering the projects at an individual level, it is notable that the specific characteristics of the African continent are often the topic of projects within those categories. Hence, the higher relative amounts might be caused by the special conditions on the continent that are overproportionally suited for creative works. Second, one conspicuous difference is the relatively low usage of the worldwide popular categories design, games, music and technology. Except for music, projects in those categories are often of an entrepreneurial nature. Seen from a different angle, it could be reasoned that crowdfunding is not yet popular among African entrepreneurs. However, among African creatives it has gained relatively more interest as a funding source.

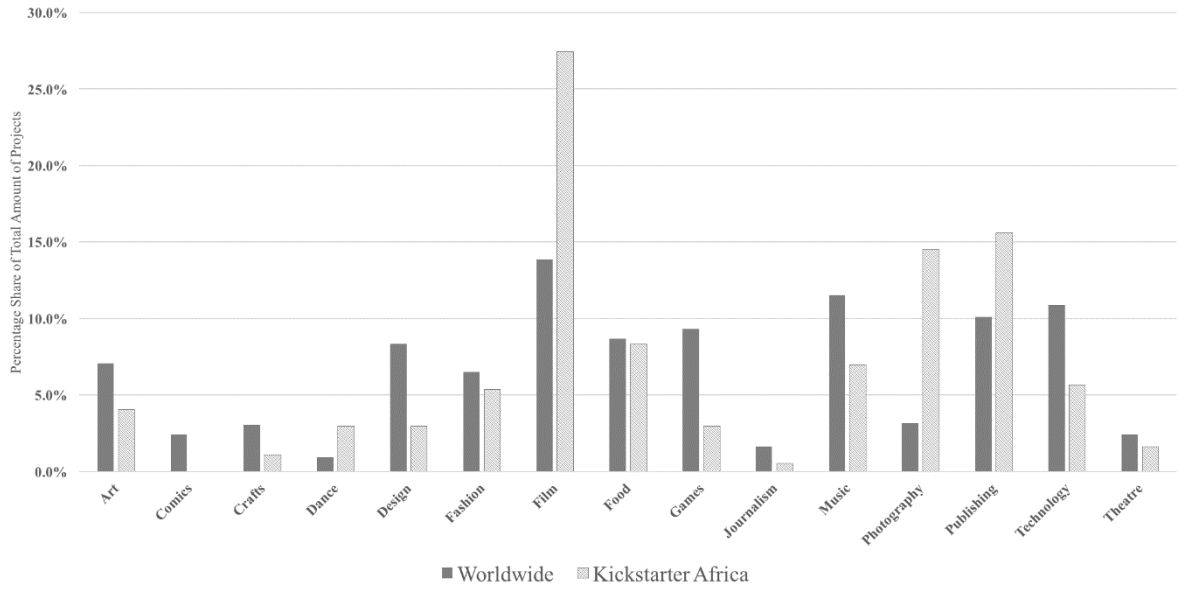

Figure 8. Relative distribution of African and worldwide crowdfunding projects by category for Kickstarter.

When considering the total funding volumes per category, the picture changes. While film, fashion and technology raise the most total money for African projects, technology, design and games receive the most contributions on a worldwide level. Regarding the share of the total funding volume as shown in figure 9, it shows that the majority of trends analysed before are further intensified. The creative categories dance, fashion, film, photography, publishing and theatre have the highest difference compared to the worldwide values. By comparison, the categories design, games and technology show the highest differences on a worldwide level compared to African projects.

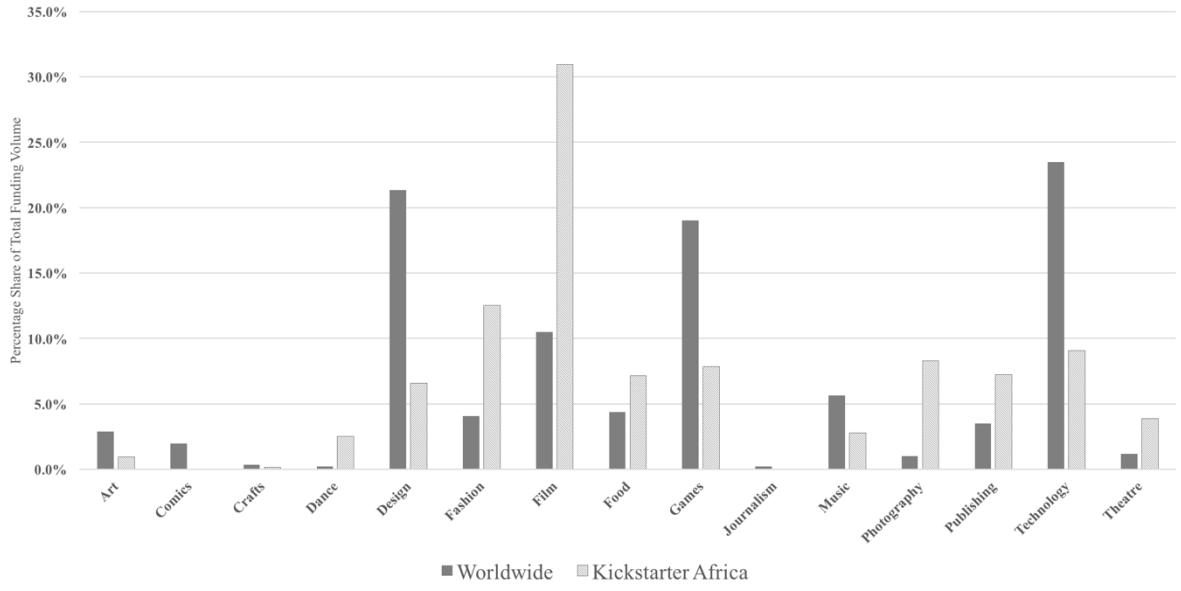

Figure 9. Relative distribution of African and worldwide funding volume by category for Kickstarter.

Finally, when considering the average amounts raised per project within a category as depicted in figure 10, it shows that the rather entrepreneurial projects in the categories design, technology and games are raising the highest average amounts on a worldwide level. Interestingly, besides fashion and theatre, those 3 categories also show the highest average amounts for African projects and thus are raising considerable amounts of money for their projects, even in international comparison.

As a result, the highest number of African projects are started in the creative categories

film, photography and publishing, jointly representing close to 58%. In addition to the category dance, those categories are the only ones with a positive difference compared to international levels for the number of projects started. By contrast, categories such as design, games and technology, which are relatively more used on a worldwide level and are of a rather entrepreneurial nature, do not receive the same attention from African entrepreneurs. Nevertheless, they are among the highest yielding average funding categories.

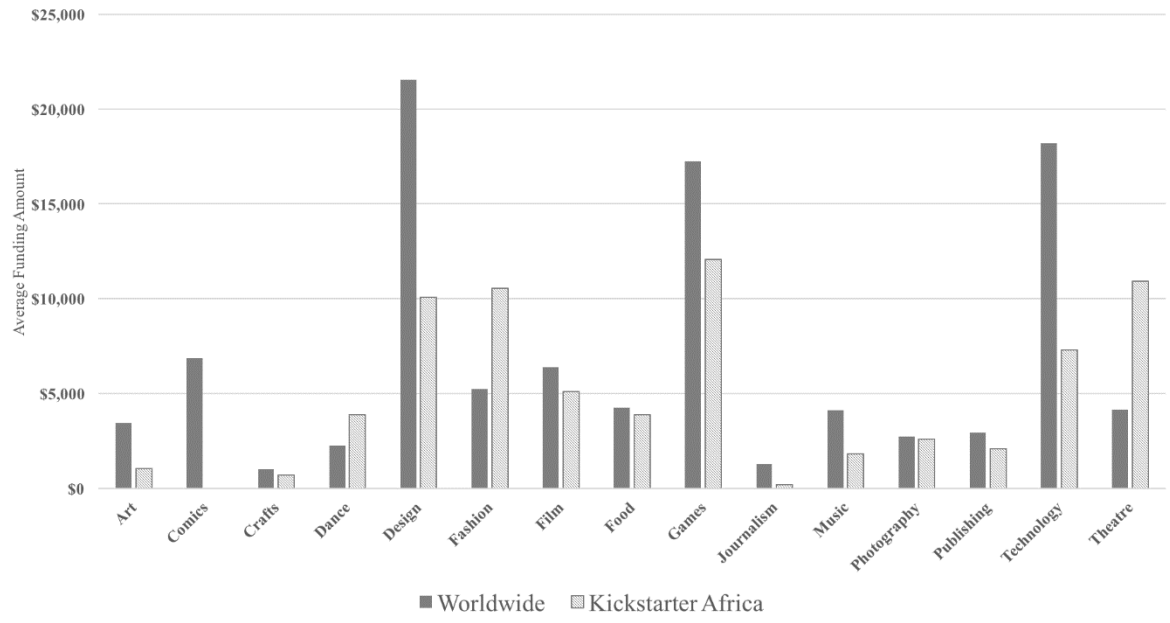

Figure 10. Average funding amount of African and worldwide crowdfunding projects by category for Kickstarter.

4.4.2.2 Indiegogo

A summary of the descriptive statistics for the 3,892 African crowdfunding projects initiated on Indiegogo between 2014 and 2015 across the 25 platform-categories can be found in table 8.

Table 8

Descriptive Statistics for African Indiegogo Projects by Category

	Observations	Total Funding Amount	Average Funding Amount	Average Funding Goal	Average Success Rate	Average Funding Rate	Zero Funding Rate	Average Amount of Funders	Average Contribution of Funders
1. Animals	110	$142,308	$1,294	$87,755	0.71	0.17	0.27	18.05	$71.66
2. Art	71	$60,949	$858	$16,426	0.62	0.17	0.32	12.27	$69.99
3. Comics And Graphic Novels	4	$663	$166	$2,125	0.50	0.03	0.50	4.25	$39.00
4. Community	932	$1,134,696	$1,217	$194,541	0.59	0.19	0.40	13.32	$91.38
5. Dance	26	$17,417	$670	$19,221	0.69	0.16	0.31	8.65	$77.41
6. Design	27	$20,309	$752	$36,246	0.41	0.14	0.56	13.70	$54.89
7. Education	775	$1,037,866	$1,339	$65,125	0.62	0.21	0.36	14.84	$90.24
8. Environment	140	$150,117	$1,072	$272,747	0.52	0.10	0.44	11.68	$91.81
9. Fashion	45	$31,905	$709	$35,946	0.33	0.04	0.64	8.04	$88.14
10. Film	202	$165,128	$817	$105,544	0.54	0.10	0.44	10.59	$77.16
11. Food	105	$26,603	$253	$119,375	0.30	0.08	0.70	3.51	$72.09
12. Health	308	$354,192	$1,150	$42,998	0.59	0.21	0.38	12.57	$91.50
13. Music	123	$67,585	$549	$8,215,352	0.48	0.12	0.51	11.33	$48.48
14. Other	6	$0	$0	$75,833	0.00	0.00	100.00	0.00	$0.00
15. Photography	39	$17,695	$454	$16,806	0.46	0.12	0.54	6.13	$74.04
16. Politics	12	$32,756	$2,730	$40,525	0.33	0.04	0.67	29.67	$92.01
17. Religion	46	$32,278	$702	$96,444	0.46	0.10	0.52	4.20	$167.24
18. Small Business	410	$126,906	$310	$5,020,301	0.31	0.04	0.67	3.38	$91.50
19. Sports	86	$64,801	$754	$220,657	0.58	0.15	0.38	9.26	$81.41
20. Technology	251	$71,185	$284	$153,938	0.38	0.04	0.59	4.94	$57.45
21. Theatre	17	$24,698	$1,453	$13,927	0.88	0.28	0.12	15.47	$93.91
22. Transmedia	14	$7,019	$501	$65,918	0.57	0.06	0.43	9.93	$50.50
23. Video / Web	42	$10,285	$245	$39,677	0.57	0.10	0.43	5.00	$48.98
24. Video Games	46	$9,198	$200	$250,710	0.33	0.08	0.67	3.61	$55.41
25. Writing	55	$13,237	$241	$38,990	0.35	0.03	0.62	2.56	$93.88

A comparison to the worldwide data can be found in figure 11. By far the highest number of African crowdfunding projects on Indiegogo have been started in the community and education categories, which together represented close to 44% of all projects. The categories small business, health, technology and film are following as the most used categories, jointly representing another 30% of all African projects on Indiegogo. On an international level, the concentration on a category level is not as pronounced. Here, the six most used categories, community, film, music, technology, education and small business, jointly represent around 59% but with a more equal distribution among them. Despite the fact that five out of the six

most used categories are similar between Africa and the world, their relative usage differs considerably. While the categories community and education have the highest positive difference, the categories film and music have the highest negative difference between African projects and the world regarding their relative number of projects.

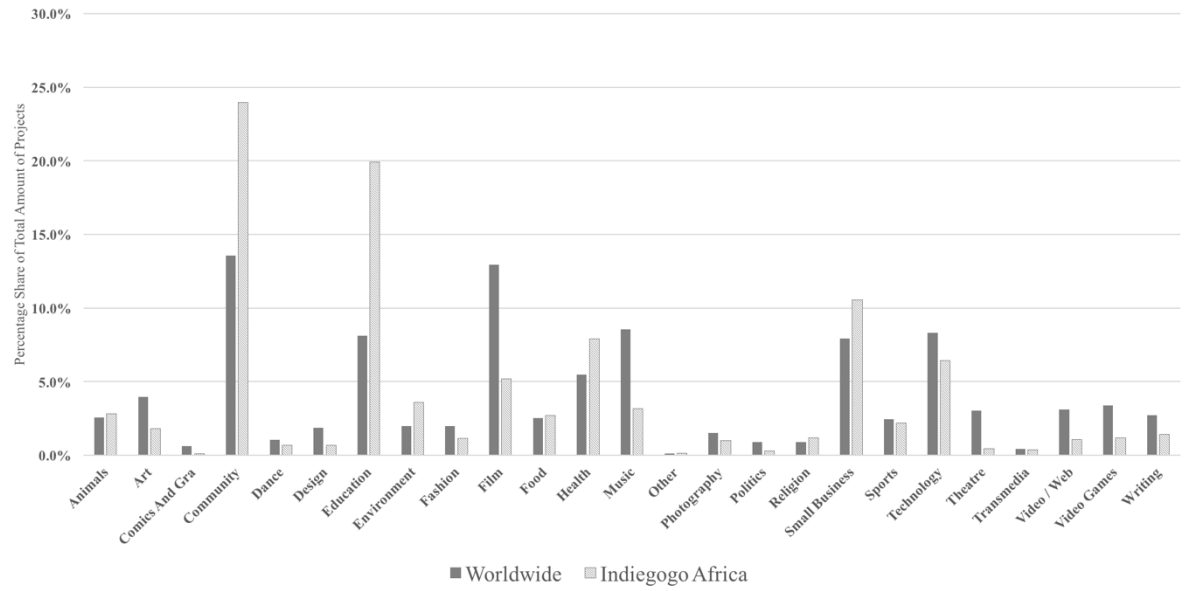

Figure 11. Relative distribution of African and worldwide crowdfunding projects by category for Indiegogo.

When considering the total funding volumes as shown in figure 12, it shows that the most raising categories for African projects, namely community, education, health, film, environment and animals, are not of an entrepreneurial nature. Yet, together they represent more than 82% of all raised funds in Africa. By contrast, the most raising categories on a worldwide level are technology, film, community, education, music and design, which together represent more than 73% of all funds raised worldwide. Here, the technology and design sectors, which are of a rather entrepreneurial nature, together represent 38% of the total worldwide funding volume. When comparing the total funding volumes for Africa with the world on a category level, it shows that the relative share of community and education are further intensified for the African sample. Together, they represent as much as 60% of all

funds raised for African projects on Indiegogo. On a worldwide level, the technology category shows by far the highest gap between the African and worldwide values, followed by film, design and music. It shows that African projects in entrepreneurial categories such as technology and design exhibit the highest relative gaps compared to the worldwide values. An exception is the category small business, which is actually slightly higher for African projects.

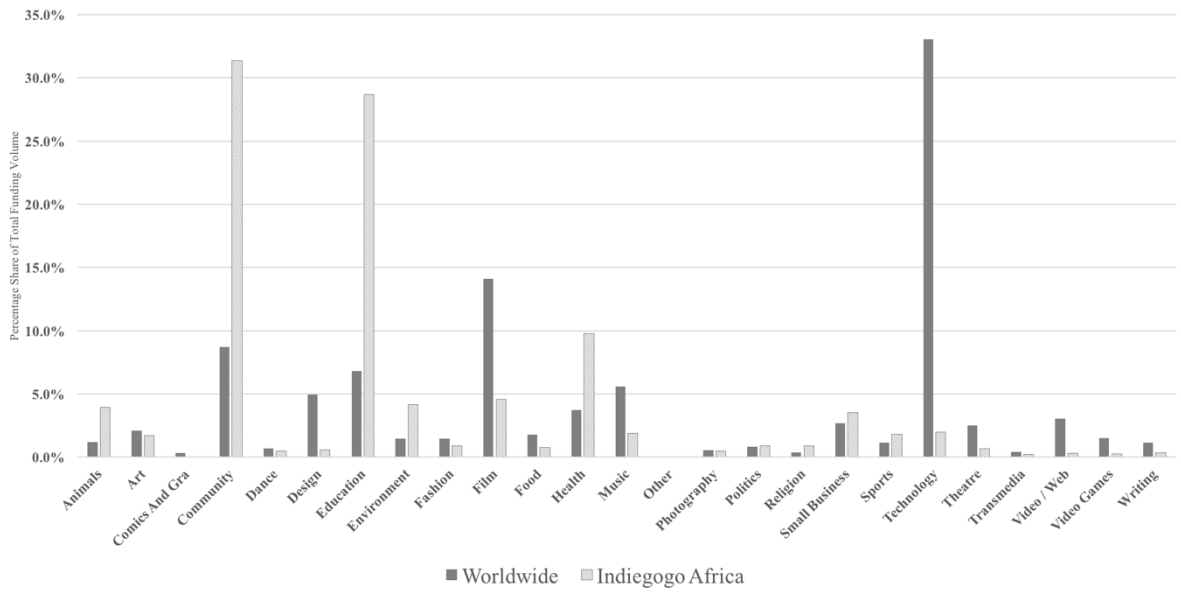

Figure 12. Relative distribution of African and worldwide funding volume by category for Indiegogo.

Finally, analysing the average funding amounts by category reveals that the best performing categories vary considerably between Africa and the world on Indiegogo, as shown in figure 13. In Africa, the highest average funding amounts are raised in the categories politics, theatre, education, animals, community and health. On a worldwide level, the highest average funding amounts are raised in the categories technology, design, film, video/web, politics and transmedia. Hence, with the exception of politics, the best performing categories are entirely different. It is notable that the highest negative differences for the

average funding amounts between the African and worldwide values can be found for the rather entrepreneurial categories of technology, design and video/web.

The average percentage difference between the average amounts raised per category are higher for Indiegogo than for Kickstarter. In particular, a worldwide Kickstarter category raises on average 110% more than an African Kickstarter category for a project. By contrast, a worldwide Indiegogo category raises on average 490% more than an African Indiegogo category for a project. Further, the standard deviation of those differences is much lower for Kickstarter than for Indiegogo. Specifically, the standard deviation is around 150% for Kickstarter, while it is around 866% for Indiegogo.

In conclusion, on Indiegogo the social categories community and education dominate African crowdfunding activity, both by the number of started projects and the total funding amount. By contrast, on a worldwide level, a substantial share of funds are raised in categories that are of entrepreneurial nature, such as technology and design. In general, African Indiegogo projects raise considerably lower amounts per project on average across all categories than on a worldwide level. The low average funding amounts might be explained by the high zero funding rate, which is about 45% for African projects on Indiegogo. However, comparable worldwide data on the zero funding rate on Indiegogo is not available. When taking into accounts only projects that raised at least $1, the average funding amount for Indiegogo changes from around $930 to around $1702, while for Kickstarter it changes from $4535 to $5389. Hence, when removing projects that raised no money, the gap between the average funding rate between Kickstarter and Indiegogo decreases from around 388% to around 217%.

