TOTO Seminar on

Crowdfunding: Past Research, Future Directions
June 6, 2013

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Introduction

Crowdfunding: Past Research, Future Directions was hosted on June 6, 2013 by University College Cork's Technology-Enabled Organisational Transparency and Openness Project (TOTO), co-located with the European Conference for Information Systems (ECIS) 2013 in Utrecht, NL, and funded by the Lewis Charitable Foundation (USA).

The purpose of the seminar was to stimulate discussion among researchers interested in various crowdfunding phenomena like peer-lending, collective investment and raising capital through open calls. The seminar focused on several key themes:

1. defining, conceptualising and bounding crowdfunding phenomena,
2. identifying key phenomenological, methodological and theoretical gaps in the crowdfunding literature,
3. articulating an agenda for future crowdfunding research (What kinds of crowdfunding should the IS community be researching? What kinds of questions should we be asking? What theoretical lenses should we be using? What methods? Etc.),
4. sharing experiences of doing crowdfunding research, funding/publication strategies, etc.

This document provides a summary of the seminar discussion, as well as the position statements provided in advance by some of the participants (Appendices 1 and 2), and the TOTO working paper that framed the discussion (Appendix 3).

Seminar Format and Participants

The seminar lasted for 90 minutes. The first 10 minutes included a brief introduction by Joseph Feller, which laid out the goals of the seminar and highlighted key issues up for discussion. These key issues reflected concerns identified in a working paper reviewing crowdfunding literature by members of the TOTO project team (Appendix

3). The remainder of the seminar comprised a semi-structured discussion of these key issues by the participants (listed in Table 1), as well as a collaborative exploration of emerging theoretical insights and contrasting perspectives.

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Table 1. List of Crowdfunding Seminar Attendees

Summary of Discussion

The first issue discussed concerned the definition of crowdfunding and its subfields. The working paper on crowdfunding by members of the TOTO project team defined the phenomena as the "*behavior where individuals, rather than institutions, use digital technologies to make financial contributions to people, projects, or businesses in response to either financial or developmental commitments from those people, projects, or businesses*". This definition was contrasted with the crowdfunding definition offered within the European Crowdfunding Framework[1] (brought to attention of the group by Robin Teigland), i.e. "*a collective effort of many individuals who network and pool their resources to support efforts initiated by other people or organizations*". All participants agreed that, regardless of the exact wording of a definition, the key defining features were the collective nature of the funding, and the potential for funders to participate outside of one single organizational boundary.

The working paper had subdivided crowdfunding into lending, equity investment, and patronage. Several participants suggested that referring to philanthropic patronage and business or product-oriented patronage did not capture meaningful differences between these forms of crowdfunding. This was discussed by the group and a consensus emerged that patronage should be further decomposed into the separate categories of Charitable Patronage and Rewards-based Patronage (see Figure 1).

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[1] De Buysere, K., Gajda, O., Kleverlaan, R., and Marom, D. (2012) A Framework for European Crowdfunding, www.crowdfundingframework.eu.

Figure 1: Proposed taxonomy of crowdfunding phenomona

There was concern among the group in response to observations made in the working paper that few studies of crowdfunding investigated phenomena other than lending. The group was in agreement that all of the forms of crowdfunding discussed already were relevant for Information Systems (IS) research, and that more research on equity investment and patronage (both charitable and rewards-based) is necessary.

The final portion of discussion surrounded the technical aspect of research on crowdfunding. The working paper had categorised research according to a social, economic, legal/regulatory, or technical focus. The group agreed that a technical focus should surround the actual platforms that facilitate these forms of crowdfunding. As such, there was discussion whether the platforms themselves should be given more emphasis in IS research on crowdfunding. This led to three further avenues of discussion. The first related to the actual novelty of the phenomena in question and older examples of similar phenomena were given that predated the Internet.The second related to the ability of social media platforms with no official crowdfunding purpose to accommodate crowdfunding-like behaviour, as well as the integration of crowdfunding and social media. The group discussed the social media-like behaviour taking place on crowdfunding platforms as investment-

seekers seek to build connections and establish a reputation to encourage investment. This led to the third and final avenue of discussion, namely the legal complexities of crowdfunding. Several participants suggested that the regulatory demands are likely to require increased transparency among funders and fundees as the phenomena increases in popularity and becomes more mainstream. A discussion of the growth in crowdfunding and crowdsourcing practices among financial institutions in both Australia and Sweden served to reinforce this need for regulatory clarity and funder/fundee transparency.