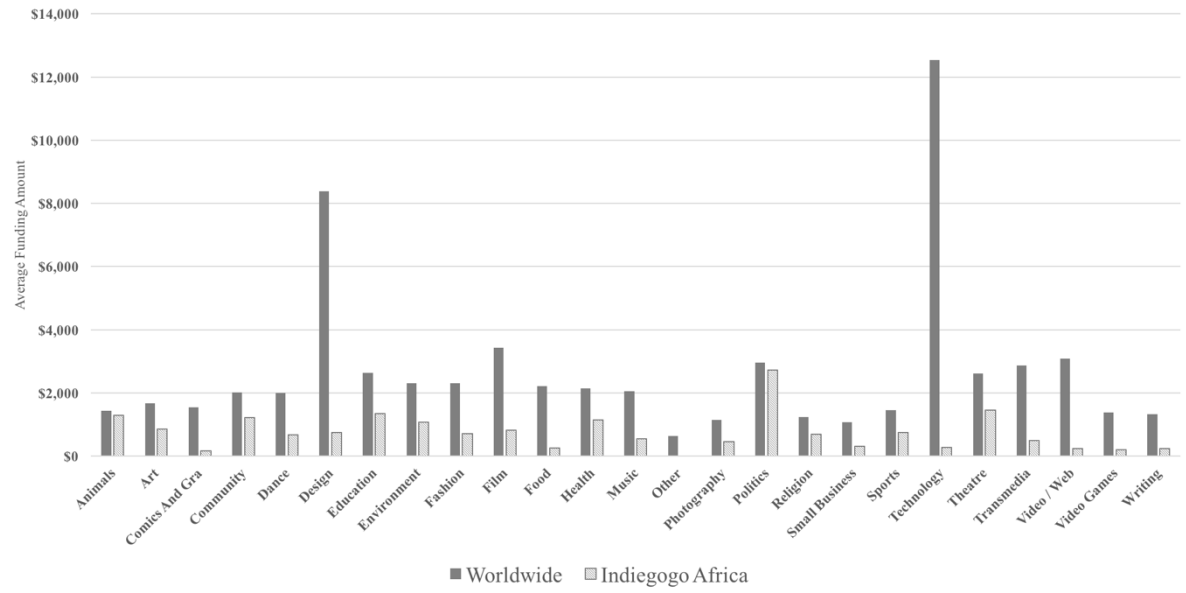

Figure 13. Average funding amount of African and worldwide crowdfunding projects by category for Indiegogo.

4.4.3 Country Results

Africa consists of 49 countries with a combined population of around 975 million in 2014 (World Bank, 2014). In this section, the crowdfunding use on the continent is studied by country classifications. First, how the crowdfunding activity differs across the individual countries is shown. Second, based on the high income differences among African countries, analysis is conducted by comparing low-income with middle-income countries. Finally, crowdfunding activity is studied for the four main African regions.

4.4.3.1 Country Overview

Table 9 summarizes crowdfunding activity on a country basis. Column 1 and 2 in table 9 show the absolute number of crowdfunding projects by country for both Kickstarter and Indiegogo. The highest number of Kickstarter projects have been initiated in South Africa, Kenya, Ghana, Uganda, Ethiopia and Nigeria, which jointly represent 70% of all African Kickstarter projects for 2014 and 2015. Regarding Indiegogo, the highest number of projects have been started in South Africa, Kenya, Nigeria, Uganda, Ghana and Zimbabwe, which

together represent 78.5% of all African Indiegogo projects in 2014 and 2015. With the exception of Zimbabwe and Ethiopia, the countries hosting the majority of African crowdfunding projects are the same for Kickstarter and Indiegogo. In addition, all of those countries are among those with the highest population in Africa, with the exception of Zimbabwe. As a result of this relation, it is controlled for the population by calculating the amount of crowdfunding projects relative to a country's population to get a better understanding of its crowdfunding activity. This is done in columns 3 and 4 for both platforms. Column 5 represents the total crowfunding activity based on the pooled sample. On Kickstarter, the most relative number of projects are started in Swaziland, Liberia, South Africa, Namibia, Mauritius and Lesotho, while on Indiegogo the highest relative number of projects are started on Seychelles, South Africa, Cape Verde, Botswana, Mauritius and Namibia. Hence, when measuring crowdfunding activity in relative instead of absolute terms, the most active countries differ considerably. The pooled sample yields the same country ranking for the relative crowdfunding activity as for Indiegogo because of the dominant size of the Indiegogo sample.

Table 9

African Crowdfunding Activity by Country

	Crowdfunding Projects Kickstarter	Crowdfunding Projects Indiegogo	Relative Crowdfunding Projects Kickstarter	Relative Crowdfunding Projects Indiegogo	Relative Crowdfunding Projects Total	Income Level	Geographic Affiliation
1. Angola	0	8	0.00	0.33	0.33	M	MA
2. Benin	2	30	0.19	2.83	3.02	L	WA
3. Botswana	2	38	0.90	17.12	18.02	M	SA
4. Burkino Faso	3	17	0.17	0.97	1.14	L	WA
5. Burundi	1	13	0.09	1.20	1.29	L	EA
6. Cameroon	5	107	0.22	4.70	4.92	M	MA
7. Cape Verde	0	11	0.00	21.57	21.57	M	WA
8. Central African Republic	0	0	0.00	0.00	0.00	L	MA
9. Chad	0	4	0.00	0.29	0.29	L	MA
10. Comoros	0	0	0.00	0.00	0.00	L	EA
11. Congo, Dem. Rep.	0	0	0.00	0.00	0.00	L	MA
12. Congo, Rep.	0	0	0.00	0.00	0.00	M	MA
13. Djibouti	0	0	0.00	0.00	0.00	M	EA
14. Equatorial Guinea	0	0	0.00	0.00	0.00	M	MA
15. Eritrea	0	0	0.00	0.00	0.00	L	EA
16. Ethiopia	25	47	0.26	0.48	0.74	L	EA
17. Gabon	0	2	0.00	1.18	1.18	M	MA
18. Gambia, The	2	7	1.04	3.63	4.66	L	WA
19. Ghana	33	320	1.23	11.95	13.18	M	WA
20. Guinea	2	9	0.16	0.73	0.90	L	WA
21. Guinea-Bissau	0	0	0.00	0.00	0.00	L	WA
22. Ivory Coast (Cote d'ivoire)	5	19	0.23	0.86	1.08	M	WA
23. Kenya	44	631	0.98	14.07	15.05	M	EA
24. Lesotho	3	8	1.42	3.80	5.21	M	SA
25. Liberia	9	37	2.05	8.41	10.45	L	WA
26. Madagascar	6	39	0.25	1.65	1.91	L	EA
27. Malawi	1	35	0.06	2.1	2.16	L	EA
28. Mali	4	21	0.23	1.23	1.46	L	WA
29. Mauritania	1	1	0.25	0.25	0.50	M	WA
30. Mauritius	2	18	1.59	14.29	15.87	M	EA
31. Mozambique	3	35	0.11	1.29	1.40	L	EA
32. Namibia	4	34	1.67	14.17	15.83	M	SA
33. Niger	0	0	0.00	0.00	0.00	L	WA
34. Nigeria	22	414	0.12	2.33	2.46	M	WA
35. Rwanda	7	72	0.62	6.35	6.97	L	EA
36. Sao Tome and Principe	0	0	0.00	0.00	0.00	M	MA
37. Senegal	12	53	0.82	3.61	4.43	L	WA
38. Seychelles	0	4	0.00	43.96	43.96	H	EA
39. Sierra Leone	6	45	0.95	7.12	8.07	L	WA
40. Somalia	0	0	0.00	0.00	0.00	L	EA
41. South Africa	102	1171	1.89	21.69	23.57	M	SA
42. South Sudan	0	0	0.00	0.00	0.00	L	EA
43. Sudan	0	0	0.00	0.00	0.00	M	EA
44. Swaziland	3	16	2.36	12.60	14.96	M	SA
45. Tanzania	12	49	0.23	0.95	1.18	L	EA
46. Togo	0	0	0.00	0.00	0.00	L	WA
47. Uganda	33	398	0.87	10.54	11.41	L	EA
48. Zambia	10	59	0.64	3.75	4.39	M	EA
49. Zimbabwe	8	120	0.52	7.87	8.39	L	EA

Note. Low-income country (L), Middle-income counry (M), Eastern Africa (EA), Western Africa (WA), Middle Africa (MA), Southern Africa (SA).

The second last column in table 9 assigns each African country an income level based on the World Bank classification. While a low-income country (L) is defined as having a

GNI per capita of less than $1,025, middle-income countries are defined as having a GNI per capita between $1,026 and $12,475, and high-income countries a GNI of at least $12,476 per capita (World Bank, 2016). In the case of middle-income countries (M), there is no further differentiation between lower middle-income and upper middle-income countries due to the naturally limited sample size.

The final column in table 9 assigns each African country a geographic affiliation as determined by the United Nations (2016). Here, the four regions, Eastern Africa (EA, 19 countries), Western Africa (WA, 16 countries), Middle Africa (MA, 9 countries) and Southern Africa (SA, 5 countries) are distinguished. As the World Bank counts Sudan in Sub-Saharan Africa, it is added to the East African countries. In the following, a closer look at the differences in crowdfunding activity is taken based on those two country classifications.

4.4.3.2 Country Classifications

Africa consists of 27 low-income countries and 21 middle-income countries (World Bank, 2016). While the low-income countries have a combined population of around 525 million, the middle-income countries consist of nearly 450 million inhabitants. As the Seychelles are the only high-income country and hosted only 4 crowdfunding projects in 2014 and 2015, statistics have only limited meaning and, as a result, are not reported separately. The descriptive statistics for Kickstarter and Indiegogo divided into low-income and middle-income are depicted in table 10.

When comparing crowdfunding activity across low-income and middle-income countries, it shows that middle-income countries have a higher crowdfunding activity in both absolute and relative terms. Specifically, the relative crowdfunding activity is 103% higher for Kickstarter and 224% higher for Indiegogo in middle-income countries. Further, the total

amount raised is higher for both platforms in middle-income countries. In particular, the total amount raised was around $1.7 million in low-income countries and around $3.6 million in middle-income countries. Surprisingly, when comparing only projects on Indiegogo, low-income countries yield higher average funding amounts, have higher success and funding rates as well as a lower zero funding rate. One possible explanation is that countries of the same income classification use different platforms and, thus, could have different usage patterns. However, the analysis shows that there are no considerable differences regarding platform usage for countries with the same income classification. In other words, those low and middle income countries that mostly use Kickstarter also use mostly Indiegogo. Another possible explanation is that the platform-specific category usage of low-income countries in comparison to middle-income countries is different. This analysis also yields no results, as the top categories on both platforms are almost exactly the same for low-income and middle-income countries. However, what is notable are the different categories offered on each platform and their effect on the respective usage patterns. While the three most used categories on Kickstarter, namely film, publishing and photography, are of a creative nature, the two most used categories on Indiegogo, namely community and education, are of a social nature. Interestingly, on Kickstarter film, publishing and photography have a share of around 60% in low-income countries and around 56% in middle-income countries. By contrast, community and education have a share of around 56% in low-income countries but only around 40% in middle-income countries. As community and education are among the categories that raise the highest average amounts, have the highest success and funding rates as well as the lowest zero funding rates on Indiegogo, the better performance of low-income countries on Indiegogo are partly due to this difference. In addition, on Kickstarter middle-income countries have higher average funding amounts in 10 out of the 14 categories. However, on Indiegogo only 11 out of the 25 categories raise higher average amounts in

middle-income countries. As a result, the different platform-specific categories lead to different usage patterns between low and middle-income countries on the two platforms and thus provide an explanation for the otherwise counterintuitive result that low-income countries perform better than middle-income countries on Indiegogo.

Table 10

Descriptive Statistics for Low-income and Middle-income Countries

	Observations	Mean	SD	Min	Max
Kickstarter Low-income Countries					
1. Funding amount	124	$2,759	$5,056	0.00	$28,109
2. Funding goal	124	$28,873	$73,931	$50	$450,000
3. Success rate	124	0.33	0.47	0.00	1.00
4. Funding rate	122	0.50	0.63	0.00	2.27
5. Funders per project	124	34.46	63.27	0.00	354
Kickstarter Middle-income Countries					
1. Funding amount	248	$5,423	$12,600	0.00	$108,893
2. Funding goal	248	$33,425	$162,330	$250	$2,500,000
3. Success rate	248	0.33	0.47	0.00	1.00
4. Funding rate	248	0.54	0.73	0.00	3.38
5. Funders per project	248	61.91	163.32	0.00	1310.00
Indiegogo Low-income Countries					
1. Funding amount	978	$1,378	$3,355	0.00	$38,597
2. Funding goal	978	$53,832	$330,615	$50	$8,675,309
3. Success rate	978	0.65	0.48	0.00	1.00
4. Funding rate	978	0.24	0.47	0.00	4.73
5. Funders per project	978	32.92	47.02	0.00	269
Indiegogo Middle-income Countries					
1. Funding amount	2910	$778	$2,844	0.00	$52,161
2. Funding goal	2910	$1,177,756	$41,487,941	$0	$2,000,000,000
3. Success rate	2910	0.49	0.50	0.00	1.00
4. Funding rate	2910	0.11	0.31	0.00	4.24
5. Funders per project	2910	9.43	31.47	0.00	806

Note. The table shows the mean, standard deviation (SD), minimum value (Min), and maximum value (Max) for all variables divided into low-income and middle-income countries for Kickstarter and Indiegogo.

Table 11 shows the comparison of crowdfunding activity across the four African regions in both absolute and relative terms. The absolute crowdfunding activity is highest in East Africa, followed by Southern Africa, West Africa and Middle Africa. It is notable that Middle Africa has by far the lowest absolute amount of crowdfunding activity. The result is

the same for Kickstarter and Indiegogo.

Table 11

Descriptive Statistics for African Geographical Regions

	East Africa	West Africa	Middle Africa	Southern Africa
Population	421.5	343.8	147.5	62
Kickstarter				
1. Absolute crowdfunding activity	152	101	5	114
2. Relative crowdfunding activity	0.36	0.29	0.03	1.84
3. Average funding amount	$4,803	$3,735	$12,026	$4,557
4. Success rates	0.36	0.28	0.20	0.32
5. Funding rates	0.61	0.44	0.46	0.50
6. Zero funding rate	0.12	0.23	0.20	0.15
Indiegogo				
1. Absolute crowdfunding activity	1520	984	121	1267
2. Relative crowdfunding activity	3.61	2.86	0.82	20.44
3. Average funding amount	$1,132	$804	$928	$786
4. Success rates	0.58	0.48	0.50	0.51
5. Funding rates	0.19	0.13	0.11	0.11
6. Zero funding rate	0.41	0.50	0.50	0.46

However, when taking crowdfunding activity relative to the population, Southern Africa is the leading region, while Middle Africa shows the lowest relative crowdfunding activity. Again, both Kickstarter and Indiegogo yield the same results. It is conspicuous just how much crowdfunding is used more in Southern Africa compared to the other African regions. Individually, when looking at the Southern African countries, it shows that there are no specific countries that drive this result, but rather all five countries of the region have comparatively high levels of crowdfunding activity. The same is true for Middle Africa, which uses crowdfunding far less than the other regions. On a country-basis, with the exception of Cameroon and Gabon, all countries of Middle Africa have very low levels of crowdfunding activity. These results are robust for both platforms. Suprisingly, despite the fact that Southern Africa and Middle Africa show high differences in their relative

crowdfunding activity compared to the other regions, the same does not hold when looking at aggregated project metrics. Here, metrics such as the average funding amount, funding rates, fully funded rates as well as zero funding rates do not show the same differences across regions as is the case for crowdfunding activity. Specifically, Eastern Africa and Middle Africa yield the highest average funding amounts on Kickstarter and Indiegogo. It is also Eastern Africa, followed by South Africa, that shows the highest funding rates, fully funded rates as well as lowest zero funding rates. As a result, the comparatively high values in crowdfunding activity for Southern Africa as well as the comparatively low values in crowdfunding activity for Middle African countries are not reflected in other crowdfunding metrics.

4.5 Summary and Critical Reflection

Despite the high potential that crowdfunding is given in the current literature to mitigate the access to finance problem for African entrepreneurs, the use of this innovative form of funding is at low levels in international comparison. The domestic CFPs are in their infancy, with only a limited number of participants on both the demand and supply side. As a consequence, it is not surprising that the domestic crowdfunding market is currently small and that the majority of African crowdfunding activity takes place on international platforms. However, even in an international environment where the supply and demand side are on higher levels, the results indicate that African crowdfunding activity is currently small in scale. The allocation of projects over 2014 and 2015 shows that African crowdfunding activity has not been growing in that period, yet experienced a recent upward tick on both platforms. Interestingly, Africans use Indiegogo at a much higher ratio compared to Kickstarter than international crowdfunding initiators do. A possible explanation for this is the challenge for African project initiators to start and approve their crowdfunding projects

on Kickstarter. Indiegogo pursues a more flexible and open strategy by having no restrictions on who can initiate a project, providing a wider range of categories and offering the KIA funding method in addition to the AON funding method. Despite the overall low usage of crowdfunding, the average amounts raised on a project level are substantial even in international comparison. While the average amounts raised are higher on Kickstarter than on Indiegogo, both platforms show the potential that crowdfunding has to mitigate the access to finance problem for African entrepreneurs. The main advantage seems to be the actively involved international funding community, which has a higher financial power compared to African funders. This reasoning is underpinned by the fact that the average individual contribution to African crowdfunding projects is equal to those on a worldwide level. Looking at the average success rates also yields promising results. While the success rate for Indiegogo is only at 50% of the international rate, African Kickstarter projects enjoy even a slightly higher success rate. This might be mainly due to the fact that Kickstarter projects are individually approved in contrast to Indiegogo projects and, as a consequence, demand for higher quality before being publicly available. Hence, while the usage of crowdfunding is currently low on foreign platforms, the potential it is given by current literature can be empirically confirmed.

On Kickstarter, more than 57% of all African projects are posted in the creative categories of film, photography and publishing. Together with the category dance, these categories are the most used by Africans compared to the worldwide average. This stands in contrast to the fact that the majority of categories that raise the highest average amounts for African crowdfunding projects are of an entrepreneurial nature, such as design, games and technology. As a result, even compared to the worldwide average, African projects in those categories raise substantial amounts of money and thus are a promising method to overcome the prevailing access to finance problem for African entrepreneurs. African entrepreneurs

who search for an initial funding for their business idea have a good opportunity to raise this via Kickstarter. On Indiegogo, the social categories community and education dominate the African crowdfunding activity. This stands in contrast to the worldwide usage, where a substantial share of crowdfunding activity on Indiegogo takes place in categories that are rather of an entrepreneurial nature. In contrast to Kickstarter, African projects on Indiegogo have a high zero funding rate, which is reflected in comparatively low average funding amounts across the platform-specific categories. When removing zero funded projects, the gap of the average funding rate between Kickstarter and Indiegogo decreases substantially and hence projects on Indiegogo also have the potential to raise substantial amounts of money for Africans across all categories. In conclusion, the majority of African crowdfunding activity on Kickstarter is of a creative nature and on Indiegogo of a social nature. By contrast, on a worldwide level, both platforms show higher crowdfunding activity in entrepreneurial categories such as technology, games and design. In its current state, African crowdfunding activity on both platforms shows signs that are comparable with the beginnings of crowdfunding activity in the developed world, when artistic and social causes dominated.

On a country level, middle-income countries enjoy higher crowdfunding activity than low-income countries in Africa. However, while Kickstarter projects perform better in middle-income countries, those initiated on Indiegogo perform better in low-income countries. This might be attributable mainly to the fact that Kickstarter and Indiegogo have different platform-specific categories that lead to different usage patterns between low and middle-income countries. Taking a geographic perspective, it shows that by far the highest relative crowdfunding activity is exhibited in Southern Africa and the lowest crowdfunding activity in Middle Africa, on both Kickstarter and Indiegogo. Yet looking at the aggregated project metrics throughout the African regions yields different results. Essential project

metrics such as the average funding amount, funding rates, fully funded rates as well as zero funding rates do not differ widely across regions. Hence, while crowdfunding is currently most used in Southern Africa, it has an equal potential across the different African geographical regions when considering metrics on a project level. To uncover the driving economic forces behind those extreme differences in the regional usage of African crowdfunding, the second research question aims to provide empirical evidence on the enabling economic factors of crowdfunding across different institutional settings on the African continent. Before conducting the analysis, the next chapter introduces the Global Competitiveness Report that serves as basis for the economic data.

5. National Competitiveness

The previous chapter provided showed that crowdfunding activity differs widely across African countries and regions. The goal of the second research question is to shed light on those differences by providing initial empirical evidence of economic factors that are related to the use of crowdfunding on the continent. The selection of these economic factors should not be arbitrary but follow a rigorous methodology. Furthermore, these economic factors must be actionable and grounded on sound theory.

It is the ultimate goal of national competitiveness indices to provide policymakers with this comprehensive set of actionable economic data. As will be shown in this chapter, the Global Competitiveness Index (GCI) is especially suited for the analysis, and as a consequence its data will be used for empirical analysis of the second research question. Indeed, entrepreneurial researchers such as van Stel, Carree and Thurik (2005) or Wennekers et al. (2005) have used different types of data from the GCI in their empirical analyses. Similarly, yet more comprehensive, this study uses data from the GCI in order to account for the various economic factors that shape the different institutional settings in Africa.

The remainder of the chapter proceeds as follows. First, the notion of national competitiveness is defined. Second, the Global Competitiveness Report (GCR) is presented. Finally, the different economic factors and aggregations of the GCI are introduced.

5.1 What is National Competitiveness?

Historically, the concept of competitiveness originated on a firm-level (Aiginger, 2006; Berger, 2008; Berger & Bristow, 2009; Lall, 2001; Smit, 2010). The two most fundamental theories regarding a firms's competitiveness are the market-based view and the resource-based view (Berger, 2008). The market-based view focuses on market structures and explains a firm's individual competitiveness by its ability to position itself within this exogenous

context. Here, firms can improve their competitiveness by cost or product differentiation advantages. By contrast, the resource-based view focuses on the specific, endogeneous resources a firm posseses and aims to improve its competitiveness by the effective utilization of them.

The concept of competitiveness has been transferred from firms to nations, with policymakers around the world being increasingly concerned about their respective national competitiveness (Aiginger, 2006; Berger, 2008; Berger & Bristow, 2009; Lall, 2001; Smit, 2010). Driven by the rapid advancements in technology, globalization and international markets, these concerns have been accelerated in recent years (Lall, 2001). The reasons for that are manifold and unique to the respective competitive situation a country is exposed to. While high-income countries worry about their technological lead, exporting countries are concerned with new low-wage entrants on the global markets, ultimately reducing or even destroying their competitive advantage. Those concerns gave rise to what Lall (2001) calls "a large industry aimed at policy makers, analysts and enterprises (...) ranging from productivity and cost studies for specific activities and institutional analyzes to country strategy papers" (p.1501).

While there is little disagreement that competitiveness is an important issue, there is no overarching theory but instead competing views on what national competitiveness is or should be (Aiginger, 2006; Berger, 2008; Boltho, 1996). Ketels (2016) distinguishes two views of national competitiveness: the cost/market share-view and the productivity-based view of competitiveness. The cost/market share-view is adapted from the market-based view of firms and looks at nations from the same perspective (Ketels, 2016; Aiginger & Vogel, 2015). It is concerned with a nation's unit cost level, which determines its ability to compete successfully in globalized markets and thereby maintain macroeconomic balance. In this view, nations are competitive if they can sell enough products in worldwide markets to be

able to purchase imports. By contrast, the productivity-based view defines competitiveness as a nation's sustainable level of productivity that drives its standard of living (Ketels, 2016; Aiginger & Vogel, 2015). It looks at a nation‘s ability to create value based on its available production factors and hence its underlying fundamentals. Here, costs are assumend to adapt endogenously to their equilibrium levels. As the goal of the second research question is to compare African countries based on their fundamental economic factors, this study adapts the productivity view on competitiveness for the empirical analysis.

Probably the best-known and most comprehensive instruments to measure and compare national competitiveness are competitiveness indices (Aiginger, 2006; Ketels, 2016; Lall, 2011). Their goal is to measure the strengths and weaknesses of individual countries in order to rank them based on their respective theoretical understanding and definition of national competitiveness. The two most prominent examples are the World Competitiveness Yearbook (WCY), published by the International Institute for Management Development (IMD), and the Global Competitiveness Report (GCR), published by the World Economic Form (WEF).

In order to empirically study the enabling economic factors for crowdfunding in Africa, an index measuring competitiveness needs to fullfill the following three requirements. First, it needs to apply a comprehensive set of economic indicators that is grounded on sound economic theory. Second, those indicators must be actionable by policymakers and other stakeholders to provide practial recommendations on how to foster the usage of crowdfunding in Africa. Finally, the indicators of the index need to be operationable. Especially, data with a high overlap between the various datasources needs to be available across African countries. This is a challenge for the African continent where reliable and consistent data for the different countries is scarce.

The GCR fulfills these requirements. It is based on a solid theoretical framework (Fendel & Frenkel, 2005). Furthermore, one of the main goals of the GCR is to deliver practial recommendations to practitioners and policymakers and, as a result, is conceptualized under that premise (Porter, Delgado, Ketels, & Stern, 2008). Finally, with the publication of the periodical GCR, which contains the GCI, the theoretical framework is operationalized by the WEF and delivers consistent data without the problem of missing overlaps for the various sources of data. In addition, the GCI covers a wide range of African countries compared to the WCY, making the latter inappropriate for the analysis.

5.2 The Global Competitiveness Report

The GCR has been published since 1979 by the WEF, an independent non-profit organization based in Geneva, Switzerland (Fendel & Frenkel, 2005). Its ultimate goal is to compare the strengths and weaknesses of national economies and rank them according to their relative competitiveness with the GCI (Fendel & Frenkel, 2005). By doing so it aims to give policymakers and other stakeholders a tool to gain actionable insight (World Economic Forum, 2014). Competitiveness as defined in the GCR is measured by the productivity of a country, which in turn determines its prosperity (Porter et al., 2008). In particular, the World Economic Forum (2014) defines competitiveness as "the set of institutions, policies, and factors that determine the level of productivity of a country" (p.4). This level of productivity determines the sustainable prosperity of a country (Sala-i-Martin & Artadi, 2004). In addition, the individual levels of productivity are also setting the rate of returns from investments which are important drivers of economic growth (World Economic Forum, 2014).

Until 2008, the GCR consisted of two different indices. While the Growth Competitiveness Index focused on macroeconomic indicators that drive the potential future

productivity in a country, the Business Competitiveness Index focused on the microeconomic drivers of the current national productivity (Fendel & Frenkel, 2005; Porter et al., 2008). The first GCI was published in 2004, with the ultimate goal of creating a single competitiveness index that covers both macroeconomic and microceconomic national competitiveness (Sala-i-Martin & Artadi, 2004). Since 2008, the GCI is the only published index in the GCR. In its 2014 / 2015 version it measures the competitiveness of 144 countries, among them 33 African countries (World Economic Forum, 2014)

5.3 The Global Competitiveness Index

The GCI is the basis of the empirical competitiveness analysis of the GCR (World Economic Forum, 2014). It is based on a paper by Sala-i-Martin and Artadi (2004) in an effort to combine both macroeconomic and microeconomic competitiveness into one single combined index (Sala-i-Martin & Artadi, 2004; World Economic Forum, 2014). The data for the index is derived from a combination of qualitative and quantitative data for each country under consideration (World Economic Forum, 2014). Qualitative data is obtained from WEF's own annual Executive Opinion Survey (Browne, Battista, Geiger, & Gutknecht, 2014; World Economic Forum, 2014). This is conducted by national partner institutes across the globe that survey domestic "business leaders". These individuals are part of large as well as medium and small-sized companies across the main economic sectors and are asked about particular aspects of their environment on a scale from 1 to 7 (Browne et al., 2014). The scores of the previous and current year are weighted for each question to compute the final score for each indicator on a country-level (Browne et al., 2014). By contrast, quantitative data is collected from internationally recognized data sources such as the United Nations Educational, Scientific and Cultural Organization (UNESCO), International Monetary Fund (IMF) and the

World Health Organization (WHO), and converted to a scale from 1 to 7 (World Economic Forum, 2014).

These individual indicators are aggregated into 12 pillars measuring actionable concepts of national competitiveness that are grounded on different strands of economic theory (Sala-i-Martin & Artadi, 2004; World Economic Forum, 2014). To account for the different development stages of a country, those 12 pillars are further aggregated into 3 subindices, namely basic requirements, efficiency enhancers and innovation and sophistication (World Economic Forum, 2014). This relation is shown in figure 14. The final competitiveness score for a country according to GCI is then derived by weighting those 3 subindices, depending on the stage of development (World Economic Forum, 2014). While basic requirements are most important for factor-driven economies, efficiency enhancers are most important for efficiency-driven economies and innovation and sophistication factors for innovation-driven economies (World Economic Forum, 2014).

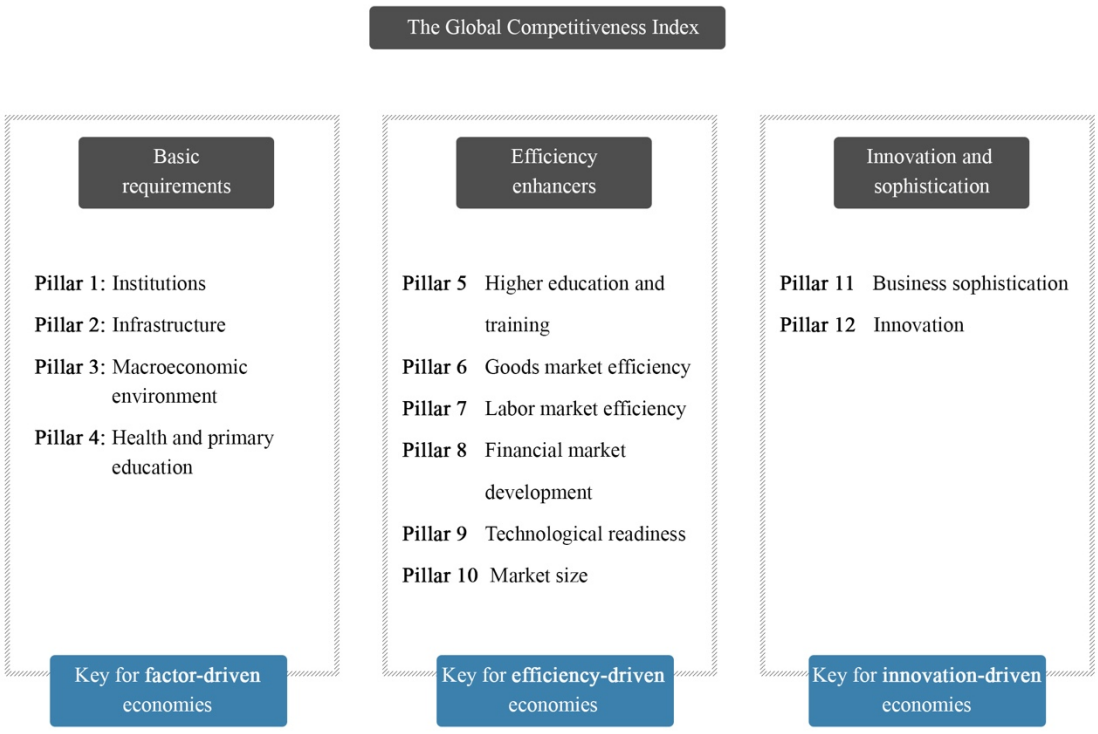

Figure 14. Framework of the GCI.

The overall global competitiveness score, the 3 subindices and the 12 pillars of the GCI enter the statistical methods as variables in the next chapter. Therefore, in the following these variables are introduced. To better account for the different aggregations of the GCI, the definitions of the variables from the GCI are given in reverse order, starting at the level of individual pillars. Appendix B presents the individual indicators used for each pillar and the conducted computations to derive the GCI 2014/2015.

Institutions: In recent years there has been a strong focus on the role of institutions as a source of economic productivity (Acemoglu, Johnson, & Robinson, 2000; Porter et al., 2008). According to the definition of the GCR, institutions encompass "the legal and administrative framework within which individuals, firms, and governments interact to generate wealth." (World Economic Forum, 2014, p.4). In this regard, the quality of institutions has a strong effect on the productivity of a country and thus its prosperity, as it directly affects the legal and administrative certainty in which individuals and firms interact. If property rights are not secure, owners of assets will be unwilling to invest in their maintainance and improvement (De Soto, 2000). The same is true for market transactions and the involved transfer of property rights that must be endorsed by authorities in order to create trust in those transactions (De Soto, 2000). Specifically, the set of indicators covered by the institutional pillar cover both the public and private level. On a public level, it measures the efficiency of the legal framework, i.e. the protection of property rights, intellectual property protection and the burden of government regulation. Furthermore, the efficiency and transparency of government operations are captured including the wastefulness of government spending, burdens of government regulation and the transparency of government policymaking. On a private level, the pillar considers different dimensions of private legislation such as the strength of auditing and reporting standards as well as corporate

governance to maintain the trust of investors and consumers. A total of 21 individual indicators constitute the institutional pillar of the GCR (World Economic Forum, 2014).

Infrastructure: The infrastructure pillar contains indicators measuring the national transport, electronic as well as telecommunication infrastructures (World Economic Forum, 2014). Economic literature has attested infrastructure a decisive role for the functioning of an economy in both developed and developing countries (Sridhar & Sridhar, 2007). This is especially true since a working infrastructure bridges distances within a country and makes it possible to connect with other regions around the world. While transport infrastructure allows the efficient movement of goods and workers within an economy, communication infrastructure allows for the efficient and rapid flow of information (World Economic Forum, 2014). In addition, a reliable electronic infrastucture is the basis for the production of goods and services (World Economic Forum, 2014). The infrastructure pillar consists of 9 individual indicators (World Economic Forum, 2014).

Macroeconomic environment: This pillar represents the stability of the macroeconomic environment by considering the government budget balance, national savings, inflation rate and overall government debt (World Economic Forum, 2014). Research has shown the importance of the macroeconomic environment for business and economic growth (Fischer, 1993). For instance, high government debt makes it difficult for the government to react in adverse economic situations as it limits its financial power (World Economic Forum, 2014). Equally, high inflation rates adversely affect firms running their operations efficiently, as output and factor prices are not stable and lead to a volatile business environment (World Economic Forum, 2014). In total, there are 5 indicators that together constitute the macroeconomic environment pillar.

Health and primary education: This pillar consists of indicators that measure the health of the national population as well as the quality and diffusion of national primary

education (World Economic Forum, 2014). Only a healthy population can contribute to the productivity of a country and hence its prosperity. Maintaining a healthy population by providing efficient health services is at the core of this concept. It is especially a challenge in poor countries with weak health systems. Yet health is strongly associated with reducing poverty and reaching long-term economic growth (World Health Organization, 2001). In this regard, the indicators capture the quality of the national health system by looking at various incident rates of diseases, infant mortality and general life expectancy. In addition, the pillar tracks both the quality and quantity of a nation's provision of primary education (World Economic Forum, 2014). Workers that do not have a minimum amount of education are inefficient, such that they can only perform very easy working steps and are slower to adapt to more advanced production methods (World Economic Forum, 2014). The health and primary education dimension is measured by 10 individual indicators.

Higher education and training: This pillar represents the quality of more advanced forms of education, including secondary and tertiary education (World Economic Forum, 2014). Economic theory has shown the importance of an educated and trained workforce for the output of advanced products (Kremer, 1993). This is especially true in a globalized world where the working requirements change rapidly with the introduction of new production processes and shorter product lifecycles. Together, the higher education and training pillar is measured by 8 different indicators.

Goods market efficiency: This pillar captures a number of indicators that are related to an efficient goods market structure (World Economic Forum, 2014). This includes a healthy amount of competition in the goods and service sector. Furthermore, an efficient goods market for both domestic and foreign trade requires low amounts of adverse government intervention, such as overly burdensome regulations and excessive or inefficient taxes. In addition, local demand conditions are part of the pillar, representing the extent of customer

orientation and the sophistication of local demand. In total, 16 indicators constitute the goods market efficiency pillar.

Labor market efficiency: The flexibility and efficiency of the labor market are captured in this pillar (World Economic Forum, 2014). At the core are indicators measuring the extent of flexibility for workers to change their jobs, the possibility of flexible wage determination as well as gender equality in the workplace (Almeida & Carneiro, 2009; World Economic Forum, 2014). This includes general incentives to work and low costs of labor mobility. Taken together, these indicators strengthen the ability of a country to attract and retain talent in the labor market (World Economic Forum, 2014). There are 10 indicators measuring the labor market efficiency pillar.

Financial market development: This pillar covers indicators measuring the efficiency and well-functioning of the domestic financial market (World Economic Forum, 2014). In general, this includes the availability and affordability of financial services throughout economic sectors. In particular, the productivity of a country is enhanced by the efficient allocation of available and affordable financial resources by financial intermediaries to its most productive uses (World Economic Forum, 2014). This includes the financing of investment projects and entrepreneurial ventures that promise the highest returns, as well as the financing of the private sector through banking loans, security exchanges, venture capital and other forms of finance (World Economic Forum, 2014). These transactions need to take place in a well regulated and transparent environment that allows for a proper risk evaluation to protect investors and, as such, the economy as a whole. The financial market development pillar consists of 8 indicators.

Technological readiness: Technological readiness measures the availability and adoption of existing technologies in an economy on a private and commercial level (World Economic Forum, 2014). With its high impact on virtually every industry across the supply

chain, technology is a main enabler to increase a country's efficiency in providing goods and services. This is especially true in a globalized world, where the extent to which firms make use of technology is increasingly important to enhance their productivity and remain competitive. Therefore, the 7 indicators measuring technological readiness encompass both the availability and the usage of existing technology on a private and commercial level within an economy.

Market size: This pillar measures the size of an economy on a domestic and foreign level (World Economic Forum, 2014). The main rationale behind the importance of market size is the exploitation of economies of scale (World Economic Forum, 2014). In a globalized world, this can happen both on a domestic and a global level so that exports can become a substitue for small economies. Market size is measured by 4 indicators.

Business sophistication: This pillar represents the quality of the overall domestic business networks as well as the quality of business operations on an individual firm level (World Economic Forum, 2014). The quality of the national business network is measured by the quantity and quality of its suppliers and the form of their interaction. Geographically proximate firms of the same sector across the supply chain lead to the creation of clusters that are positively associated with the efficiency and innovative capacity of an economy (World Economic Forum, 2014). In particular, firms within clusters have better access to specialized production factors, including suppliers, employees and knowledge, ultimately increasing their productivity (Sala-i-Martin & Artadi, 2004). Further, clusters enable innovations and make it easier to create new firms through highly appropriate available resources (Sala-i-Martin & Artadi, 2004). In addition to clusters, the more advanced the operations and strategies of individual firms, the more advanced the economy as a whole. The business sophistication pillar is measured by 9 individual indicators.

Innovation: The innovation pillar as defined by the GCR focuses on technological innovations (World Economic Forum, 2014). They are especially important for economies that are well developed and hence only remain competitive by generating new, innovative products and services. For this, an appropriate environment is needed that supports technological innovation. The innovation pillar captures them by indicators such as spending on research and development, the quality of scientific institutions and the number of patents. 7 indicators constitute the innovative competitiveness of a country.

Basic requirements: The basic requirements subindex is the aggregate of the institutions, infrastructure, macroeconomic environment and health and primary education pillars (World Economic Forum, 2014). As such it covers basic economic indicators of a country's individual factor endowments. As a result, it is especially important for factor-driven economies where companies mainly sell basic products and compete on a price-level (World Economic Forum, 2014).

Efficiency enhancers: The efficiency enhancers subindex aggregates the higher education and training, goods market efficiency, labor market efficiency, financial market development, technological readiness as well as market size pillars (World Economic Forum, 2014). This index is decisive for the productivity of countries that are already more advanced than factor-driven economies and have higher wages. In this case, countries must develop more efficient production processes and a higher goods and services quality to remain competitive, as they can no longer compete exclusively by price.

Innovation and sophistication factors: The innovation sophistication index comprises the business sophistication and innovation pillars. These pillars are especially important for countries that have surpassed the efficiency-driven stage and must now compete by creating innovative processes, goods and services to maintain their high wages and thus remain competitive.

Global Competitiveness Score (GCS): The global competitiveness score is a single score that summarizes the three subindices (basic requirements, efficiency enhancers and innovation and sophistication) and, as such, all pillars and indicators of the GCR. This final competitiveness score of a country is derived by weighting those 3 subindices depending on the stage of development of the respective country (World Economic Forum, 2014). While basic requirements are most important for factor-driven economies, efficiency enhancers are most important for efficiency-driven economies and innovation and sophistication factors for innovation-driven economies (World Economic Forum, 2014).

6. Evidence on Enabling Economic Factors for the Usage of Reward-based Crowdfunding in Africa

The first research question provided empirical evidence on the current usage pattern of crowdfunding by Africans on the two biggest reward-based crowdfunding platforms, Kickstarter and Indiegogo. The results shed light on the immense differences in crowdfunding activity across different African countries and regions. Undoubtedly, results for the first research question showed that crowdfunding has the potential to mitigate the early-stage funding gap for African entrepreneurs across the continent, yet it remains unclear which economic factors drive its usage on a country-level (Berndt, 2016; Bruton et al., 2015; Eniola & Entebang, 2015; Gajda & Walton, 2013: World Bank, 2013). Bruton et al. (2015) highlight that it is unknown how the demand for alternative finance differs accross countries, noting that "At the macro level, studying the differences between new alternative financial mechanisms may shed light on the processes that give rise to financial innovations across institutional contexts. For example, policy differences associated with governments could impact which financial mechanisms entrepreneurs choose to pursue and may, in the long run, determine their relative availability" (p.15). As a consequence, they call for research on the following question: "How does competition and regulation affect the availability, cost, and performance of new alternative forms of finance in different countries and institutional settings?" (p.16). Indeed, the current understanding of economic factors associated with the use of crowdfunding is highly limited. In particular, extant research indicates that GDP per capita is positively associated with the use of crowdfunding (FSD Africa, 2017). However, evidence at a more granulated level of economic factors is missing. Accordingly, FSD Africa (2017) in cooperation with the Cambridge Centre for Alternative Finance states that "market activity measured by alternative finance per capita more closely correlates with those

countries with higher GDP per capita. While more research is necessary, it is likely that a large number of factors contribute to this finding" (p.14).

Focusing on the distinctive African context, it is the ultimate goal of the second research question to address this gap by delivering initial evidence on those macroeconomic and microeconomic factors from the GCR that are positively related to the usage of crowdfunding across different institutional settings.

6.1 Research Objective

In order to gain more insight on the causes of the remarkable regional differences in crowdfunding activity, the second research question aims to provide initial empirical evidence on the enabling economic factors for the usage of reward-based crowdfunding in Africa. In particular, the goal is to obtain an initial understanding on the causal relationship between the crowdfunding activity measured on a project-per-country level and different aggregations of economic factors by using inferential statistics. It is important to note that the study focuses on African countries only and hence the empirical results are limited to that sample. However, on a more general level, the study also attempts to provide a first understanding of the performance of crowdfunding across different institutional settings. Identifying the driving factors is no end it itself; rather, it gives policymakers a first profound insight on the effects of different economic factors on the usage of crowdfunding across Africa and puts them in the position to act upon this information. By using economic data from the GCR, which itself puts high emphasis on delivering actionable metrics instead of abstract econometrical derived dominant factors, the aspiration of delivering practical insights is further underpinned. Academically, the research conducted advances theory building in the emerging field of crowdfunding research by delivering a first causal understanding of the different usage patterns of crowdfunding across institutional settings.