Appendix 1. Seminar Position Statement by Yu Lei & Ali Alper Yayla

The effect of social influence on decision-making: The case of crowdfunding

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One of the significant research streams in the crowdfunding literature examines the decision making process of the individuals who invest in crowdfunding projects. A majority of the extant studies investigate the effect of the crowd in this decision making process. These studies converge on the herd behavior of the participating individuals. That is, individuals invest in projects by looking at the crowd's decision rather than using a rational approach of collecting data, analyzing problems, comparing alternatives, and making the optimum decision. This herd behavior is not unique to the crowdfunding community. Similar examples can be found in the economics, psychology, and consumer behavior literatures. The main reason behind the herd behavior is the attempt to make the right choice by minimizing the decision costs rather than optimizing the decision outcome. Although imitating others' behavior by itself is not necessarily an irrational behavior, as more decision makers imitate the common decision, the less information can be gathered from each decision, and eventually, imitation would lead to economically irrational outcomes.

We submit that the current findings of the crowdfunding studies provide an incomplete picture of the decision process of participating individuals since these studies mostly focus on the effect of the crowd and the herd behavior and thus analyze the phenomenon only from the *economic decision* perspective. To have a complete understanding, we have to consider the *social decision* perspective as well. That is, we need to investigate the social influence in the decision making process and look at how individuals' social networks affect their decision in crowdfunding. While the current studies agree that decision makers follow the crowd, how experts, family, friends and similar others affect individuals' decision making is yet to be studied. Or in one simple question; how would the social influence affect the crowdfunding decision making? Social influence has been an intriguing subject in the social psychology domain. Early studies published in the 1940s examined how individuals confirm to others' decision and how individuals compare themselves to similar others during decision making. Given that crowdfunding projects vary from economically rational equity lendings to socially responsible donations, we believe that juxtaposition of different reference groups and different types of crowdfunding and comparing and contrasting the effects of these reference groups would provide both theoretical and practical insights.

Appendix 2: Seminar Position Statement by Claire Ingram, Robin Teigland and Emmanuelle Vaast

Is Crowdfunding Doomed in Sweden? An Empirical Examination of Institutional Logics, Perceived Affordances, and IT Entrepreneur Behaviors

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Crowdfunding, which offers promising opportunities for start-ups to gain access to financial capital, has gained momentum in the last few years. In May 2013, there were around 800 crowdfunding platforms worldwide. Crowdfunding initiatives raised an estimated $2.6 billion in 2012 alone, including about $945 million in Europe (Massolution, 2012). The idea behind crowfunding is that by appealing to a global community (the crowd), anyone who has access to the Internet should be able to fund his/her start-up. In principle, then, crowdfunding puts *what* you know ahead of *whom* and thus challenges the age-old adage, "It's not what you know, but who you know." Yet, despite an increasing number of crowdfunding platforms and growing interest by the media as well as government actions fuelling crowdfunding momentum worldwide, it remains unclear whether this new, technologically-enabled, funding model will actually become fully embraced by *entrepreneurs* as a viable alternative to traditional funding models. In fact, in Sweden, although several crowdfunding platforms have become available, at least one Swedish institutional actor expressed concern that the phenomenon is not catching on in Sweden, least of all among IT entrepreneurs. This observation is especially surprising considering that Sweden is the world's leading country in terms of ICT networked readiness and the world's second most entrepreneurial country (Global Economic Forum, 2012).

Our research examines this empirical puzzle in light of two complementary theoretical literatures: institutional entrepreneurship and technology affordances. We propose that their integration will provide a useful lens with which to investigate the crowdfunding phenomenon for three related reasons. First, at the heart of crowdfunding are the crowdfunding platform providers who drive the implementation of the crowdfunding model by building and marketing platforms in a number of countries. These platform providers are a clear example of institutional entrepreneurs, or actors who initiate changes that contribute to transforming existing, or creating new, institutions (DiMaggio, 1988). Second, the crowdfunding platforms are Internet-based technologies that enable an entrepreneur to access a crowd of individuals anywhere across the globe to raise external financing to fund his/her venture as opposed to through the traditional means of soliciting a small group of local investors (Belleflamme *et al.*, 2012). Thus, these platform technologies afford entrepreneurs and other crowdfunding actors certain "features", i.e., what the

creators and designers of the technology intended it to be used for (Majchrzak & Markus, 2012), yet these features may not be perceived – or may be built upon – allowing for different "affordances" from those the creators intended. We believe that the integration of these two literatures will provide a fruitful lens with which to investigate the dynamic interactions between institutional entrepreneurs and other institutional actors in the field and the technologies they use as well as bring about theoretical contributions.