Looking forward, the results are a first step for the formulation of hypotheses and ultimately theory building.

6.2 Research Design and Methodology

In accordance with the first research question, the research conducted is exploratory. Instead of testing hyptheses from previous research, the ultimate goal is to develop a first understanding. In particular, exploratory research is an established method for an emerging topic in the new field of entrepreneurship and common in peer-reviewed crowdfunding research (Busenitz et al., 2003; Mollick, 2014). In contrast to the first research question, the second research question is mainly of a correlational nature, as it aims to understand causal relationships between crowdfunding activity and different aggregations of economic factors.

To perform the analysis, two types of quantitative data are needed. First, African crowdfunding activity is represented by using the same sample of African reward-based crowdfunding projects that has been used for the first research question. In particular, the crowdfunding activity per country is measured relative to its population. Second, a comprehensive set of economic factors is needed that is based on sound economic theory, actionable and available for African countries. As derived in Chapter 5, the GCR of the WEF fulfills those requirements and as a result is used in the analysis. Based on these two sets of data, correlations, regressions and difference tests are used to conduct the empirical analysis.

6.3 Data Sample

Data for African crowdfunding activity is taken from the two biggest reward-based crowdfunding platforms worldwide, Kickstarter and Indiegogo, which were introduced in Chapter 3. Economic data is taken from the GCR, which was introduced in Chapter 5. In the

following, the two data sets are described in detail and the variables for the analysis are defined.

6.3.1 Data Set Construction

To conduct the analysis, overlapping country-level data needs to be available for both crowdfunding activity and the economic indicators from the GCR. The GCR 2013/2014 covers 35 African countries whereas the GCR 2014/2015 covers 33 African countries (World Economic Forum, 2013; World Economic Forum, 2014). Besides Benin and Liberia, which are only covered by the GCR 2013/2014, the country coverage between the two reports is identical. In order to have the most recent data and at the same time the highest possible number of observations, the data for the 33 overlapping countries is taken from the GCR 2014/2015, whereas the data for Benin and Libera is taken from the GCR 2013/2014.

The resulting economic dataset from the GCR covers 35 African countries that are depicted in table 12, along with a classification of the six subsamples that will be used throughout the analysis. As complete economic data is only available for 35 of the 49 African countries, this naturally limits the number of countries for which the relative crowdfunding activity can be used. Interestingly, those 35 countries comprise the total of 4,264 crowdfunding projects from the sample. In the remaining 14 African countries not a single crowdfunding project was initiated on Kickstarter or Indiegogo in 2014 and 2015. Specifically, the sample size for Kickstarter comprises 372 projects, while the sample for Indiegogo comprises 3,892 projects for the two years.

Table 12

List of African Countries in Sample and Subsamples

Country	Total Sample	Low-Income	Middle-Income	Below Median Crowdfunding	Lowest Quartile Crowdfunding Activity	Above Median Crowdfunding	Highest Quartile Crowdfunding Activity
Angola	✓		✓	✓	✓		
Benin	✓	✓		✓			
Botswana	✓		✓			✓	✓
Burkino Faso	✓	✓		✓	✓		
Burundi	✓	✓		✓			
Cameroon	✓		✓			✓	
Cape Verde	✓		✓			✓	✓
Chad	✓	✓		✓	✓		
Ethiopia	✓	✓		✓	✓		
Gabon	✓		✓	✓	✓		
Gambia, The	✓	✓				✓	
Ghana	✓		✓			✓	✓
Guinea	✓	✓		✓	✓		
Ivory Coast	✓		✓	✓	✓		
Kenya	✓		✓			✓	✓
Lesotho	✓		✓			✓	
Liberia	✓	✓				✓	
Madagascar	✓	✓		✓			
Malawi	✓	✓		✓			
Mali	✓	✓		✓			
Mauritania	✓		✓	✓	✓		
Mauritius	✓		✓			✓	✓
Mozambique	✓	✓		✓			
Namibia	✓		✓			✓	✓
Nigeria	✓		✓	✓			
Rwanda	✓	✓				✓	
Senegal	✓	✓		✓		✓	
Seychelles	✓					✓	✓
Sierra Leone	✓	✓				✓	
South Africa	✓		✓			✓	✓
Swaziland	✓		✓			✓	✓
Tanzania	✓	✓		✓	✓		
Uganda	✓	✓				✓	
Zambia	✓		✓	✓			
Zimbabwe	✓	✓				✓	
Observations	35	18	16	18	9	18	9
Population in million	793.5	389.9	403.4	558.2	244.3	250	133.4

Table 13 shows the descriptive statistics for the variables used in the analysis. The first three rows show the data for the crowdfunding activity for the pooled and individual samples. Rows 4 to 19 show the descriptives for the GCS, the subindices and the individual pillars of the GCR for the resulting 35 African countries. The individual measures of the GCR are not independent of one another, rather they represent the same information in

different aggregations. A detailed description of the different aggregations can be found in Chapter 5. All values in the GCI are measured on a scale from 1, representing the lowest possible score, to 7, representing the highest possible score.

Table 13

Descriptive Statistics

	Observations	Mean	SD	Min	Max
1. Crowdfunding activity pooled	35	7.77	9.18	0.30	44.00
2. Crowdfunding activity Kickstarter	35	0.63	0.66	0	2.36
3. Crowdfunding activity Indiegogo	35	7.14	8.96	0.30	44.00
4. Global competitiveness score	35	3.57	0.42	2.80	4.50
5. Basic requirements	35	3.75	0.53	2.80	5.00
6. Efficiency enhancers	35	3.41	0.42	2.60	4.40
7. Innovation sophistication	35	3.24	0.40	2.40	4.10
8. Institutions	35	3.62	0.59	2.60	5.20
9. Infrastructure	35	2.79	0.76	1.70	4.70
10. Macroeconomic Environment	35	4.40	0.75	2.40	6.30
11. Health and primary education	35	4.20	0.87	2.70	6.10
12. Higher education and training	35	3.01	0.67	1.90	4.70
13. Goods market efficiency	35	4.00	0.44	2.90	4.90
14. Labor market efficiency	35	4.14	0,42	3.10	5.10
15. Financial market development	35	3.62	0,68	2.40	5.40
16. Technological readiness	35	2.87	0.49	2.10	4.00
17. Market size	35	2.81	0.83	1.30	4.90
18. Business sophistication	35	3.54	0.46	2.60	4.50
19. Innovation	35	2.96	0.38	2.10	3.70

Note: The table shows the mean, standard deviation (SD), minimum value (Min), and maximum value (Max) for all variables.

6.3.2 Variables

Two sets of variables enter the statistical analysis. The various economic factors are taken from the GCR and have been introduced in detail in Chapter 5. The dependent variable is the African crowdfunding activity that is defined in the following.

Crowdfunding activity: The crowdfunding activity is defined as the total amount of crowdfunding projects in a country that have been initiated on Kickstarter and Indiegogo in the years 2014 and 2015 divided by the population of a country. In particular, the

crowdfunding activity represents the amount of crowdfunding projects from the pooled sample per one million inhabitants per country.

6.4 Results

The ultimate goal of the analysis is to provide practical recommendations for African countries in order to foster the usage of crowdfunding on the continent. For this purpose, the total sample is split into four subsamples to account for their moderating effect on the various independent variables (Franzese & Kam, 2010). This method produces valid estimates and is suited for exploratory research (Franzese & Kam, 2010). The first two subsamples consider low-income and middle-income countries. Two additional subsamples are created that divide the total sample by the median crowdfunding activity. In particular, one subsample contains the 18 countries with the 50% highest crowdfunding activity and one subsample contains the 18 countries with the 50% lowest crowdfunding activity. A list of the countries that are part of each subsample can be found in table 12.

The empirical analysis for each subsample is based on three statistical methods to gain the highest possible insight into the driving economic factors. First, bivariate correlations are reported to obtain a first overview about the driving factors within each subsample. Next, linear multiple regression analysis is used to identify the individually most explanatory economic factors for African crowdfunding activity. To account for violations of the Gauss-Markov assumptions, variables are log-transformed for correlation and regression analysis. The dependent variable for each model is the pooled crowdfunding activity per one million inhabitans per African country. GDP per capita 2014 enters the models as a further control variable to disentangle the income effect from the individual economic factors. The use of panel regressions is not possible as African crowdfunding is a new phenemenon and does not yet provide enough data over time. As a consequence, the results of the regression analysis

are limited due to their small sample size. To overcome this limitation, robustness checks are performed by additionally reporting regression results for the Kickstarter and Indiegogo samples that can be found in Appendix C. Further, post-hoc statistical power is reported for each regression to increase confidence in the results. All regression models have been tested for their normal distribution of residuals, functional misspecification and homoscedastic errors. With the exception of one model, VIF factors are below the critical value of 10 and hence do not suffer from undue multicolinearity (Kutner, Nachtsheim, Neter, & Li, 2004). For the third statistical method, a reference group is created that contains the upper quartile African countries with the highest crowdfunding activity. Using univariate analysis, the means of the respective subsample with those of the reference group are compared.

The remainder of the results section proceeds as follows. First, empirical results are presented and discussed for the total sample and each subsample. Then the special role of productivity and the subindex basic requirements is highlighted. Finally, the results are connected and practical advice is given on a country-level.

6.4.1 Total Sample

The first part of the result section analyses the entirety of the 35 African countries. Table 14 shows the correlation matrix for the overall productivity, subindices and individual pillars of the GCR. The strong positive correlation of the GCS with the crowdfunding activity provides a first indication that the usage of crowdfunding is positively related to the overall productivity for the average African country. In particular, all three subindices of the GCS and nine out of twelve pillars are highly positively correlated with African crowdfunding activity. By contrast, the macroeconomic environment, labor market efficiency and market size pillars do not show significant correlations.

Table 14

Pearson Correlation Matrix for Total Sample

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Log Crowdfunding activity																
2. Log Global competitiveness score	0.723***															
3. Log Basic requirements	0.701***	0.917***														
4. Log Efficiency enhancers	0.643***	0.866***	0.650***													
5. Log Innovation sophistication	0.674***	0.822***	0.621***	0.894***												
6. Log Institutions	0.734***	0.883***	0.822***	0.758***	0.747***											
7. Log Infrastructure	0.682***	0.825***	0.842***	0.677***	0.710***	0.765***										
8. Log Macroeconomic Environment	0.117	0.355*	0.458**	0.103	-0.030	0.136	0.218									
9. Log Health and primary education	0.535***	0.618***	0.733***	0.399*	0.451**	0.540***	0.498**	-0.037								
10. Log Higher education and training	0.814***	0.850***	0.788***	0.807***	0.827***	0.800***	0.808***	0.134	0.569***							
11. Log Goods market efficiency	0.692***	0.800***	0.624***	0.831***	0.888***	0.794***	0.662***	0.070	0.382*	0.776***						
12. Log Labor market efficiency	0.298	0.433**	0.298	0.545***	0.503**	0.497**	0.169	0.006	0.192	0.268	0.530**					
13. Log Financial market development	0.705***	0.841***	0.625***	0.945***	0.867***	0.806***	0.691***	0.060	0.338*	0.799***	0.816***	0.498**				
14. Log Technological readiness	0.717***	0.818***	0.761***	0.808***	0.738***	0.690***	0.851***	0.179	0.514**	0.841***	0.666***	0.203	0.749***			
15. Log Market size	-0.243	0.134	-0.133	0.408*	0.192	-0.117	-0.082	0.063	-0.204	-0.083	0.046	0.093	0.304	0.111		
16. Log Business sophistication	0.726***	0.818***	0.628***	0.899***	0.977***	0.756***	0.745***	-0.032	0.436**	0.868***	0.904***	0.470**	0.890***	0.778***	0.134	
17. Log Innovation	0.640***	0.820***	0.644***	0.836***	0.959***	0.750***	0.674***	0.056	0.461**	0.767***	0.860***	0.541***	0.792***	0.682***	0.151	0.895**

N = 35; †p < 0.10: *p < 0.05; **p < 0.01; ***p < 0.001.

In order to disentangle the individual correlation effects, multiple regression analysis is used. The results are reported in table 15. All models show a statistical power of close to 1 and VIF factors below the critical value of 10. In addition, all models are correctly specified, have homoscedastic errors and normally distributed residuals. Model 1 shows a significant relationship between the GCS and African crowdfunding activity. The result is robust for Kickstarter and Indiegogo. Model 2 shows the results for the regressions of the crowdfunding activity on the three subindices of the GCS. Basic requirements is the only significant subindex for the pooled and the Indiegogo sample. Models 3 to 5 show the results of the pillars for each subindex. Here, institutions, financial market development and business sophistication are positively and market size negatively correlated with African crowdfunding activity. Except for market size, which is not significant in the Kickstarter sample, the results are robust for Kickstarter and Indiegogo. Finally, model 6 regresses the African crowdfunding activity on all twelve pillars of the GCS. Financial market development is positively and market size is negatively correlated with African crowdfunding activity for both the pooled and the Indiegogo sample. Interestingly, an unreported regression of financial market development on the remaining 11 pillars of the GCS shows significant correlations for institutions, market size and business sophistication. Hence, while the

institutions and business sophistication pillars are not significant in model 6, both are significantly related to financial market development.

Table 15

Predictors of Crowdfunding Activity for Total Sample

	Model 1 *Log Crowdfunding Activity*	**Model 2** *Log Crowdfunding Activity*	**Model 3** *Log Crowdfunding Activity*	**Model 4** *Log Crowdfunding Activity*	**Model 5** *Log Crowdfunding Activity*	**Model 6** *Log Crowdfunding Activity*
Log Global competitiveness score	7.982***					
Log Basic requirements		3.969*				
Log Efficiency enhancers		-0.843				
Log Innovation sophistication		4.923				
Log Institutions			3.952*			-2.001
Log Infrastructure			0.907			-1.265
Log Macroeconomic Environment			-0.253			0.857
Log Health and primary education			1.027			1.194
Log Higher education and training				0.869		-0.194
Log Goods market efficiency				0.302		0.746
Log Labor market efficiency				-0.366		-1.310
Log Financial market development				3.821*		6.394*
Log Technological readiness				1.623		2.310
Log Market size				-1.784**		-2.478**
Log Business sophistication					6.172*	-0.357
Log Innovation					0.595	1.098
Log GDP/capita	0.037	0.087	0.128	0.023	0.255	0.039
Constant	-9.042***	-9.234***	-6.615**	-4.451†	-8.910***	-5.863†
R^2	0.524	0.586	0.597	0.772	0.563	0.809
Post hoc Power (1-β)	0.999	0.999	0.999	1	0.999	1
F	17.612***	10.633***	8,595***	13.066***	13.299***	6.855***
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	<10	<10	<10
N	35	35	35	35	35	35

N = 35; †p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

The comparison of means between the total sample and the reference group is shown in table 16. The total sample has a significantly lower crowdfunding activity than the reference group. Further, the overall productivity and all three subindices differ significantly. It is notable that those pillars that are significantly different from the reference group are also positively correlated with the crowdfunding activity in the total sample. In addition, the infrastructure pillar shows the highest absolute mean difference of all individual pillars.

All three statistical methods show a significant relationship between the overall productivity and the crowdfunding activity for the average African country. This relationship also holds when controlling for the income-level. Specifically, the model predicts an 8% increase in crowdfunding activity for every 1% increase in GCS ceteris paribus. The only significant subindex throughout all three empirical methods is basic requirements, which captures the most basic economic indicators of an economy. In particular, considering the individual pillars of the subindex basic requirements, institutions is the only pillar that is significant throughout all three empirical methods. In addition, infrastructure is positively correlated and has a significant mean difference, yet is not significant in the regression analysis. While the macroeconomic environment pillar shows no significance, the health and primary education pillar is only positively correlated in the Kickstarter sample. Hence, the empirical evidence in this study suggests that the average African country that wishes to increase its crowdfunding activity should invest in enhancing public and private institutions as well as its infrastructure. For institutions, this includes the quality of the overall legal and administrative framework through the protection of property rights, low costs of doing business and efficient and transparent government operations. Only an economy that creates an environment where the proceedings of crowdfunding projects can be used to their full extent will set the basis for an increase in the usage of crowdfunding. This is further underpinned by the fact that the significant financial market development pillar, which measures the functioning of the domestic financial market, is itself significantly correlated with institutions. So, while there is evidence that the quality of institutions drives the usage of crowdfunding activity in Africa, they also seem to enable the development of the domestic financial market. In addition, a working infrastructure is decisive to drive the usage of crowdfunding. Indeed, the provision of reliable electricity is a prerequisite for the production of new goods and services which, in turn, creates new firms that might seek funding through

crowdfunding. In addition, only a reliable communication networks allows for an efficient domestic and worldwide communication and enables the usage of internet-based crowdfunding. Finally, the somewhat counterintuitively negative relation of market size in the regression analysis is driven by the fact that the quartile of countries with the smallest population shows a significantly higher crowdfunding activity compared to the remaining countries.

Table 16

Mean Difference Test Between Total Sample and Reference Group

	Observations	Total Sample (Mean)	Reference Group (Mean)	Difference Test (Total Sample vs. Reference Group)
1. Crowdfunding activity pooled	35	7.77	20.24	-12.47***
2. Global competitiveness score	35	3.57	3.99	-0.42**
3. Basic requirements	35	3.75	4.31	-0.56**
4. Efficiency enhancers	35	3.41	3.81	-0.40*
5. Innovation sophistication	35	3.24	3.57	-0.33*
6. Institutions	35	3.62	4.13	-0.51*
7. Infrastructure	35	2.79	3.73	-0.94**
8. Macroeconomic Environment	35	4.40	4.56	-0.16
9. Health and primary education	35	4,20	4.84	-0.64†
10. Higher education and training	35	3.01	3.77	-0.76**
11. Goods market efficiency	35	4.00	4.31	-0.31†
12. Labor market efficiency	35	4.14	4.17	-0.03
13. Financial market development	35	3.62	4.29	-0.67*
14. Technological readiness	35	2.87	3.49	-0.62**
15. Market size	35	2.81	2.86	-0.05
16. Business sophistication	35	3.54	3.96	-0.42*
17. Innovation	35	2.96	3.23	-0.27†

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

6.4.2 Low-Income Countries

The low-income sample consists of 18 African countries that have a GNI of less than $1,025 per capita and thus are classified as low-income according to the World Bank (World Bank, 2016).

The bivariate correlations for this subsample in table 17 provide initial evidence of a positive correlation of the overall productivity with the crowdfunding activity in low-income countries. On lower aggregations, all three subindices and 7 out of 12 individual pillars are positively correlated. However, it shows that the strength of the individual correlations is lower compared to the total sample. As with the total sample, macroeconomic environment, labor market efficiency and market size are again not correlated.

Table 17

Pearson Correlation Matrix for Low-Income African Countries

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Log Crowdfunding activity																
2. Log Global competitiveness score	0.563*															
3. Log Basic requirements	0.494*	0.964***														
4. Log Efficiency enhancers	0.487*	0.829***	0.681**													
5. Log Innovation sophistication	0.511*	0.849***	0.725***	0.883***												
6. Log Institutions	0.576*	0.821***	0.755***	0.793***	0.766***											
7. Log Infrastructure	0.469*	0.767***	0.725***	0.674**	0.847***	0.742**										
8. Log Macroeconomic Environment	0.081	0.293	0.362	-0.022	0.039	-0.085	0.030									
9. Log Health and primary education	0.295	0.685**	0.747***	0.475*	0.436†	0.459†	0.375	-0.061								
10. Log Higher education and training	0.696**	0.715**	0.674**	0.679**	0.749***	0.717***	0.818***	-0.004	0.404							
11. Log Goods market efficiency	0.613**	0.800***	0.602**	0.774***	0.833***	0.748***	0.672**	0.048	0.304	0.572*						
12. Log Labor market efficiency	0.271	0.510*	0.376	0.659**	0.582*	0.629**	0.271	-0.179	0.274	0.222	0.603**					
13. Log Financial market development	0.643**	0.769***	0.627**	0.893***	0.797***	0.844***	0.671**	-0.094	0.388	0.710***	0.698**	0.552*				
14. Log Technological readiness	0.530*	0.728***	0.631**	0.768***	0.814***	0.631**	0.836***	0.073	0.355	0.802***	0.637**	0.240	0.689**			
15. Log Market size	-0.390	0.107	0.037	0.324	0.098	-0.180	-0.115	0.168	0.162	-0.240	-0.097	0.033	0.111	0.122		
16. Log Business sophistication	0.615**	0.787***	0.648**	0.839***	0.967***	0.788***	0.844***	-0.057	0.367	0.798***	0.844***	0.541*	0.823***	0.792***	-0.061	
17. Log Innovation	0.454	0.878***	0.778***	0.870***	0.949***	0.744***	0.769***	0.205	0.439	0.659**	0.820***	0.633**	0.720***	0.753***	0.175	0.861***

N = 18; †p < 0.10: *p < 0.05; **p < 0.01; ***p < 0.001.

Multiple regression models for the pooled subsample are reported in table 18. Due to a lower R^2, statistical power is low for model 2 and model 3. The VIF factors are below the critical value of 10 for each model and thus the models do not suffer from undue multicollinearity. In addition, all models are correctly specified, have homoscedastic errors and, except for Model 5, normally distributed residuals. Model 1 shows that the GCS is significantly related to the crowdfunding activity within low-income countries. However, the point estimate indicates a lower effect size compared to the total sample. The result is robust for the Indiegogo sample. In an unreported regression, the trend of a lower impact of productivity on crowdfunding activity is confirmed when regressing the pooled crowdfunding activity on the GCS for the countries in the lower GDP quartile. Here, the

overall productivity is no longer significantly correlated with the crowdfunding activity. The result is robust for Kickstarter and Indiegogo. In Model 2, no single subindex shows significance with the crowdfunding activity in low-income countries. This result is robust for Kickstarter and Indiegogo and stands in contrast to the total sample that showed a significant positive correlation with the basic requirement subindex. Finally, Models 3 to 5 show that no individual pillar is significantly correlated with the crowdfunding activity in low-income countries. With the exception of the business sophistication pillar that is significant in the Kickstarter sample, the result is robust for both Kickstarter and Indiegogo.

Table 18

Predictors of Crowdfunding Activity for Low-Income African Countries

	Model 1 *Log Crowdfunding Activity*	**Model 2** *Log Crowdfunding Activity*	**Model 3** *Log Crowdfunding Activity*	**Model 4** *Log Crowdfunding Activity*	**Model 5** *Log Crowdfunding Activity*
Log Global competitiveness score	5.856*				
Log Basic requirements		2.360			
Log Efficiency enhancers		1.600			
Log Innovation sophistication		2.094			
Log Institutions			3.503		
Log Infrastructure			0.395		
Log Macroeconomic Environment			0.796		
Log Health and primary education			0.180		
Log Higher education and training				1.207	
Log Goods market efficiency				3.111	
Log Labor market efficiency				-1.203	
Log Financial market development				2.981	
Log Technological readiness				-0.584	
Log Market size				-1.713	
Log Business sophistication					9.084†
Log Innovation					-2.538
Log GDP / capita	-0.193	-0.162	-0.099	0.389	0.046
Constant	-4.967	-5.256	-4.485	-6.687	-7.766
R^2	0.321	0.299	0.353	0.688	0.401
Post hoc Power (1-β)	0.651	0.428	0.462	0.937	0.717
F	3.550†	1.388	1.310	3.153*	3.122†
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	not normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	<10	<10
N	18	18	18	18	18

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

Comparing low-income countries with the reference group in table 19 shows significant differences in the means for the crowdfunding activity, GCS, each subindex and all pillars except macroeconomic environment, labor market efficiency and market size. As a result, all pillars that are positively correlated with the crowdfunding activity in low-income countries also have significant mean differences with the reference group. As is the case for the total sample, the infrastructure pillar shows the highest absolute mean difference of all individual pillars.

As in the case of the total sample, all three empirical methods show a significant relationship between the overall productivity and the crowdfunding activity in low-income countries. The model predicts a 5.9% increase in crowdfunding activity for every 1% increase in productivity ceteris paribus. In case of low-income countries, no single subindex is identified as a significant driver while controlling for the others. However, all three subindinces are significantly correlated and have significant mean differences. This further underpins the fact that low-income countries need to increase their overall productivity to increase their crowdfunding activity, instead of focusing on a specific subindex. In addition, no single pillar is identified by all three empirical methods as being significantly correlated within low-income countries. Yet, as for the total sample, institutions and infrastructure are again the two pillars of the basic requirement subindex that are positively correlated and have significant mean differences. Hence, these two pillars appear to be the main drivers once a low-income country increases its productivity and thereby gets closer to the African average represented by the total sample. As a consequence, the empirical evidence suggests that the average African low-income country should increase its overall productivity to induce higher crowdfunding activity, with special attention on the institution and infrastructure pillar.

Table 19

Mean Difference Test Between Low-Income African Countries and Reference Group

	Observations	Low-Income Sample (Mean)	Reference Group (Mean)	Difference Test (Low-Income vs. Reference Group)
1. Crowdfunding activity Pooled	18	3.87	20.24	-16.36***
2. Global competitiveness score	18	3.38	3.99	-0.61***
3. Basic requirements	18	3.51	4.31	-0.81***
4. Efficiency enhancers	18	3.23	3.81	-0.58***
5. Innovation sophistication	18	3.13	3.57	-0.44**
6. Institutions	18	3.47	4.13	-0.67**
7. Infrastructure	18	2.40	3.73	-1.33***
8. Macroeconomic Environment	18	4.14	4.56	-0.41
9. Health and primary education	18	4.04	4.84	-0.80*
10. Higher education and training	18	2.66	3.77	-1.11***
11. Goods market efficiency	18	3.88	4.31	-0.43**
12. Labor market efficiency	18	4.19	4.17	0.02
13. Financial market development	18	3.36	4.29	-0.93***
14. Technological readiness	18	2.61	3.49	-0.88***
15. Market size	18	2.64	2.86	-0.22
16. Business sophistication	18	3.38	3.96	-0.58***
17. Innovation	18	2.87	3.23	-0.37**

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

6.4.3 Middle-Income Countries

The middle-income countries sample consists of 16 African countries that are defined as having a GNI per capita between $1,026 and $12,475 (World Bank, 2016).

Starting with bivariate correlations in table 20, it shows that the overall productivity and all three subindices are positively correlated with the crowdfunding activity in middle-income countries. The significantly correlated nine single pillars are congruent with the total sample and generally stronger than for low-income countries. Similar to the total sample and low-income countries, macroeconomic environment, labor market efficiency and market size do not show a significant relationship.

Table 20

Pearson Correlation Matrix for Middle-Income African Countries

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Log Crowdfunding activity																
2. Log Global competitiveness score	0.788***															
3. Log Basic requirements	0.712**	0.878***														
4. Log Efficiency enhancers	0.675**	0.854***	0.529*													
5. Log Innovation sophistication	0.715**	0.801***	0.480	0.906***												
6. Log Institutions	0.836***	0.944***	0.910***	0.711**	0.708**											
7. Log Infrastructure	0.676**	0.810***	0.804***	0.575*	0.609*	0.813***										
8. Log Macroeconomic Environment	-0.116	0.173	0.357	-0.078	-0.314	0.191	0.017									
9. Log Health and primary education	0.624**	0.561*	0.706**	0.313	0.408	0.588*	0.498*	-0.220								
10. Log Higher education and training	0.834***	0.887***	0.745***	0.814***	0.873***	0.876***	0.672**	-0.117	0.673**							
11. Log Goods market efficiency	0.734**	0.845***	0.609*	0.866***	0.922***	0.806***	0.654**	-0.102	0.414	0.926***						
12. Log Labor market efficiency	0.412	0.599*	0.405	0.700**	0.553*	0.480	0.252	0.319	0.095	0.500*	0.577*					
13. Log Financial market development	0.748***	0.868***	0.578*	0.962***	0.912***	0.780***	0.680**	-0.066	0.298	0.824***	0.887***	0.670**				
14. Log Technological readiness	0.726**	0.804***	0.684**	0.782***	0.677**	0.707**	0.736**	-0.112	0.579*	0.757***	0.669**	0.363	0.758***			
15. Log Market size	-0.150	0.100	-0.288	0.469†	0.283	-0.134	-0.102	-0.096	-0.424	-0.084	0.103	0.304	0.355	0.121		
16. Log Business sophistication	0.729**	0.811***	0.505*	0.920***	0.981***	0.707**	0.636**	-0.288	0.421	0.887***	0.948***	0.559*	0.926***	0.724**	0.273	
17. Log Innovation	0.718**	0.778***	0.491†	0.829***	0.969***	0.723**	0.596*	-0.289	0.417	0.851***	0.880***	0.545*	0.850***	0.621*	0.173	0.917***

N = 16; †p < 0.10: *p < 0.05; **p < 0.01; ***p < 0.001.

The results of the multiple regression analysis for middle-income countries are reported in table 21. All models show a statistical power of close to 1 and VIF factors that are below the critical value of 10 for each model, except for Model 4. Further, all models are correctly specified, have homoscedastic errors and normally distributed residuals. Model 1 shows a highly significant relationship between the overall productivity of a middle-income country and the crowdfunding activity. Compared to the low-income subsample the point estimate has a higher effect size. The result is robust for Kickstarter and Indiegogo. In contrast to low-income countries, Model 2 shows a significant relationship of basic requirements with the crowdfunding activity in middle-income countries. The result is robust for Indiegogo. This is further underlined by the fact that the only significant pillar in Models 3 to 5 is the institution pillar. The result is robust for Indiegogo. Interestingly, in an unreported mean difference test, it shows that there is a significant difference of basic requirements between low-income and middle-income countries.

The mean difference test with the reference group shows that only the crowdfunding activity is significantly different between both groups as shown in table 22. This stands in stark contrast to the total and the low-income sample where a multitude of indicators has a significant difference with the reference group. Interestingly, as is the case in low-income and

middle-income countries, infrastructure has the highest absolute mean difference of all individual pillars.

Table 21

Predictors of Crowdfunding Activity for Middle-Income African Countries

	Model 1 *Log Crowdfunding*	**Model 2** *Log Crowdfunding*	**Model 3** *Log Crowdfunding*	**Model 4** *Log Crowdfunding*	**Model 5** *Log Crowdfunding*
Log Global competitiveness score	10.560***				
Log Basic requirements		6.040*			
Log Efficiency enhancers		0.499			
Log Innovation sophistication		3.804			
Log Institutions			8.544**		
Log Infrastructure			-1.080		
Log Macroeconomic Environment			-2.923		
Log Health and primary education			0.245		
Log Higher education and training				3.133	
Log Goods market efficiency				-7.424	
Log Labor market efficiency				-0.711	
Log Financial market development				6.536	
Log Technological readiness				1.437	
Log Market size				-1.607	
Log Business sophistication					1.153
Log Innovation					6.413
Log GDP/capita	-0.289	-0.193	0.146	-0.281	0.526
Constant	-9.916**	-10.222*	-5.440†	2.996	-11.130*
R^2	0.642	0.692	0.790	0.815	0.610
Post hoc Power (1-β)	0.992	0.982	0.998	0.992	0.957
F	11.667**	6.171**	7.518**	5.032*	6.258**
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	>10	<10
N	16	16	16	16	16

†p < 0.10: *p < 0.05; **p < 0.01; ***p < 0.001.

Correlation and regression analyses show a strong relation between the overall productivity and crowdfunding activity in middle-income countries. In particular, the model predicts a 10.6% increase in crowdfunding activity for every 1% increase in GCS, which is the highest effect size throughout all subsamples. However, compared to the results for the total sample and low-income subsample, the mean productivity in middle-income countries is

not different from the reference group. The result indicates that once overall productivity has reached a certain basis, further gains in productivity are increasingly driving crowdfunding activity. As in the case of the total sample, basic requirements is the only subindex that is both correlated and significant in regression analysis. Further, the effect size of the point estimate is higher than for the total sample. This stands in contrast to low-income countries where no single subindex is significant. As in the case of overall productivity, the result suggests that a certain minimum of basic requirements needs to be in place before it starts enabling the usage of crowdfunding. This is further underpinned by an unreported difference test that shows that basic requirements is significanly lower for low-income countries compared to middle-income countries. In particular, institutions is the only pillar of the basic requirements subindex that shows a significant correlation and regression coefficient. In conclusion, economic indicators in middle-income countries are not significantly different to those of the reference group. This higher level of productivity in middle-income countries appears to drive the crowdfunding usage through further gains in overall productivity. In particular, the results indicate that the institution pillar should be the focus of middle-income countries to get closer to the crowdfunding activity in the reference group, which is statistically significantly higher.

Table 22

Mean Difference Test Between Middle-Income African Countries and Reference Group

	Observations	Middle-Income Sample (Mean)	Reference Group (Mean)	Difference Test (Middle-Income vs. Reference Group)
1. Crowdfunding activity Pooled	16	9.89	20.24	-10.34**
2. Global competitiveness score	16	3.76	3.99	-0.23
3. Basic requirements	16	3.95	4.31	-0.36†
4. Efficiency enhancers	16	3.61	3.81	-0.20
5. Innovation sophistication	16	3.35	3.57	-0.22
6. Institutions	16	3.78	4.13	-0.36
7. Infrastructure	16	3.13	3.73	-0.60†
8. Macroeconomic Environment	16	4.65	4.56	0.09
9. Health and primary education	16	4.26	4.84	-0.59
10. Higher education and training	16	3.34	3.77	-0.43
11. Goods market efficiency	16	4.12	4.31	-0.19
12. Labor market efficiency	16	4.06	4.17	-0.10
13. Financial market development	16	3.93	4.29	-0.36
14. Technological readiness	16	3.11	3.49	-0.38†
15. Market size	16	3.08	2.86	0.23
16. Business sophistication	16	3.69	3.96	-0.27
17. Innovation	16	3.04	3.23	-0.19

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

6.4.4 Below-Median Crowdfunding Activity Countries

The below median subsample consists of 18 African countries with the 50% lowest crowdfunding activity. The 18 countries cover 12 low-income and 6 middle-income countries.

The bivariate analysis reported in table 23 yields that the overall productivity within the subsample is positively correlated with the crowdfunding activity. As is the case for low-income and middle-income countries, all subindices are positively correlated. Regarding the individual pillars, it is notable that insititutions is the only significant pillar in the basic requirement subindex. In addition, an unreported correlation analysis shows that institutions is also the only significant pillar in the basic requirement subindex when considering only those African countries that are in the lower crowdfunding activity quartile.

Table 23

Pearson Correlation Matrix for Below Median Crowdfunding Activity African Countries

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Log Crowdfunding activity																
2. Log Global competitiveness score	0.652**															
3. Log Basic requirements	0.475*	0.910***														
4. Log Efficiency enhancers	0.710***	0.829***	0.562*													
5. Log Innovation sophistication	0.792***	0.833***	0.579*	0.868***												
6. Log Institutions	0.719***	0.863***	0.767***	0.782***	0.805***											
7. Log Infrastructure	0.387	0.739***	0.720***	0.501*	0.618**	0.635**										
8. Log Macroeconomic Environment	-0.158	0.337	0.467†	0.094	0.008	-0.029	0.281									
9. Log Health and primary education	0.435†	0.498*	0.605**	0.215	0.311	0.531*	0.178	-0.208								
10. Log Higher education and training	0.823***	0.840***	0.657**	0.853***	0.862***	0.836***	0.637**	0.108	0.303							
11. Log Goods market efficiency	0.823***	0.789***	0.551*	0.847***	0.932***	0.780***	0.603**	-0.043	0.314	0.821***						
12. Log Labor market efficiency	0.627**	0.520*	0.325	0.711**	0.634***	0.589*	0.046	-0.141	0.317	0.484*	0.629**					
13. Log Financial market development	0.691**	0.795***	0.541*	0.953***	0.851***	0.834***	0.527*	-0.002	0.200	0.853***	0.794***	0.680**				
14. Log Technological readiness	0.607**	0.712***	0.544*	0.750***	0.693**	0.587*	0.744***	0.304	0.003	0.756***	0.752***	0.238	0.692**			
15. Log Market size	-0.053	0.335	0.132	0.574*	0.273	0.115	0.078	0.324	-0.187	0.178	0.183	0.281	0.475*	0.348		
16. Log Business sophistication	0.811***	0.809***	0.531*	0.896***	0.981***	0.771***	0.599**	-0.022	0.272	0.877***	0.934***	0.625**	0.882***	0.749***	0.305	
17. Log Innovation	0.758***	0.862***	0.675**	0.796***	0.958***	0.830***	0.666**	0.119	0.345	0.826***	0.904***	0.586*	0.762***	0.665**	0.186	0.902***

N = 18; †p < 0.10: *p < 0.05; **p < 0.01; ***p < 0.001.

Multiple regression models for below median crowdfunding activity countries are reported in table 24. With the exception of Model 3, which has a statistical power of around 84%, all other models show a statistical power close to 1. The VIF factors for all models are below the critical value of 10 and, as a result, the models do not suffer from undue multicolinearity. Further, all models are correctly specified, have homoscedastic errors and normally distributed residuals, except for Model 4. Model 1 shows that the the overall productivity is significantly driving the usage of crowdfunding within the subsample. The result is robust for Kickstarter and Indiegogo. In line with the low-income sample, there is no significant subindex as can be seen from Model 2. The result is robust for Kickstarter and Indiegogo. In addition, Model 3 to Model 5 show that institutions is the only significant pillar. The result is robust for Indiegogo.

Table 24

Predictors of Crowdfunding Activity for Below Median Crowdfunding Activity African Countries

	Model 1 *Log Crowdfunding Activity*	**Model 2** *Log Crowdfunding Activity*	**Model 3** *Log Crowdfunding Activity*	**Model 4** *Log Crowdfunding Activity*	**Model 5** *Log Crowdfunding Activity*
Log Global competitiveness score	5.817***				
Log Basic requirements		0.968			
Log Efficiency enhancers		2.417			
Log Innovation sophistication		2.174			
Log Institutions			4.418*		
Log Infrastructure			-0.136		
Log Macroeconomic Environment			-0.126		
Log Health and primary education			-0,04		
Log Higher education and training				2.430†	
Log Goods market efficiency				-0.870	
Log Labor market efficiency				3.633†	
Log Financial market development				-0.722	
Log Technological readiness				2.826	
Log Market size				-0.756	
Log Business sophistication					4.614†
Log Innovation					0.313
Log GDP/capita	-0.291†	-0.212	-0.128	-0.199	-0.119
Constant	-4.705*	-4.718*	-3.758	-5.636**	-4.739***
R^2	0.539	0.661	0.551	0.869	0.680
Post hoc Power (1-β)	0.967	0.987	0.843	0.999	0.997
F	8.778**	6.337**	2.948†	9.464**	9.909***
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	not normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	<10	<10
N	18	18	18	18	18

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

Finally, when comparing the subsample with the reference group, the significant mean differences are equal to those for low-income countries as shown in table 25. In addition, the same significant mean differences are obtained for African countries with the 25% lowest crowdfunding activity in an unreported mean difference test. Specifically, the overall productivity and each subindex is significantly different. The same is true for all individual pillars except macroeconomic environment, labor market efficiency and market size. Again, infrastructure shows the highest absolute mean difference across all pillars.

Table 25

Mean Difference Test Between Below Median Crowdfunding Activity African Countries and Reference Group

	Observations	Below-Median Sample (Mean)	Reference Group (Mean)	Difference Test (Below-Median vs. Reference Group)
1. Crowdfunding activity Pooled	18	1.66	20.24	-18.57***
2. Global competitiveness score	18	3.34	3.99	-0.65***
3. Basic requirements	18	3.46	4.31	-0.86***
4. Efficiency enhancers	18	3.24	3.81	-0.57**
5. Innovation sophistication	18	3.07	3.57	-0.49**
6. Institutions	18	3.27	4.13	-0.86***
7. Infrastructure	18	2.40	3.73	-1.33***
8. Macroeconomic Environment	18	4.29	4.56	-0.26
9. Health and primary education	18	3.86	4.84	-0.99**
10. Higher education and training	18	2.63	3.77	-1.14***
11. Goods market efficiency	18	3.80	4.31	-0.51**
12. Labor market efficiency	18	4.06	4.17	-0.11
13. Financial market development	18	3.29	4.29	-1.00***
14. Technological readiness	18	2.62	3.49	-0.87***
15. Market size	18	2.99	2.86	0.13
16. Business sophistication	18	3.32	3.96	-0.64***
17. Innovation	18	2.81	3.23	-0.43**

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

All three empirical methods show a significant relationship between the overall productivity and the crowdfunding activity for African countries that have a below median crowdfunding activity. The model predicts a 5.8% increase in crowdfunding activity for a 1% increase in the GCS ceteris paribus. While all three subindices are significantly correlated and have a significant mean difference compared to the reference group, regression analysis identifies no single subindex as the main driver while controlling for the others. However, the institutions pillar seems to play a decisive role in the subsample as it is the only pillar that is significant across all three statistical methods. Despite being not significantly correlated with the crowdfunding activity, the infrastructure pillar shows an immense difference in means compared with the reference group, which is equal to that obtained for low-income countries. As a result, the empirical evidence suggests that African countries that have a below median crowdfunding activity should increase their overall productivity across all subindices to

increase their crowdfunding activity. As basic requirements will become the main driver once the overall productivity is increased, African countries in that subsample should invest specifically in institutions and infrastructure to create the basis for a higher crowdfunding activity.

6.4.5 Above-Median Crowdfunding Activity Countries

The final subsample represents the 18 countries that have the highest crowdfunding activity in the total sample. It consists of seven low-income countries, ten middle-income countries and one high-income country.