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Majchrzak, A. and Markus, M.L. 2012. Technology Affordances and Constraints in Management Information Systems (MIS). In E. Kessler (ed.) *Encyclopedia of Management Theory*, Sage Publications.

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Appendix 3. TOTO Working Paper V.2

From the Wisdom to the Wealth of Crowds: A Metatriangulation of Crowdfunding Research

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1.   Introduction

The peer production (cf. Benkler 2002) of software (e.g. Linux), content (e.g. Wikipedia) and meta-content (e.g. delicious.com) has challenged our understanding of the production of knowledge goods. Likewise, the crowdsourcing (cf. Howe 2008) of micro-tasks (e.g. Amazon Mechanical Turk), design (e.g. Threadless.com) and problem solving (e.g. InnoCentive) has forced us to reconsider the nature of work, creativity and innovation. In all of these phenomena, Internet technologies intertwine with novel social and legal mechanisms to enable new modes of organizing human capability, and the study of these complex systems has become an important theme in Information Systems (IS) research.

More recently, it has become evident that knowledge and capability are not the only distributed resources that can be aggregated through such systems. Specifically, over the last several years we have observed the emergence of an ecosystem of "crowdfunding" environments, in which communities of funders collectively support new business ventures, social initiatives and creative works. In short, we've seen that beyond the wisdom of crowds (c.f. Surowiecki 2004), the wealth of crowds can also be tapped on a global scale.

Both the crowdfunding phenomenon, and the body of research investigating it, have emerged suddenly and grown rapidly. Indeed, the crowdfunding body of research has expanded at a rate that we are already seeing efforts to review and synthesize this literature (e.g. Bachmann et al. 2011). We argue that the complexity and instability of the phenomenon, combined with the diversity of both scholarly and popular treatments of the subject, have made it challenging to maintain a cohesive high-level view of crowdfunding. Without such an understanding capable of transcending specific paradigms and perspectives, we suggest there is a danger that important practical and intellectual concerns and opportunities may be overlooked.

Thus, the objective of this study is to take stock of the growing crowdfunding literature – its characteristics, strengths and weaknesses – to identify fruitful avenues of inquiry for the IS research community. This is achieved through a metatriangulation (c.f. Lewis and Grimes 1999) of 100 peer-reviewed research artifacts. The next section of the paper describes the theoretical and methodological foundations of the study, defining the phenomenon of interest and describing the paradigmatic lenses, data gathering and data analysis methods employed. This is followed by two sections describing the study's findings. First, we provide a frequency analysis of the research artifacts within each of the paradigmatic lenses. Second, we present the results of combining individual paradigmatic views into a single multiparadigm perspective. This multiparadigm perspective serves to both illustrate the areas of the crowdfunding research space that are underrepresented, as well as identifying possible methods for addressing these issues by drawing on comparisons across paradigms. The paper continues with a discussion of the metaconjectures that arise from our findings, and we provide suggestions towards a more comprehensive agenda for future crowdfunding research.

2.   Theoretical Foundations and Research Method

When a research area is investigated across a range of separate paradigms, integrating the findings from such research can represent a significant challenge (Schultz and Hatch 1996). For this reason, this study employs a metatriangulation of existing crowdfunding research artifacts. Metatriangulation allows existing research within diverse research paradigms to be synthesized and analyzed as one unified data set (Lewis and Grimes 1999). Such unified analysis can establish theoretical correspondence across paradigms, meaning findings can be carried over from one paradigm to another, so facilitating the discovery and reconciliation of areas of theoretical conflict or neglect (Gioia and Pitre 1990). This process of discovering and resolving theoretical conflict in a way that can withstand multiparadigmatic scrutiny can be an essential mechanism for creating meaningful scientific breakthroughs (Kuhn 1970).