Table 26

Pearson Correlation Matrix for Above Median Crowdfunding Activity African Countries

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Log Crowdfunding activity																
2. Log Global competitiveness score	0.409†															
3. Log Basic requirements	0.548*	0.853***														
4. Log Efficiency enhancers	0.403†	0.855***	0.541*													
5. Log Innovation sophistication	0.253	0.683**	0.399	0.874***												
6. Log Institutions	0.194	0.773***	0.695**	0.594**	0.467†											
7. Log Infrastructure	0.598**	0.759***	0.801***	0.684**	0.648**	0.666**										
8. Log Macroeconomic environment	0.226	0.349	0.478*	-0.004	-0.269	0.177	0.084									
9. Log Health and primary education	0.386	0.537*	0.726***	0.338	0.342	0.282	0.504*	0.010								
10. Log Higher education and training	0.526*	0.689**	0.716***	0.639**	0.633**	0.477*	0.817***	0.014	0.614**							
11. Log Goods market efficiency	0.215	0.692**	0.466†	0.721***	0.706**	0.683**	0.555*	0.101	0.138	0.475*						
12. Log Labor market efficiency	-0.080	0.315	0.181	0.352	0.324	0.429†	0.116	0.097	-0.016	-0.083	0.413†					
13. Log Financial market development	0.394	0.761***	0.406†	0.915***	0.779***	0.574*	0.640**	-0.028	0.126	0.486*	0.694**	0.279				
14. Log Technological readiness	0.613**	0.782***	0.719***	0.804***	0.693**	0.527*	0.818***	-0.011	0.645**	0.831***	0.435†	0.065	0.669**			
15. Log Market size	-0.021	0.409†	-0.034	0.672**	0.515*	0.046	0.088	-0.040	-0.074	0.068	0.297	0.082	0.666**	0.298		
16. Log Business sophistication	0.319	0.661**	0.417†	0.850***	0.958***	0.482*	0.721***	-0.256	0.308	0.712***	0.772***	0.267	0.786***	0.704**	0.419†	
17. Log Innovation	0.170	0.645**	0.371	0.806***	0.934***	0.455†	0.505*	-0.198	0.336	0.478*	0.637**	0.472*	0.669**	0.595**	0.494*	0.815***

N = 18; †p < 0.10: *p < 0.05; **p < 0.01; ***p < 0.001.

The bivariate analysis depicted in table 26 shows remarkable differences compared to the other subsamples. The overall productivity of a country is no longer significantly correlated with the crowdfunding activity. In particular, only the basic requirements subindex and the infrastructure, higher education and training, and technological readiness pillars are significantly correlated. The result is even stronger when considering only those countries with the 25% highest crowdfunding activity in an unreported correlation analysis. In this

case, neither the overall productivity nor any subindex or pillar is significantly related to the crowdfunding activity.

Table 27

Predictors of Crowdfunding Activity for Above Median Crowdfunding Activity African Countries

	Model 1 *Log Crowdfunding Activity*	**Model 2** *Log Crowdfunding Activity*	**Model 3** *Log Crowdfunding Activity*	**Model 4** *Log Crowdfunding Activity*	**Model 5** *Log Crowdfunding Activity*
Log Global competitiveness score	-0.854				
Log Basic requirements		-0.764			
Log Efficiency enhancers		-0.082			
Log Innovation sophistication		0.319			
Log Institutions			-0.401		
Log Infrastructure			-0.165		
Log Macroeconomic Environment			-0.468		
Log Health and primary education			-0.022		
Log Higher education and training				-1.011	
Log Goods market efficiency				-1.396	
Log Labor market efficiency				-0.475	
Log Financial market development				2.557	
Log Technological readiness				0.461	
Log Market size				-0.758	
Log Business sophistication					0.280
Log Innovation					-0.194
Log GDP / capita	0.499***	0.516**	0.530*	0.421*	0.448***
Constant	-0.214	-0.705	-0.115	-0.180	-1.115
R^2	0.629	0.627	0.639	0.714	0.619
Post hoc Power (1-β)	0.996	0.970	0.954	0.963	0.984
F	12.692***	5.474**	4.253*	3.574*	7.589**
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	heterosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	<10	<10
N	18	18	18	18	18

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

Multiple regressions are reported in table 27. All models have a statistical power close to 1 and VIF factors below the critical value of 10. In addition, all models are correctly specified and have normally distributed residuals. Furthermore, all models have homoscedastic residuals with the exception of Model 2. Regression analysis confirms that the overall productivity is not significantly related to crowdfunding activity, as can be seen in Model 1. The result is robust for Kickstarter and Indiegogo, as well as for countries with the

25% highest crowdfunding activity. Further, Model 2 shows that no subindex has a significant influence on crowdfunding activity in the subsample. Again, the result is robust for Kickstarter and Indiegogo, and countries with the 25% highest crowdfunding activity. On a pillar-level, there is no single pillar that is significantly related to crowdfunding activity in the subsample while controlling for the others. The result is robust for Indiegogo.

Finally, there are no significant differences between the subsample and the reference group as reported in table 28. However, as is the case in the other subsamples, infrastructure has the highest absolute mean difference.

Table 28

Mean Difference Test Between Above Median Crowdfunding Activity African Countries and Reference Group

	Observations	Above Median Sample (Mean)	Reference Group (Mean)	Difference Test (Above Median vs. Reference Group)
1. Crowdfunding activity Pooled	18	13.70	20.24	-6.54
2. Global competitiveness score	18	3.81	3.99	-0.18
3. Basic requirements	18	4.04	4.31	-0.27
4. Efficiency enhancers	18	3.59	3.81	-0.22
5. Innovation sophistication	18	3.43	3.57	-0.13
6. Institutions	18	3.98	4.13	-0.15
7. Infrastructure	18	3.19	3.73	-0.54†
8. Macroeconomic Environment	18	4.49	4.56	-0.06
9. Health and primary education	18	4.53	4.84	-0.32
10. Higher education and training	18	3.40	3.77	-0.37†
11. Goods market efficiency	18	4.21	4.31	-0.10
12. Labor market efficiency	18	4.22	4.17	0.05
13. Financial market development	18	3.97	4.29	-0.32
14. Technological readiness	18	3.13	3.49	-0.36†
15. Market size	18	2.64	2.86	-0.22
16. Business sophistication	18	3.78	3.96	-0.18
17. Innovation	18	3.14	3.23	-0.09

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

All three statistical methods show that the crowdfunding activity is no longer positively correlated with increases in productivity for African countries that have an above median crowdfunding activity. Specifically, no subindex or individual pillar is significant in

the regression analysis and in the mean difference test. This trend is even more pronounced for those African countries that have a crowdfunding activity in the upper quartile. In this case, there is no significant factor across all three statistical methods. As a consequence, the results of the analysis suggest that those African countries with an above median or upper quartile crowdfunding activity must use other means apart from productivity gains to increase their crowdfunding activity.

6.5 The Role of Productivity and Basic Requirements

The preceding empirical analysis showed that the overall productivity and the subindex basic requirements appear to play a decisive role for the level of crowdfunding activity in African countries. However, their effect size varies depending on the subsample, and hence, institutional setting.

For the average African country represented by the total sample, overall productivity is significantly positively correlated with crowdfunding activity for all three statistical methods. The same result is obtained for the low-income and below median subsample. Comparing the effect sizes of the regression coefficients, it shows that the regression point estimate is more than 80% higher in middle-income countries compared to low-income and below median countries. This trend is further pronounced when considering only those African countries in the lowest and in the highest GDP quartile. In both cases, overall productivity is no longer significantly correlated with crowdfunding activity. The same is true for the above median subsample. Here, the empirical results suggest that overall productivity is not associated with crowdfunding activity.

Basic requirements is the only subindex of the GCR that shows significance throughout all three statistical methods for the total sample. In addition, it is the only subindex that is positively correlated with crowdfunding activity across all subsamples.

However, while the regression coefficient is significant for the total and the middle-income subsample, there is no such effect for the low-income, below-median and above-median subsample.

To better understand this contrasting role of productivity and basic requirements on African crowdfunding, two groups are created. The first group divides the total sample into three subsamples based on the quartiles with the highest GCS, and the second group divides the total sample into three subsamples based on the quartiles with the lowest GCS. For each of the quartiles, bivariate regressions are performed.

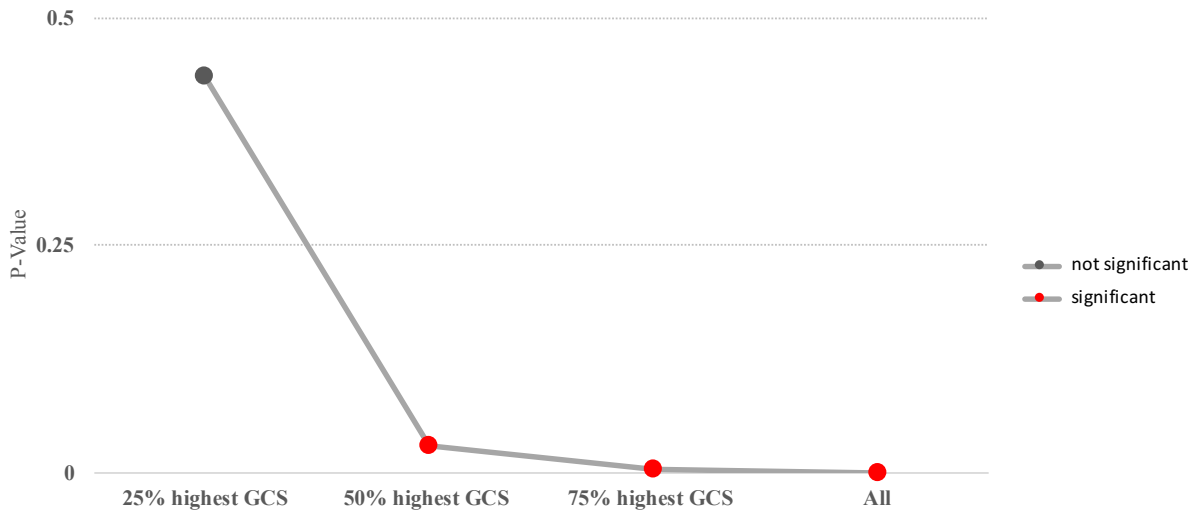

Figure 15. P-values for regressions of pooled crowdfunding activity on GCS for countries in the three highest GCS quartiles.

The resulting p-values for the overall productivity are depicted in figure 15 for the first group and in figure 16 for the second group. The first group shows that for countries in the upper quartile of overall productivity, productivity is not correlated with crowdfunding activity. By contrast, for the other two quartiles, overall productivity is increasingly positively correlated. The second group shows that for those countries that are in the lowest quartile of overall productivity, crowdfunding activity is not related to overall productivity.

By contrast, the remaining two quartiles in the second group are positively related to crowdfunding activity.

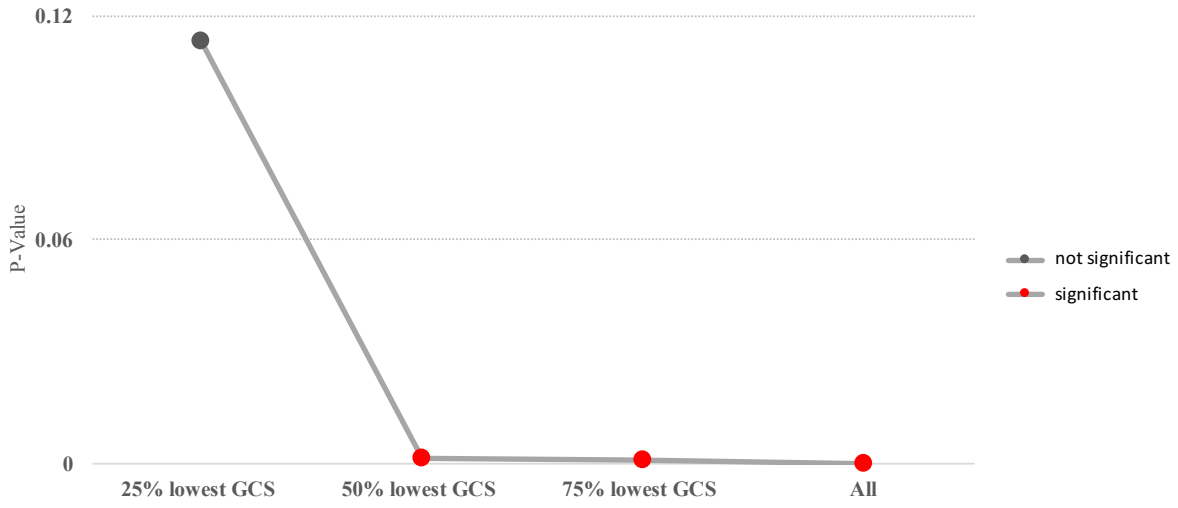

Figure 16. P-values for regressions of pooled crowdfunding activity on GCS for countries in the three lowest GCS quartiles.

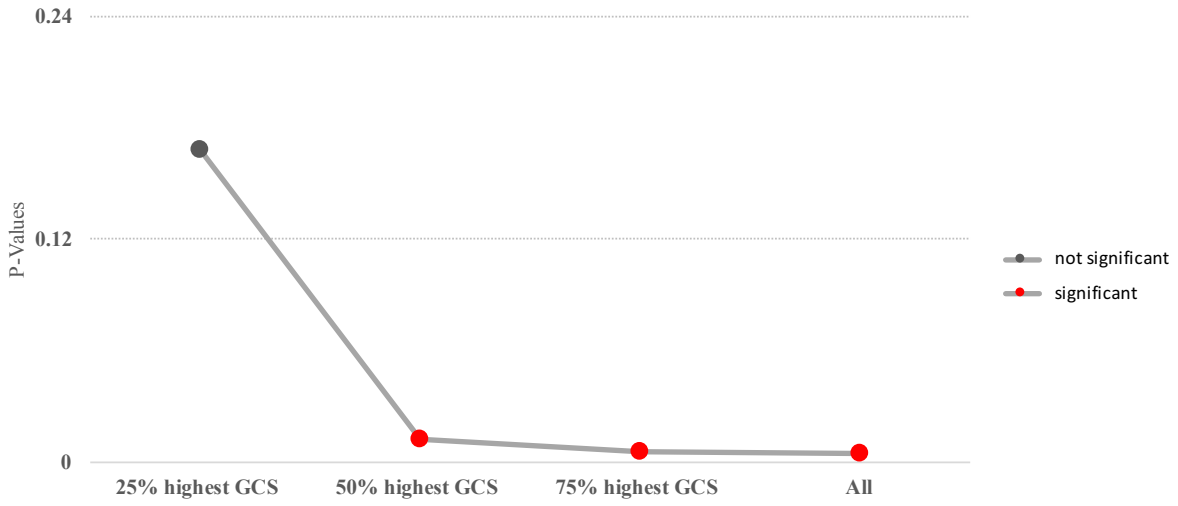

Figure 17. P-values for regressions of pooled crowdfunding activity on basic requirements for the countries in the three highest GCS quartiles. Efficiency enhancers and innovation and sophistication used as control variables.

The p-values for the regressions of the crowdfunding activity on basic requirements while controlling for the two remaining subindices efficiency enhancers as well as innovation

and sophistication are depicted in figure 17 for the first group and in figure 18 for the second group.

In the first group, it shows that basic requirements drive the crowdfunding activity for all quartiles, except for countries in the upper GCS quartile. By contrast, in the second group the only significance is shown for the total sample. However, the p-values decrease and reach significance at a 10% level for the 75% quartile.

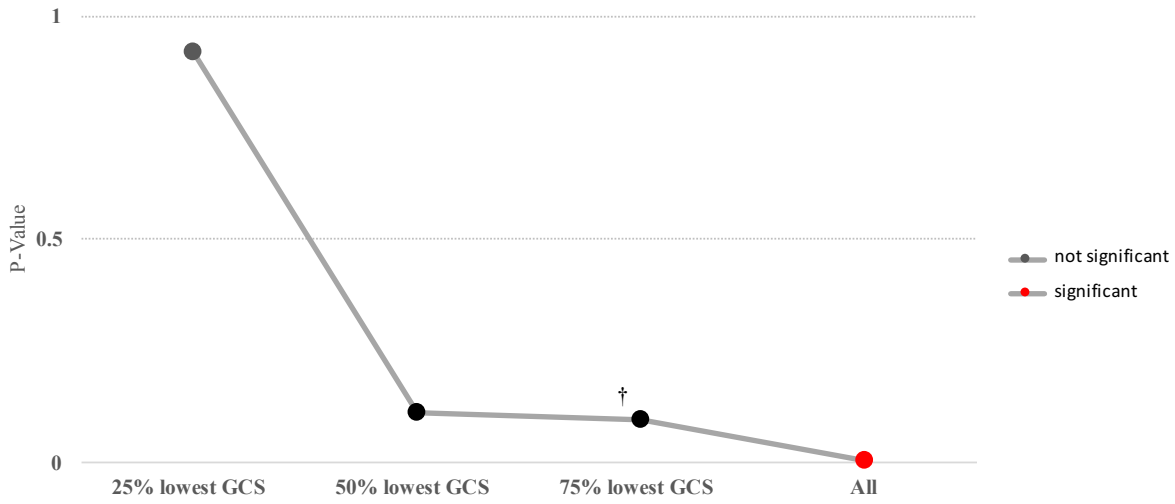

Figure 18. P-values for regressions of pooled crowdfunding activity on basic requirements for the countries in the three lowest GCS quartiles. Efficiency enhancers and innovation and sophistication used as control variables.

In conclusion, both the overall productivity and the subindex basic requirements are not significant in the highest and lowest GCS quartile. The underlying reasons seem to be, however, different. A possible explanation is that African countries in the lowest GCS quartile appear to lack the most basic requirements to enable overall productivity to drive crowdfunding. By contrast, those countries that are in the highest GCS quartile seem to have built up the required basic requirements that enabled initial (autonomous) crowdfunding activity but have now reached a point where they experience diminishing returns of increases in productivity on crowdfunding activity and must find other means to increase their

crowdfunding activity. Certainly, these results are restricted to African countries only and further research is needed to shed light on differences at a more global level.

6.6 Discussion and Connection of the Results

In order to provide actionable recommendations to policymakers and other stakeholders, the empirically analysed subsamples are connected. The resulting matrix with the corresponding countries for each quadrant can be found in figure 19. In the following, the results for each quadrant are discussed and practical advice is given on a country-level.

The first quadrant contains six low-income African countries that have a crowdfunding activity above the median. In general, the average African low-income country does not have a high crowdfunding activity. In particular, there is no single low-income country that is in the upper quartile of the crowdfunding activity. Generally, the overall level of productivity is driving the crowdfunding activity in low-income countries. While this is not the case for those countries that are in the lower GCS quartile, the basis of productivity appears to be given for the six low-income countries in this quadrant. This is empirically confirmed by testing the differences in means of productivity between the six low-income countries in the first quadrant and middle-income countries, which yields no significant differences. Data suggests that in order to further increase their crowdfunding activity, countries in this quadrant need to further increase their overall productivity, as the upper quartile of crowdfunding activity only consists of middle-income countries. In particular, the subindex basic requirements needs to be enhanced as it will be the main driver for crowdfunding activity for the average African country and for middle-income countries. Furthermore, basic requirements are positively correlated with crowdfunding activity in the above median crowdfunding subsample. The individual pillars infrastructure and institutions

should be of particular concern, as they are positively correlated with crowdfunding activity and have a significant mean difference in low-income countries.

Low-Income **Below Median Crowdfunding Activity** Benin, Burkina Faso, Burundi, Chad, Ethiopia, Guinea, Madagascar, Malawi, Mali, Mozambique, Senegal, Tanzania	**Low-Income** **Above Median Crowdfunding Activity** Gambia, Liberia, Rwanda, Sierra Leone, Uganda, Zimbabwe
Middle-Income **Below Median Crowdfunding Activity** Angola, Gabon, Ivory Coast, Mauritania, Nigeria, Zambia	**Middle-Income** **Above Median Crowdfunding Activity** Botswana, Cameroon, Cape Verde, Ghana , Kenya, Lesotho, Mauritius, Nambia, South Africa, Swaziland

Figure 19. Country matrix based on subsamples.

The second quadrant comprises those 12 countries that are both low-income and have a crowdfunding activity below the median. 6 of those 12 countries, namely Burkina Faso, Burundi, Chad, Guinea, Malawi and Mozambique, are even part of the lower quartile GCS countries. As derived in the previous paragraph, evidence suggests that these countries need to reach a certain level of productivity before further productivity gains are positively correlated with crowdfunding activity. In other words, those countries will need to build up the most necessary requirements to let increases in productivity drive their crowdfunding activity. For the remaining low-income countries, a basic productivity level is already in place such that additional gains in productivity are correlated with the crowdfunding activity. As it is the case for countries in the first quadrant, the subindex basic requirements should be generally improved. As soon as these low-income countries get closer to the African average it will be the driving subindex for increases in crowdfunding activity. Except for the pillar

macroeconomic environment, all other pillars of the basic requirement index are significantly different to the reference group for both subsamples. However, it appears that countries in this quadrant should especially improve the institutional and infrastructure pillars as they are positively correlated and have significant mean difference in both subsamples.

The third quadrant consists of those six countries that are both middle-income and at the same time have a below median crowdfunding activity. Interestingly, when comparing the means of the overall productivity, subindices and individual pillars of these six countries with low-income countries, there are no significant differences. Still, the crowdfunding activity of those six countries is positively related to the overall productivity. Hence, those countries do already have the basic level of productivity, such that further productivity gains are positively correlated with the crowdfunding activity. As middle-income countries, basic requirements should be enhanced as it is the single driving subindex when controlling for the others. More specifically, analysis suggests that countries in this quandrant should improve the institutional pillar in order to increase their crowdfunding activity and eventually move into the fourth quadrant.