The metatriangulation performed in this study utilizes the framework presented by Lewis and Grimes (1999), and later refined by Jasperson et al. (2002). This framework involves three high-level stages, the first of which specifies that 'groundwork' be performed. Groundwork comprises (1) defining the phenomenon of interest in a way that transcends individual research paradigms, (2) defining paradigmatic lenses through which to view existing research artifacts, and (3) gathering a metatheoretic sample of research artifacts. The execution and results of these three activities are described in the remainder of this section.

2.1   Defining the Phenomenon of Interest

Crowdfunding is funding behavior that bypasses conventional intermediaries by directly connecting financiers and finance seekers (Belleflamme et al. 2010, Ley and

Weaven 2011, Ordanini et al. 2011). The crowdfunding concept originates within the broader domain of crowdsourcing, in which crowds are leveraged to obtain ideas and effort to support organizational activities (Belleflamme et al. 2011, c.f. Howe 2008). Crowdfunding manifests significant new patterns of behavior in personal and business financing (Ordanini et al. 2011). This behavior has been the subject of scrutiny from a wide range of scholarly perspectives; e.g. the impact of borrowers' photographs (Pope and Syndor 2011) and personal narratives (Herzenstein et al. 2011) on lender behavior, the social basis for compassionate lending (Heller and Badding 2012), the economic impact of specific legislation (Kitchens and Torrence 2012), fundraising for scientific research (Wheat et al. 2013), and the role of crowdfunding in innovation (Singer et al. 2011).

In this paper, we use the umbrella term crowdfunding to refer to three related phenomena:

1) Systems of collective lending: investment: peer-to-peer *lending at interest*

2) Systems of collective equity investment: peer-to-peer *investing in return for equity/future income*

3) Systems of collective patronage: peer-to-peer *funding given without expectation of return or with expectation of token return* (e.g. product pre-sales, in-product acknowledgement, etc.)

Table 1 provides examples of these different crowdfunding systems.

Table 1. Examples of Crowdfunding Environments		
Collective Lending	**Collective Equity Investment**	**Collective Patronage**
www.lendingclub.com	www.aswarmofangels.com	www.kickstarter.com
uk.zopa.com	www.fundedbyme.com	angelshares.com
www.prosper.com	www.microventures.com	www.feedthemuse.net
www.comunitae.com	www.crowdcube.com	www.kiva.org[2]
www.isepankur.ee	www.startupvalley.com	www.sellaband.com
www.babyloan.org	www.earlyshares.com	www.emphas.is

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[2] Although the funding mechanism at www.kiva.org is a loan, there is no return on investment and thus Kiva is a patronage site by our definition.

Examples of systems of collective lending include *Prosper.com* and *Lending Club*. These platforms allow peers to request small to medium loans for personal projects, such as the repayment of student loans or home/business premise improvement. This approach introduces new lender/borrower dynamics from those of traditional personal financing domains, due to their varying financial, social, and ideological motivations (Bachmann et al., 2011). Most notably, these platforms introduce the capacity to obtain loans to broad customer segments beyond those of traditional microfinance, such as those individuals who lack credit history, or who would be considered high-risk to traditional financial institutions (Yum et al., 2012). These platforms demonstrate high rates of growth; for example *Prosper.com* and *Lending Club* alone exceeded US$50 million in February 2012, representing a more than 100% growth rate from the previous year (Renton, 2012).

Examples of systems of collective equity investment can vary from those of a purely financial nature to less traditional dynamics, such as when investors assume some creative or strategic say in the future of a business. *Funded By Me* presents an example of a primarily financial platform, the goal of which is to provide a means for venture capitalists and entrepreneurs to interact and negotiate financial contributions in return for a stake in the borrowers' enterprise. An example of a less traditional dynamic is *A Swarm of Angels*, an open source film project in which financial investors have input on issues such as script development, casting, and distribution.

Examples of systems of collective patronage include those platforms where a financial contribution is made to the development of a product/service simply in order to ensure that the proposed product/service can be developed. An example of this is *Kickstarter.com*, in which products/services and the start-up capital they require are presented to a community, with the intention that community will contribute sufficiently to enable the development of that product and/or service. Other examples are more specific to certain project domains, such as *Sellaband.com*. On this platform music artists can request funding for music recording, record releases, promotion, touring, and/or specialist limited release products. For both *Kickstarter.com* and *Sellaband.com*, investors often receive token rewards – such as t-shirts, posters, gift boxes, or special access to live performances or events – rather than formal returns on investment.

These systems manifest a number of advantages over traditional funding mechanisms, including: (1) financiers and finance seekers can easily post and search for information, while completing transactions on the online platforms with lower transaction costs (Lin 2009); (2) low transaction costs make very small transactions feasible (Chen and Han 2012); (3) multiple microloans may be pooled together to fund projects which require a large fund while reducing the risk of lending; and (4) online authentication and information search helps to mitigate information asymmetry between financiers and finance seekers, so reducing lending/investment risks and the expansion of lending/investment practices beyond the traditional circle of acquaintances (Lin et al. 2009). Thus, it is not surprising that

crowdfunding systems have witnessed significant collective growth in the past five years. Early reports as of March 2008 suggested that, at that time, over US$500 million in loans had originated from twenty crowdfunding platforms worldwide (Ashta and Assadi, 2010). A more recent report from Massolution (2013) suggests that US$2.7 billion was raised in 2012 and a further US$5.1 billion is forecast for 2013. Such growth is supported by new legislation facilitating crowdfunding, such as the JOBS act introduced in the USA in 2012 (Kitchens and Torrence 2012, Stemler 2013).

In order to bound this diverse range of behavior in a way that lends itself to multiparadigmatic inquiry, it is important not to focus on characteristics specific to only certain forms of crowdfunding. Put differently, a definition must not unnecessarily exclude behavior by defining crowdfunding at too low a level. However, it is equally important to bound the concept of crowdfunding in such a way that makes it is clear what forms of behavior should not be included. Thus, crowdfunding is defined as *behavior where individuals, rather than institutions, use digital technologies to make financial contributions to people, projects, or businesses in response to either financial or developmental commitments from those people, projects, or businesses*. This techno-centric definition does not restrict crowdfunding to specific forms, yet means that only behavior relevant to IS be considered (c.f. Benbasat and Zmud 1999, Orlikowski and Iacono 2001).

2.2   *Focusing Paradigmatic Lenses*

Four paradigmatic lenses are presented through which to view crowdfunding research. Each of these lenses represents one key dimension across which studies may vary according to the goals and positioning of the study. We note that in our application of metatriangulation methods, this study focuses on analyzing the research studies themselves (research metadata) rather than the studies' findings (research data).

The first paradigmatic lens is *Type of Crowdfunding Studied.* Several forms of crowdfunding are evident. As described in the introduction of this paper, we characterize the dominant forms of crowdfunding in terms of two types of investment (debt-based and equity-based) and of patronage (unrewarded or with token reward). We implement this lens using a taxonomy of three terms: *lending*, *equity* and *patronage*.

The second paradigmatic lens is *Primary Focus of Study*. Investigations of crowdfunding have focused on a variety of characteristics and dynamics within the phenomena, ranging from concrete technical architectures to highly abstract socio-cultural processes. Thus, for out first lens we employ Peng and Nunes' (2007) high-level taxonomy for the analysis of macro-level environmental phenomena: *social*, *technical*, *economic*, and *political* (*legal*) (Peng and Nunes 2007).

The third paradigmatic lens is *Study Design*. This lens considered whether the sample research artifact was *empirically tested*, or represented *non-empirical* conceptualization/theorizing. This lens was selected as significant, as the empirical validation and practical grounding of IS research affords theoretical findings a level of reliability that differentiates it from purely conceptual work (Benbasat and Zmud 1999, Hevner 2007, Roseman and Vessey 2008).

The fourth paradigmatic lens is *Type of Theory Developed*. Studies typically seek to describe phenomena at varying levels of detail according to the underlying philosophical assumptions and the maturity of the subject matter (Weick 1995), as well as the practical demands of the area (Hevner et al. 2004). For this reason, the final paradigmatic lens concerned the type of theory developed by sample research artifacts. This lens employed a taxonomy based upon the five types of theory identified by Gregor (2006). According to this perspective, theories for *analysis* (Type 1) provide a description of the phenomenon of interest, with no predictions or causal relationships made. Theories for *explanation* (Type 2) differ from theories for analysis by providing a reason as to how, why and when things happened. Theories for *prediction* (Type 3) differ from theories for explanation, as they don't seek to explain existing phenomena, but rather seek to forecast the future outcomes of existing trends and preconditions. Theories for *explanation and prediction* (Type 4) combine many of the characteristics of Types 2 and 3 theories by seeking to use causal explanations of existing phenomena as a means of predicting the development of less mature systems of a similar nature. Lastly, theories for *design and action* (Type 5) seek to translate descriptive/normative knowledge into prescriptive/goal-driven guidelines for the construction working artifacts.