The majority of middle-income countries are based in the fourth quadrant of figure 19, which combines middle-income with above median crowdfunding activity countries. In fact, with the exception of Lesotho and Cameroon, these countries constitute the upper quartile crowdfunding activity countries. As derived in the previous paragraph, crowdfunding activity in these countries seems to be no longer correlated with the overall productivity. More precisely, no subindex or individual pillar is positively correlated with crowdfunding activity. For these countries, it appears that there are diminishing returns of increases in productivity on crowdfunding activity as they have exploited (autonomous) crowdfunding gains within the African sample. Hence, in order to further increase their crowdfunding activity, other means apart from productivity gains must be deployed. Some examples are

presented in Chapter 7. For Lesotho and Cameroon, which are both not part of the upper quartile crowdfunding activity, productivity gains still matter. The goal for those two countries should be to further improve the basic requirements to reach a level where they become part of the upper quartile crowdfunding activity group. In particular, they should improve the infrastructure pillar as it is positively correlated in both the middle-income and above median crowdfunding activity subsamples.

6.7 Summary and Critical Reflection

The first research question showed that the usage of crowdfunding differs significantly across African countries and regions. Based on this finding, the motivation for this chapter was to explain those differences by providing initial empirical evidence of the driving economic factors for African crowdfunding and, in general, to gain an initial understanding of the individual roles of economic factors across different institutional settings.

The empirical analysis was conducted for the total sample and four subsamples. Despite the multitude of economic factors under consideration, the analysis revealed that overall productivity and basic requirements, more precisely institutions and infrastructure, appear to be the main driving factors of African crowdfunding.

For the average African country as represented by the total sample, overall productivity is correlated with the crowdfunding activity. This is achieved especially through the two basic requirement pillars institutions and infrastructure. Yet, the analysis shows substantial differences for the subsamples. In both low-income and middle-income countries the overall productivity is positively related to the crowdfunding activity. However, this is not the case for countries that are in the lower and upper GCS quartile. A possible explanation is that countries in the lower GCS quartile do not yet have the minimum level of productivity to generate (autonomous) gains in crowdfunding activity by further increases in

productivity. By contrast, those countries that are in the upper GCS quartile seem to have already exploited (autonomous) crowdfunding activity gains by further increases in productivity for the African sample. Hence, these countries must find other means to further increase their crowdfunding activity. Considering different levels of crowdfunding activity, the analysis shows that countries in the below median crowdfunding activity subsample can foster the usage of crowdfunding by increases in productivity. Yet this is not the case for countries in the above median crowdfunding activity subsample. In accordance with the overall productivity, the effect of the basic requirements subindex depends on the subsample. While the crowdfunding activity in middle-income countries is driven by basic requirements, this is not the case for low-income countries. It appears that a minimum level of basic requirements needs to be reached before they start to positively affect crowdfunding activity. In this context, two pillars play a decisive role. While the institutional pillar is driving crowdfunding activity for both middle-income and below median crowdfunding activity countries, the infrastructure pillar has the highest mean differences across all subsamples.

In conclusion, the results show that the institutional setting matters for the usage of crowdfunding in Africa. Based on these initial results, recommendations on an individual level can be given to African countries in order to foster the usage of crowdfunding.

7. Summary and Implications

In the following the main findings of the study are summarized, theoretical implications are derived, and practical advice is given for policymakers, African entrepreneurs as well as other stakeholders. In addition, limitations of the study and avenues for future research are provided.

7.1 Executive Summary

Extant research shows that opportunity-driven entrepreneurship is positively related to economic growth and overall economic development in developing countries. Yet, to bring ideas for new ventures to life, entrepreneurs need sufficient funding. The challenge to obtain that funding is termed the early-stage funding gap and is especially pronounced in Africa, where traditional funding sources are available only to a small extent. This lack, combined with the diffusion of mobile phones and internet access, enabled the unprecedented rise of mobile payments on a private level in Africa in recent years. On a commercial level, crowdfunding is given the potential to mitigate the early-stage funding gap for African entrepreneurs. Some sources, such as the World Bank, even see the possibility for crowdfunding to leapfrog traditional funding sources in Africa. However, up until now, there has been no empirical research to shed light on the question of whether crowdfunding can live up to the promise it is given. Indeed, the African crowdfunding landscape is distinctive. In its current state, the majority of African crowdfunding is taking place on international donation-based and reward-based CFPs. By contrast, domestic CFPs are currently too small in size and as a result not attractive enough for African entrepreneurs. Based on a unique dataset from the world's leading reward-based CFPs, Kickstarter and Indiegogo, the study followed the call to provide empirical evidence on African crowdfunding. In particular, two research questions were derived from the literature and analysed in this study.

The results of the first research question provided evidence on the current usage pattern of crowdfunding in Africa. Generally, the current overall usage of international CFPs by Africans is on low levels and did not increase significantly in the past two years. In this context, access seems to be a critical challenge, as Indiegogo, which pursues an open strategy, attracted by far the majority of African crowdfunding activity in the pooled sample. Surprisingly, the average raised amount on both platforms are substantial even by international comparison. This appears to be mainly due to the circumstance that international CFPs give African entrepreneurs the possibility to tap into the global funding community. This is underlined by the fact that the average contribution to African crowdfunding projects is at the same level as internationally. Regarding the nature of African crowdfunding projects, the majority are started in creative and social categories. This stands in contrast to international usage, where the main crowdfunding activity is instead taking place in rather entrepreneurial categories. As a consequence, African crowdfunding shows signs that are comparable with the beginnings of crowdfunding in the developed world. Taking a geographic perspective, crowdfunding activity is higher in middle-income countries compared to low-income countries on the continent. However, while Kickstarter projects perform better in middle-income countries, Indiegogo projects perform better in low-income countries. This rather counterintuitive result seems to be largely due to the different categories offered on the platforms and the resulting usage patterns. Finally, Southern Africa exhibits by far the highest crowdfunding activity, yet essential project metrics such as the average funding amount do not show the same geographical concentration. The result implies that crowdfunding is a valid tool for African entrepreneurs across the continent, despite being currently used unequally. Concluding the results of the first research question, the empirical evidence showed that African crowdfunding can live up to the potential it is given on a project level. However, much remains to be done in order to increase its overall usage and

thereby contribute on a larger scale to the mitigation of the early-stage funding gap for African entrepreneurs.

The analysis of the second research question strived to gain a first understanding of the differences in crowdfunding usage across the African continent based on data of the GCR. The obtained evidence shows that for the average African country, overall productivity and basic requirements are positively correlated with crowdfunding activity. In particular, institutions and infrastructure seem to be decisive enabling factors. Yet it appears that African countries show substantial differences depending on their respective institutional setting. What seems most notable is that overall productivity and basic requirements are not positively correlated with crowdfunding activity in African countries with the lowest and highest productivity. For those African countries with the lowest productivity, the results suggest that it is about building up the most basic requirements to enable (autonomous) gains in crowdfunding activity by further increases in productivity. By contrast, those countries with the highest productivity need to find other means apart from productivity gains to increase their crowdfunding activity, as they have already exploited (autonomous) crowdfunding activity gains in the African sample.

7.2 Theoretical Implications

First of all, African crowdfunding appears to pursue the same development path that has been experienced by developed countries (Hemer, 2011; Mollick, 2014; World Bank, 2013). Similar to the beginnings of crowdfunding in developed countries, donation-based and reward-based crowdfunding currently dominate African crowdfunding activity on both domestic and international platforms, as shown in Chapter 3. This is mainly due to the fact that both forms do not require any specific legislation and are therefore more easily accessible for stakeholders even in the less developed African countries. By contrast, more

complex debt-based and equity-based crowdfunding require a more elaborate legislation to provide an appropriate legal framework. This prevents the emergence of such African CFPs and at the same time restricts international CFPs to their local markets. As a consequence, those few domestic African debt-based and equity-based CFPs currently in place either pursue a specific model, such as the funding of livestock, or offer simple "showrooms" for ventures seeking equity funding. Moreover, it is currently impossible for Africans to access international debt-based and equity-based CFPs as these platform focus on their respective local markets in order to be legally compliant.

Furthermore, the results show that crowdfunding reduces the home bias in investments on a firm-level, as suggested by Agrawal et al. (2011) and Hornuf and Schmitt (2017). The majority of African crowdfunding takes place on international platforms and thereby benefits from the international funding community by raising substantial amounts of money. However, as the average raised amounts per project lack behind worldwide levels, it appears that a weakened form of local bias still persists. One possible explanation might be provided by Agrawal et al. (2011), who show that relatives and friends contribute largely at the beginning of a crowdfunding project and thereby create signaling effects for other (socially and geographically more distant) investors. Yet, in the African context, this special group of investors might simply not have enough financial means to contribute decisively, ultimately weakening this information signal and, hence, total contributions to a project. Other possible explanations comprise a possible lower overall project and founder quality (Mollick, 2013, 2014), lower social capital (Mollick, 2013) or even discrimination (Ravina, 2012). Future research should shed light on the causes for this discrepancy by analysing African crowdfunding projects on a more granular level and thereby further contribute to theory building.

Finally, analysing the role of the institutional context, as suggested by Bruton et al. (2015), reveals that the institutional context seems to matter for the usage of crowdfunding in Africa. However, in the case of reward-based crowdfunding this seems to be true only to a certain extent for the sample. The results indicate that once the required quality of institutions and infrastructure is in place, other means apart from productivity gains must be used to further increase the usage of crowdfunding on the continent. Examples for such means are provided in the following paragraphs. Beyond that, the required quality of institutions is likely to be much higher for more sophisticated forms of crowdfunding and provides a fruitful subject for future research.

7.3 Implications for Policymakers

Probably the most important message to policymakers is that African crowdfunding can live up to the potential it is given. Nonetheless, much remains to be done in order to create an environment in which crowdfunding reaches the necessary scale to become an important funding source on the continent.

First and foremost, policymakers should recognize crowdfunding as an innovative form of funding that is capable of mitigating the early-stage funding gap for African entrepreneurs. More precisely, crowdfunding should be an essential part of any government program targeted at small ventures in Africa. This also includes the training of government personnel in charge of those services. By doing so, awareness about crowdfunding is increased and eventually the perceived funding possibilities of African entrerpreneurs are enlarged. Yet, as a large share of African entrepreneurs bemoan the quality of government support services, collaborations between governments and international as well as domestic CFPs can help reduce this prejudice and at the same time increase the quality. By doing so, a

direct contact between CFPs and African entrepreneurs is initiated that creates opportunities for both sides.

Currently, the majority of African crowdfunding takes place on international CFPs, because domestic CFPs lack the necessary size on both the demand and the supply side. While international platforms allow African entrepreneurs to tap into the global funding community, domestic CFPs could compete by adapting their offerings to the specific African requirements. For instance, mobile payment methods such as M-Pesa and local social networks could be integrated. Further, platform categories could be tailored specifically to African needs. As a result, access for currently excluded African entrepreneurs and funders could be improved and, at the same time, the reach and identification of crowdfunding in Africa increased. Yet, if African CFPs want to compete with international offerings, they need to scale their operations on the demand and supply side. To exploit economies of scale, the prevailing and planned African currency unions might help to establish transborder African CFPs. However, African CFPs are entrepreneurial ventures themselves and face the same funding constraints on the continent. As a consequence, policymakers could support the creation of African CFPs by offering sufficient financial and non-financial support, even in the form of public-private partnerships. Alternatively, international CFPs could be incentivized to create subsidiaries on the African continent, an idea that is further elaborated below.

Depending on the current economic state, African countries need to create an environment that makes the usage of crowdfunding possible and worthwhile. Basic institutions need to be in place to allow entrepreneurs to pursue their business ideas under legal certainty. Only if an entrepreneur operates in an environment that secures his most basic rights will he be willing to invest in his venture and, eventually, seek capital through crowdfunding. Furthermore, the existence of a sufficient infrastructure is a prerequisite for

African entrepreneurs to be able to provide new goods and services and access CFPs. Interestingly, the results of the study suggest that African countries where those basic requirements are already in place need to find other means to promote crowdfunding, as they already exploited gains in (autonomous) crowdfunding activity in the African sample. Examples for those means are provided throughout this chapter.

7.4 Implications for African Entrepreneurs

Despite the fact that Southern Africa currently hosts the vast majority of crowdfunding projects, metrics on a project level show that the potential of crowdfunding is not geographically constrained in Africa. As a result, African entrepreneurs across the continent should perceive crowdfunding as a valid alternative to raise funds in their early-stage. Those African entrepreneurs that decide to raise funds over crowdfunding should use international platforms, as they currently provide the necessary scale and make it possible to benefit from the international funding community. By doing so, substantial funding amounts can be raised. Yet, while on Kickstarter every project needs to be approved in order to ensure compliance with quality standards, there is no such mechanism on Indiegogo. What is notable is the resulting high zero funding rate on Indiegogo, as almost every second African project does not receive a single contribution. Hence, in order to raise money successfully, African entrepreneurs must pay close attention to delivering high quality crowdfunding projects that are well planned and organized, even in the absence of control mechanisms such as on Kickstarter. Delivering high quality crowdfunding projects will ultimately determine its success. Hence, the necessary knowledge on how to run a successful campaign should be stressed by all stakeholders, including policymakers and CFPs. But it is also within the responsibility of African entrepreneurs to get acquainted with best practices in crowdfunding by devoting enough time to prior research and appropriate preparation.

7.5 Implications for Other Stakeholders

The sample from the two biggest reward-based CFPs worldwide provided evidence that access matters. Those international platforms that facilitate accesss to their services, such as Indiegogo, benefit from a higher usage by Africans. This trend could be further intensified in the future as international CFPs are in a strong competitive position. They have the necessary scale, weak competition from African CFPs and other funding sources on the continent are only available to a very limited extent. Indeed, when infrastructure and institutions on the continent are further enhanced and policymakers and African entrepreneurs alike realize the potential of crowdfunding, a strong business case for international CFPs emerges. In order to benefit from that potential, international CFPs should improve their access for African entrepreneurs. In particular, restrictions on platform participation should be removed, financial services should be extended to better account for the specific African conditions and additional categories as well as social sharing possibilities that are tailored to the African market should be offered. As mentioned earlier, an alternative strategy could be the creation of African subsidiaries by international CFPs, based on the same suggestions for adaptions as noted before. While this solution would offer the possibility to deeply tailor the resulting CFP to the specific African environment, it carries the risk that the current supply side of such a domestic subsidiary is not strong enough. In this case, it would be advantageous to integrate the projects of the subsidiary on the main platform of the international CFP.

Development organizations such as the World Bank can support policymakers to increase the awareness and usage of crowdfunding in various ways. For instance, they can take an advisory role to support local governments to implement the necessary regulatory environment in order to enable and increase the usage of crowdfunding. In addition, development organizations might serve as facilitators between international CFPs and African governments to provide local offerings as discussed above. Furthermore, they can

support initiatives that aim to increase the awareness and knowledge of crowdfunding by supporting existent business advisory services for entrepreneurs, as well as African accelerators and incubators.

Finally, there is an increasing number of African accelerators and incubators (Manyika et al., 2013) across the continent that can play a decisive role in making crowdfunding more popular among African entrepreneurs. They are in the unique position to spread the potential of crowdfunding as a new funding source, as they are a melting pot for opportunity-driven entrepreneurial ventures in Africa. In this regard, accelerators and incubators should form partnerships with international CFPs to increase awareness and provide deep expertise to their participating entrepreneurs. For instance, workshops could be offered that introduce the concept of crowdfunding, discuss critical success factors and provide coaching for interested entrepreneurs. Furthermore, development organizations could support such workshops by hosting them or providing access to international crowdfunding experts.

7.6 Limitations and Avenues for Future Research

First and foremost, the study is limited to African countries for both research questions. Data for the study was taken from the two biggest international reward-based crowdfunding platforms that serve as a proxy for African crowdfunding activity. While debt-based and equity-based crowdfunding are well-suited to also study opportunity-driven entrepreneurship, both forms are currently unavailable for African entrepreneurs. With the further development of African crowdfunding, these additional crowdfunding forms might become available and thereby create possibilities for future research. In particular, as these two forms of crowdfunding require more sophisticated institutions as a prerequisite they might be driven by different institutional settings.

In addition, the study focused on international CFPs as they dominate African crowdfunding activity. Once domestic CFPs reach the required scale to be suited to conduct empirical analysis, it will be worthwhile to capture their peculiarities and compare them to the international crowdfunding landscape.

The identification of enabling economic factors was based on the GCR in order to use a comprehensive set of economic constructs (pillars). In fact, each of those constructs consists of several individual indicators. Despite being highly correlated, these individual indicators might play a different role in each country. By using specific indices, such as the "Doing Business" reports by the World Bank, the role of these indicators could be investigated at a more granulated level. In addition, researchers could explore other economic factors that might play a decisive role for the usage of crowdfunding, such as the different nuances of national entrepreneurial activity. Moreover, there might be non-economic factors that influence crowdfunding activity. For instance, normative variables that measure social norms such as in-group collectivism, face-saving, uncertainty avoidance, and performance orientation might play a decisive role, as suggested by the World Bank (2013).

Apart from identifying possibilities for future research based on the limitations of the study, a plethora of related topics provide possibilities for future research on a macroeconomic and individual level. The study focused on African countries and deliberately restricted its empirical analysis to those countries. From a macroeconomic view, researchers might ask if African crowdfunding differs from crowdfunding activity in other developing and developed regions of the world. For instance, are other developing regions also using international CFPs on much higher levels than domestic CFPs? Are the driving economic factors the same across developing regions? Do we see the same usage patterns of crowdfunding in other developing regions that have comparable institutional settings, thus suggesting an evolution of crowdfunding activity? How is productivity related to

crowdfunding activity in other regions of the world? Answering these questions might not only shed light on differences and similiarities to provide practical advice for the respective regions, but also create the basis for theory-building of crowdfunding in developing countries. From an individual perspective, it is surprising that despite the role African entrepreneurs are given for economic development, we do not know much about their characteristics and perceptions shaped by the unique ennvironment they are operating in. In the specific case of crowdfunding, research should reveal the perceptions and level of knowledge of African entrepreneurs regarding crowdfunding. The study has shown that crowdfunding can raise substantial amounts of money for African entrepreneurs, yet what do they know about this new form of funding? Such research could be conducted by African accelerators and incubators and incentivized by policymakers and development organizations. Based on the findings, the above suggested workshops could be tailored to the needs of African entrepreneurs. Finally, research should be conducted to shed light on the outcomes of African crowdfunding projects. While the study showed that African entrepreneurs can benefit from crowdfunding financially, how do those ventures develop after funding and what role is crowdfunding playing in this regard?

7.7 Concluding Remarks

Crowdfunding has received much attention in recent years. Yet, it remains to be seen whether this innovative form of funding can further scale and become a fixture of early-stage financing around the world. In the African context, with its absence of traditional funding sources, it will be even more fascinating to see whether crowdfunding can live up to its potential. The recent development of the ICT infrastructure, the diffusion of mobile phones, as well as the high adaption of innovative financial services on a private level, give cause for optimism. The study underpinned this optimism by providing first empirical evidence on

African crowdfunding and showed that, albeit on small levels, crowdfunding can already be a valuable funding alternative for African entrepreneurs. The various stakeholders need to realize the potential of this innovative form of funding and provide the necessary macroeconomic environment as well as financial and non-financial support to scale crowdfunding activities on the continent. However, that does not mean that all crowdfunding processes should follow the processes that prevail in developed countries. By contrast, the development of a domestic African crowdfunding market should be adapted to the local conditions such as the prevalence of mobile technologies. Finally, the results of the study do not imply that traditional funding sources are obsolete for Africa. While crowdfunding can contribute to mitigate the early-stage funding gap for African entrepreneurs, those ventures will eventually require further, more traditional funding sources at later stages of their development.

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Appendix A

African CFPs as of March 2017

Platform Name	Country	Model	Founded	Active / Inactive	URL
1. 234Give	Nigeria	Donation	2012	inactive	http://234give.com/
2. Akabbo	Uganda	Donation	2014	active	http://akabbo.ug/
3. backabuddy	South Africa	Donation	2007	active	https://www.backabuddy.co.za/
4. Cfundin	Nigeria	Debt	2015	inactive	http://www.cfundin.com/
5. ChangeLivesNow	South Africa	Donation	2010	inactive	http://www.changelivesnow.co.za/
6. Citysoirée	South Africa	Reward	2010	active	http://www.citysoiree.co.za/
7. Donate NG	Nigeria	Donation	2014	active	https://donate-ng.com/
8. Edufunder	South Africa	Donation	2014	inactive	https://edufunder.xyz
9. Farmable	Ghana	Equity	2013	active	http://www.farmable.me/
10. Finofund	Nigeria	Reward	2014	inactive	http://www.finofund.com/
11. Fund4Crowd	Zimbabwe	Donation	2014	active	https://www.f4c.co.zw/
12. Funda Solva	Nigeria	Donation	2014	inactive	http://fundasolva.com/
13. FundFind	South Africa	Reward	2013	active	http://www.fundfind.co.za/
14. HelpFundNg	Nigeria	Donation	2015	inactive	http://www.helpfundng.com/
15. Islamic Relief SA	South Africa	Donation	1984	active	http://www.islamic-relief.org.za/
16. Jumpstarter	South Africa	Reward	2012	active	http://jumpstarter.co.za/
17. Kwikudi	Nigeria	Donation	2015	active	https://www.kwikudi.com/
18. Lelapa Fund	Kenya	Equity	2014	active	https://www.lelapafund.com
19. Lendico	South Africa	Debt	2013	active	https://www.lendico.com/
20. LiveStockWealth	South Africa	Equity	2014	active	http://www.livestockwealth.com/
21. M-Changa	Kenya	Donation	2012	active	http://www.changa.co.ke/
22. Malaik	Mauritius	Equity	2015	inactive	http://www.malaik.com/
23. NaijaFund	Nigeria	Donation	2015	active	https://www.naijafund.com/
24. Orange Collecte	Ivory Coast	Donation	2013	active	https://collecte.orange.com
25. PitchOffice	Nigeria	Equity	2013	active	http://pitchoffice.com/
26. Rainfin	South Africa	Debt	2012	active	https://rainfin.com/
27. Realty Africa	South Africa	Real Estate	2014	active	https://www.realtyafrica.com/
28. Ripple	South Africa	Donation	2015	inactive	https://www.ripple.org.za/
29. Rlabsmtoto	South Africa	Donation	2009	inactive	http://rlabsmtoto.org/
30. StartMe	South Africa	Reward	2012	active	http://www.startme.co.za/
31. The Sun Exchange	South Africa	Equity	2015	active	https://www.thesunexchange.com
32. Thundafund	South Africa	Reward	2012	active	http://www.thundafund.com
33. Trevolta	South Africa	Donation	2013	inactive	http://www.trevolta.com/
34. Tswanda	Zimbabwe	Donation	2014	active	https://www.tswanda.co.zw/
35. UCN	Uganda	Equity	2014	active	http://ucn.crowdfundhq.com/
36. Wealth Migrate	South Africa	Real Estate	2014	active	https://www.wealthmigrate.com/

Appendix B

Computation of the GCI based on World Economic Forum (2014)

Computation and indicators of the GCI 2014 / 2015. The computation is performed by aggregating the individual indicators to the corresponding pillar, the pillars to the corresponding subindices, and the subindices to the final competitiveness score. The percentage values represent the weight within the immediate parent category. The three subindices are weighted differently depending on the economic state of a country as indicated by the percentage range.

Basic Requirements	**20-60%**
Pillar 1 - Institutions	**25%**
A. Public Institutions	75%
Property Rights	
Intellectual property protection	
Diversion of public funds	
Public trust in politicians	
Irregular payments and bribes	
Judicial independence	
Favoritism in decisions of government officials	
Wastefulness of government spending	
Burden of government regulation	
Efficiency of legal framework in settling disputes	
Efficiency of legal framework in challenging regulations	
Transparency of government policymaking	
Business costs of terrorism	
Business costs of crime and violence	
Organized crime	
Reliability of police services	
B. Private Institutions	25%
Ethical behavior of firms	
Strength of auditing and reporting standards	
Efficacy of corporate boards	
Protection of minority shareholders' interests	
Strength of investor protection	
Pillar 2 - Infrastructure	**25%**
A. Transport Infrasturcture	50%
Quality of overall infrastructure	
Quality of roads	
Quality of railroad infrastructure	
Quality of port infrastructure	
Quality of air transport infrastructure	
Available airline seat kilometers	
B. Electricity and telephony infrastructure	50%
Quality of electricity supply	
Mobile telephone subscriptions	
Fixed telephone lines	
Pillar 3 - Macroeconomic Environment	**25%**
Government budget balance	
Gross national savings	
Inflation	
Government debt	
Country credit rating	
Pillar 4 - Health and primary education	**25%**
A. Health	50%
Business impact of malaria	
Malaria incidence	
Business impact of tuberculosis	
Tuberculosis incidence	
Business impact of HIV/AIDS	
HIV prevalence	
Infant mortality	
Life expectancy	
B. Primary education	50%
Quality of primary education	
Primary education enrollment rate	

Efficiency Enhancers **35-50%**

Pillar 5 - Higher education and training **17%**
- *A. Quantity of education* 33%
  - Secondary education enrollment rate
  - Tertiary education enrollment rate
- *B. Quality of education* 33%
  - Quality of the education system
  - Quality of math and science education
  - Quality of management schools
  - Internet access in schools
- *C. On-the-job training* 33%
  - Local availability of specialized research and training services
  - Extent of staff training

Pillar 6 - Goods market efficiency **17%**
- *A. Competition* 67%
  - Intensity of local competition
  - Extent of market dominance
  - Effectiveness of anti-monopoly policy
  - Effect of taxation on incentives to invest
  - Total tax rate
  - Number of procedures required to start a business
  - Time required to start a business
  - Agricultural policy costs
  - Prevalence of trade barriers
  - Trade tariffs
  - Prevalence of foreign ownership
  - Business impact of rules on FDI
  - Burden of customs procedures
  - Imports as a percentage of GDP
- *A. Quality of demand conditions* 33%
  - Degree of customer orientation
  - Buyer sophistication

Pillar 7 - Labor market efficiency **17%**
- *A. Flexibility* 50%
  - Cooperation in labor-employer relations
  - Flexibility of wage determination
  - Hiring and firing practices
  - Redundancy costs
  - Effect of taxation on incentives to work
- *B. Efficient use of talent* 50%
  - Pay and productivity
  - Reliance on professional management
  - Country capacity to retain talent
  - Country capacity to attract talent
  - Female participation in labor force

Pillar 8 - Financial market development **17%**
- *A. Efficiency* 50%
  - Availability of financial services
  - Affordability of financial services
  - Financing through local equity market
  - Ease of access to loans
  - Venture capital availability
- *B. Trustworthiness and confidence* 50%
  - Soundness of banks
  - Regulation of securities exchanges
  - Legal rights index

Pillar 9 - Technological readiness **17%**
- *A. Technological adoption* 50%
  - Availability of latest technologies
  - Firm-level technology absorption
  - FDI and technology transfer
- *B. ICT use* 50%
  - Internet users
  - Broadband Internet subscriptions
  - Internet bandwidth
  - Mobile broadband subscriptions

Pillar 10 - Market size **17%**
- *A. Domestic market size* 75%
  - Domestic market size index
  - GDP (PPP$ billions)
- *B. Foreign market size* 25%
  - Foreign market size index
  - Exports as a percentage of GDP

Innovation and Sophistication Factors **5-30%**

Pillar 11 - Business sophistication **50%**
- Local supplier quantity
- Local supplier quality
- State of cluster development
- Nature of competitive advantage
- Value chain breadth
- Control of international distribution
- Production process sophistication
- Extent of marketing
- Willingness to delegate authority

Pillar 12 - R&D Innovation **50%**
- Capacity for innovation
- Quality of scientific research institutions
- Company spending on R&D
- University-industry collaboration in R&D
- Government procurement of advanced technology products
- Availability of scientists and engineers
- PCT patent applications

Appendix C

Results of Regression Analysis for Kickstarter and Indiegogo Sample

Table C1

Predictors of Crowdfunding Activity for Total Sample (Indiegogo)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
	Log Crowdfunding Activity Indiegogo	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*
Log Global competitiveness score	7.950***					
Log Basic requirements		3.868*				
Log Efficiency enhancers		-0.619				
Log Innovation sophistication		4.842				
Log Institutions			4.218*			-2.118
Log Infrastructure			0.536			-1.744
Log Macroeconomic Environment			-0.367			0.833
Log Health and primary education			1.155			1.321
Log Higher education and training				0.991		-0.318
Log Goods market efficiency				-0.413		0.102
Log Labor market efficiency				0.089		-1.099
Log Financial market development				4.018*		6.835*
Log Technological readiness				1.623		2.476
Log Market size				-1.800**		-2.640**
Log Business sophistication					6.158*	-0.114
Log Innovation					0.623	1.455
Log GDP/capita	0.077	0.123	0.212	0.053	0.292†	0.120
Constant	-9.422***	-9.677***	-7.346**	-4.828†	-9.329***	-6.649†
R^2	0.513	0.575	0.582	0.754	0.554	0.802
Post hoc Power (1-β)	0.999	0.999	0.999	1	0.999	1
F	16.853***	10.166***	8.087***	11.838***	12.820***	6.562***
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	<10	<10	>10
N	35	35	35	35	35	35

N = 35; †p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

Table C2

Predictors of Crowdfunding Activity for Total Sample (Kickstarter)

	Model 1 *Log Crowdfunding Activity Kickstarter*	**Model 2** *Log Crowdfunding Activity Kickstarter*	**Model 3** *Log Crowdfunding Activity Kickstarter*	**Model 4** *Log Crowdfunding Activity Kickstarter*	**Model 5** *Log Crowdfunding Activity Kickstarter*	**Model 6** *Log Crowdfunding Activity Kickstarter*
Log Global competitiveness score	1.973**					
Log Basic requirements		0.560				
Log Efficiency enhancers		0.609				
Log Innovation sophistication		0.570				
Log Institutions			1.307*			0.673
Log Infrastructure			0.548			0.676
Log Macroeconomic Environment			0.181			0.697†
Log Health and primary education			-0.675*			-0.272
Log Higher education and training				-0.328		-0.065
Log Goods market efficiency				1.035		0.137
Log Labor market efficiency				-1.207†		-0.831
Log Financial market development				2.041*		1.384
Log Technological readiness				-0.878		-0.709
Log Market size				-0.357		-0.077
Log Business sophistication					2.548*	1.608
Log Innovation					-1.015	-1.923†
Log GDP/capita	-0.067	-0.046	-0.087	0.009	-0.027	-0.185†
Constant	-1.591*	-1.390*	-0.470	-0.337	-1.488*	-0.239
R^2	0.303	0.250	0.483	0.526	0.325	0.666
Post hoc Power (1-β)	0.925	0.715	0.991	0.992	0.914	0.998
F	6.963**	2.504†	5.426**	4.281**	4.971**	3.219**
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	<10	<10	>10
N	35	35	35	35	35	35

N = 35; †p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

Table C3

Predictors of Crowdfunding Activity for Low-Income African Countries (Indiegogo)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	Log Crowdfunding Activity Indiegogo	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*
Log Global competitiveness score	5.566*				
Log Basic requirements		2.352			
Log Efficiency enhancers		1.169			
Log Innovation sophistication		2.169			
Log Institutions			3.523		
Log Infrastructure			0.179		
Log Macroeconomic Environment			0.733		
Log Health and primary education			0.221		
Log Higher education and training				0.778	
Log Goods market efficiency				2.680	
Log Labor market efficiency				-1.180	
Log Financial market development				3.233	
Log Technological readiness				-0.276	
Log Market size				-1.890	
Log Business sophistication					8.833†
Log Innovation					-2.587
Log GDP / capita	-0.16	-0.121	-0.049	0.423	0.072
Constant	-4.974	-5.233	-4.761	-6.515	-7.720
R^2	0.283	0.263	0.317	0.651	0.358
Post hoc Power (1-β)	0.569	0.362	0.397	0.888	0.629
F	2.965†	1.158	1.113	2.666†	2.603†
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	not normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	<10	<10
N	18	18	18	18	18

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

Table C4

Predictors of Crowdfunding Activity for Low-Income African Countries (Kickstarter)

	Model 1 *Log Crowdfunding Activity Kickstarter*	**Model 2** *Log Crowdfunding Activity Kickstarter*	**Model 3** *Log Crowdfunding Activity Kickstarter*	**Model 4** *Log Crowdfunding Activity Kickstarter*	**Model 5** *Log Crowdfunding Activity Kickstarter*
Log Global competitiveness score	1.354†				
Log Basic requirements		0.139			
Log Efficiency enhancers		-0.194			
Log Innovation sophistication		1.395			
Log Institutions			1.279†		
Log Infrastructure			0.147		
Log Macroeconomic Environment			0.510		
Log Health and primary education			-0.568		
Log Higher education and training				0.447	
Log Goods market efficiency				1.344	
Log Labor market efficiency				0.150	
Log Financial market development				0.369	
Log Technological readiness				-0.741	
Log Market size				-0.661†	
Log Business sophistication					3.021*
Log Innovation					-1.176
Log GDP / capita	-0.054	-0.026	-0.140	0.323	0.012
Constant	-0.952	-1.020	-0.384	-3.321	-2.169
R^2	0.211	0.211	0.475	0.690	0.419
Post hoc Power (1-β)	0.410	0.276	0.704	0.940	0.752
F	2.002	0.870	2.170	3.181*	3.360*
Kolmogorov-Smirnov	not normal	not normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	<10	<10
N	18	18	18	18	18

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

Table C5

Predictors of Crowdfunding Activity for Middle-Income African Countries (Indiegogo)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	Log Crowdfunding Activity Indiegogo	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*
Log Global competitiveness score	10.848***				
Log Basic requirements		5.863*			
Log Efficiency enhancers		1.144			
Log Innovation sophistication		3.646			
Log Institutions			9.319**		
Log Infrastructure			-1.700		
Log Macroeconomic Environment			-3.321		
Log Health and primary education			0.287		
Log Higher education and training				4.396	
Log Goods market efficiency				-9.925	
Log Labor market efficiency				-0.224	
Log Financial market development				6.931†	
Log Technological readiness				1.000	
Log Market size				-1.433	
Log Business sophistication					0.725
Log Innovation					7.175
Log GDP/capita	-0.208	-0.109	0.303	-0.217	0.652
Constant	-11.077**	-11.417*	-6.614†	3.473	-12.555**
R^2	0.642	0.691	0.786	0.820	0.630
Post hoc Power (1-β)	0.992	0.982	0.998	0.994	0.970
F	11.660**	6.162**	7.366**	5.212*	6.813**
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	>10	<10
N	16	16	16	16	16

†p < 0.10: *p < 0.05; **p < 0.01; ***p < 0.001.

Table C6

Predictors of Crowdfunding Activity for Middle-Income African Countries (Kickstarter)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	Log Crowdfunding Activity Kickstarter	*Log Crowdfunding Activity Kickstarter*	*Log Crowdfunding Activity Kickstarter*	*Log Crowdfunding Activity Kickstarter*	*Log Crowdfunding Activity Kickstarter*
Log Global competitiveness score	2.443*				
Log Basic requirements		1.213			
Log Efficiency enhancers		-0.699			
Log Innovation sophistication		1.570			
Log Institutions			1.537		
Log Infrastructure			0.743		
Log Macroeconomic Environment			-0.399		
Log Health and primary education			-0.757		
Log Higher education and training				-0.745	
Log Goods market efficiency				0.861	
Log Labor market efficiency				-1.440	
Log Financial market development				2.788	
Log Technological readiness				-1.150	
Log Market size				-0.470	
Log Business sophistication					1.983
Log Innovation					-0.469
Log GDP/capita	-0.090	-0.008	-0.064	0.045	0.026
Constant	-1.966**	-2.060*	-0.117	-0.112	-1.733
R^2	0.372	0.359	0.600	0.535	0.315
Post hoc Power (1-β)	0.686	0.467	0.842	0.548	0.468
F	3.846*	1.543	2.995†	1.317	1.836
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		>10	<10	>10	<10
N	16	16	16	16	16

†p < 0.10: *p < 0.05; **p < 0.01; ***p < 0.001.

Table C7

Predictors of Crowdfunding Activity for Below Median Crowdfunding Activity African Countries (Indiegogo)

	Model 1 *Log Crowdfunding Activity Indiegogo*	**Model 2** *Log Crowdfunding Activity Indiegogo*	**Model 3** *Log Crowdfunding Activity Indiegogo*	**Model 4** *Log Crowdfunding Activity Indiegogo*	**Model 5** *Log Crowdfunding Activity Indiegogo*
Log Global competitiveness score	5.607**				
Log Basic requirements		0.705			
Log Efficiency enhancers		2.744			
Log Innovation sophistication		1.995			
Log Institutions			5.058*		
Log Infrastructure			-0.720		
Log Macroeconomic Environment			-0.036		
Log Health and primary education			-0,166		
Log Higher education and training				2.527	
Log Goods market efficiency				-1.180	
Log Labor market efficiency				5.025*	
Log Financial market development				-0.844	
Log Technological readiness				2.345	
Log Market size				-0.917	
Log Business sophistication					4.924†
Log Innovation					-0.044
Log GDP/capita	-0.255	-0.184	-0.086	-0.098	-0.094
Constant	-4.862*	-4.926*	-4.376†	-7.339*	-5.069**
R^2	0.451	0.591	0.503	0.822	0.600
Post hoc Power (1-β)	0.883	0.943	0.758	0.999	0.976
F	6.168*	4.697*	2.428†	6.615**	6.999**
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	<10	<10
N	18	18	18	18	18

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

Table C8

Predictors of Crowdfunding Activity for Below Median Crowdfunding Activity African Countries (Kickstarter)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	Log Crowdfunding Activity Kickstarter	*Log Crowdfunding Activity Kickstarter*	*Log Crowdfunding Activity Kickstarter*	*Log Crowdfunding Activity Kickstarter*	*Log Crowdfunding Activity Kickstarter*
Log Global competitiveness score	1.045**				
Log Basic requirements		0.041			
Log Efficiency enhancers		-0.549			
Log Innovation sophistication		1.252†			
Log Institutions			0.484		
Log Infrastructure			0.218		
Log Macroeconomic Environment			0.081		
Log Health and primary education			0.001		
Log Higher education and training				0.720†	
Log Goods market efficiency				-0.407	
Log Labor market efficiency				-0.405	
Log Financial market development				-0.214	
Log Technological readiness				0.802	
Log Market size				0.152	
Log Business sophistication					0.322
Log Innovation					0.488
Log GDP/capita	-0.053	0.007	-0.049	-0.115†	-0.014
Constant	-0.707*	-0.670*	-0.354	0.727*	-0.601**
R^2	0.423	0.491	0.393	0.726	0.492
Post hoc Power (1-β)	0.843	0.807	0.539	0.972	0.874
F	5.490*	3.139†	1.554	3.784*	4.523*
Kolmogorov-Smirnov	not normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	>10	<10
N	18	18	18	18	18

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

Table C9

Predictors of Crowdfunding Activity for Above Median Crowdfunding Activity African Countries (Indiegogo)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	Log Crowdfunding Activity Indiegogo	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*	*Log Crowdfunding Activity Indiegogo*
Log Global competitiveness score	-0.868				
Log Basic requirements		-0.834			
Log Efficiency enhancers		0.125			
Log Innovation sophistication		0.204			
Log Institutions			-0.279		
Log Infrastructure			-0.568		
Log Macroeconomic Environment			-0.681		
Log Health and primary education			0.213		
Log Higher education and training				-1.326	
Log Goods market efficiency				-1.572	
Log Labor market efficiency				-0.550	
Log Financial market development				2.346	
Log Technological readiness				1.067	
Log Market size				-0.722	
Log Business sophistication					-0.149
Log Innovation					0.233
Log GDP / capita	0.539***	0.554**	0.625*	0.438*	0.493***
Constant	-0.612	-1.134	-0.696	-0.111	-1.493
R^2	0.622	0.622	0.649	0.703	0.614
Post hoc Power (1-β)	0.995	0.967	0.962	0.953	0.982
F	12.350***	5.356**	4.443*	3.382*	7.423**
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	homosc. errors
VIF		<10	<10	<10	<10
N	18	18	18	18	18

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

Table C10

Predictors of Crowdfunding Activity for Above Median Crowdfunding Activity African Countries (Kickstarter)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	Log Crowdfunding Activity Kickstarter	*Log Crowdfunding Activity Kickstarter*	*Log Crowdfunding Activity Kickstarter*	*Log Crowdfunding Activity Kickstarter*	*Log Crowdfunding Activity Kickstarter*
Log Global competitiveness score	0.887				
Log Basic requirements		-0.981			
Log Efficiency enhancers		2.756			
Log Innovation sophistication		-1.752			
Log Institutions			-0.159		
Log Infrastructure			1.403†		
Log Macroeconomic Environment			0.506		
Log Health and primary education			-1.461**		
Log Higher education and training				0.616	
Log Goods market efficiency				-0.264	
Log Labor market efficiency				-0.411	
Log Financial market development				3.642**	
Log Technological readiness				-3.119**	
Log Market size				-0.246	
Log Business sophistication					3.122†
Log Innovation					-2.521
Log GDP / capita	-0.072	-0.026	-0.161	0.072	-0.084
Constant	0.031	0.870	1.937†	-0.894	0.040
R^2	0.04	0.167	0.645	0.786	0.221
Post hoc Power (1-β)	0.100	0.213	0.959	0.996	0.350
F	0.316	0.652	4.363*	5.255**	1.327
Kolmogorov-Smirnov	residuals normal	residuals normal	residuals normal	residuals normal	residuals normal
RESET Test	correctly spec.	correctly spec.	correctly spec.	correctly spec.	correctly spec.
White Test	homosc. errors	homosc. errors	homosc. errors	homosc. errors	heterosc. errors
VIF		<10	<10	<10	<10
N	18	18	18	18	18

†p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001.

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