2.3   Collecting the Metatheoretic Sample

Metatriangulation requires the collection of a suitable metatheoretic sample, to be systematically interpreted through multiple lenses (Lewis and Grimes 1999, Jasperson et al. 2002). The multidisciplinary nature of the field of crowdfunding research meant that adopting a search strategy limited to a predefined set of outlets could have produced a non-representative sample of research artifacts. Thus, the approach taken was to exhaustively search major multi-disciplinary databases (JSTOR, EBSCO, Web of Knowledge, ACM Digital, Science Direct and the AIS Electronic Library) using search terms, synonyms and variants identified *a priori* from crowd funding research. Databases were then re-queried using terms that emerged from analyzing the initial search results. Table 2 summarizes the 228 search terms used in the collection of the metatheoretic sample.

Table 2. List of search terms used in the collection of the metatheoretic sample	
A Priori Search Terms	35 search phrases resulted from combining the following prefixes and suffixes: **Prefixes:** Crowd, Peer to Peer, Peer-to-Peer, P2P, Person to Person, Person-to-Person, Social **Suffixes:** Funding, Lending, Investing, Borrowing, Banking For all 35 phrases: single word, space separated multi-word, and hyphen separated multi-word variants were searched, as well as searches using the constituent prefix and suffix joined with a boolean AND flag. All searches were case insensitive.
Emergent Search Terms	"Micro loan" and "Micro lend" (plus all variants as described above) 20 additional combinations using the prefixes: People-to-People, Collective, Consumer-to-consumer, C2C in combination with the *a priori* suffixes (plus all variants as described above)

Searches were performed manually for each term in each database. Individual results were independently assessed at the title and abstract level by two researchers, disagreements in assessment were resolved, and only relevant research artifacts were logged, producing an initial sample of 249 research artifacts. This sample was then independently assessed at the paper content level by two researchers, disagreements in assessment were resolved, and research artifacts in which (1) the subject matter was too far removed from the previously defined phenomenon of interest, or (2) no new theoretical/empirical knowledge was presented (e.g. book reviews) were excluded. This refinement led to the removal of 149 studies from the sample, resulting in a final data set of 100 research artifacts. The majority of publishing outlets contained only one artifact, three outlets had a higher concentration of crowdfunding research publications (see Table 3), all notable as indicators of crowdfunding interest within the IS research community.

Research artifacts were then coded according to the taxonomy for each individual paradigmatic lens. This allowed high-level patterns and trends within each of the paradigms to be identified. A multiparadigmatic perspective was then developed by investigating interactions between the taxonomies from different paradigmatic lenses. This analysis served to dig deeper into the interdependencies in existing crowdfunding research, as well bringing to light the implications of existing epistemological and methodological imbalances for the types of research being produced.

Table 3. List of concentrated publishing outlets	
Number of artifacts	**Outlet**
8	*International Conference on Information Systems*
4	*Americas Conference on Information Systems,*
3	*Electronic Commerce Research and Applications*

3. Findings from Intra-paradigm Analysis

This section presents accounts of the sample research artifacts according to each individual paradigm. This is done to perform the 'paradigm bracketing' that must precede 'paradigm bridging' (c.f. Lewis and Grimes 1999, Jasperon et al. 2002). This means that before a multiparadigm perspective can be developed for crowdfunding research, such research must first be viewed from the perspective of each paradigm in isolation. This singular perspective allows distinguishing characteristics of the research to be identified that may later be used to identify symmetries, asymmetries, and interactions across paradigms.

3.1 Type of Crowdfunding Studied

The sample was found to include research artifacts studying each of the three types of crowdfunding behavior identified *a priori*. The distribution of research artifacts according to types of crowdfunding studied is illustrated in Figure 1. This distribution demonstrates that lending was the most popular form of crowdfunding studied, which represented 62 of the 100 artifacts in the final sample. A roughly equal proportion of artifacts studied equity investment and patronage, with studies of equity investment accounting for 21 artifacts, and studies of patronage accounting for 17 artifacts.
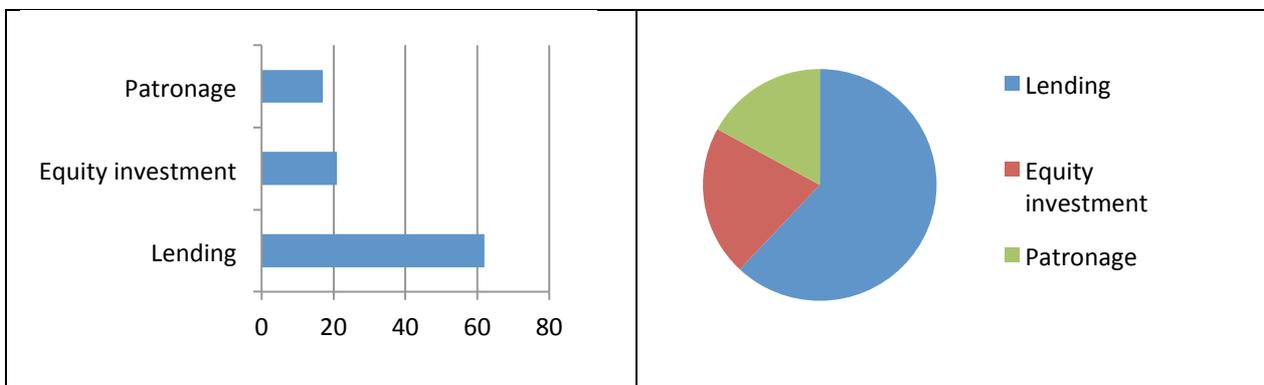

Figure 1.   Frequencies of research artifacts according to the type of crowdfunding studied

The sample demonstrated a range of crowdfunding behaviors within each of the categories. For example, a literature review of crowdfunding behavior associated with lending by Wang and Greiner (2011) characterized such lending along two dimensions. The first dimension concerned whether lenders and borrowers were strangers, e.g. on Lending Club where loans are offered to any interested party, or whether lenders and borrowers possessed existing relationships, e.g. on GreenNote where friends and family members help students fund third level education. The second dimension concerned whether the motivation for lenders was economic, e.g. on Prosper.com where borrowers are evaluated and graded in terms of credit risk and loans are structured accordingly, or whether the motivation for lenders was philanthropic, e.g. on Kiva.org where lenders are encouraged to lend to those borrowers most in need. The same two dimensions can equally be applied to each of the other two forms of crowdfunding behavior. Research artifacts studying crowdfunding behavior associated with both equity investment (e.g. Ley and Weaven 2011) and patronage (Shane and Cable 2002) illustrate that the existence of existing social relationships between investors and borrowers is an important determinant of the nature of the crowdfunding behavior. Similarly, artifacts also illustrate that crowdfunding behavior associated with both equity investment (Pasewark and Riley 2010) and patronage (Gambardella 2012) can be motivated by a range of economic and philanthropic investor intentions.

Despite such possible further decomposition of crowdfunding behaviors, the distribution of artifacts within the three categories was relatively straightforward. Where investments are made in return for interest-based financial repayment, those studies were classified as lending. Where investments are made in return for some degree of ownership of a business or organization, such as a stake of that business or organization's future earnings, those studies were classed as equity investment. Lastly, where investments are made without direct financial repayment, or repaid without interest (e.g. Kiva), those studies were classed as patronage. Table 4 lists frequently investigated sites in each category.

Table 4. Frequently Investigated Sites across Crowdfunding Categories

Lending	Equity Investment	Patronage
Funding Circle	Artemis Eternal	Bandstocks
Lending Club	Crowdcube	Crowdfunder.com
MyC4	earlyshares.com	Globalgiving.com
Popfunding.com	Everyclick	IndieGoGo
Ppdai.com	incrowdcapital.com	Kickstarter
Prosper.com	ProFounder	RocketHub
Smava.de	Seedrs	Sellaband
Virginmoney	Startupvalley.com	Slicethepie
Zopa.co.uk	thefundersclub.com	Kiva.org

3.2 Primary Focus of Study

The sample was found to include research artifacts with each of the four areas of primary focus identified *a priori*. The distribution of research artifacts according to primary focus is illustrated in Figure 2. This distribution demonstrates a strong focus upon economic issues, which represented 50 of the 100 artifacts in the final sample. The second most frequent primary focus for studies was social, which represented 25 artifacts, while legally and technically focused studies accounted for only 13 artifacts and 12 artifacts, respectively.
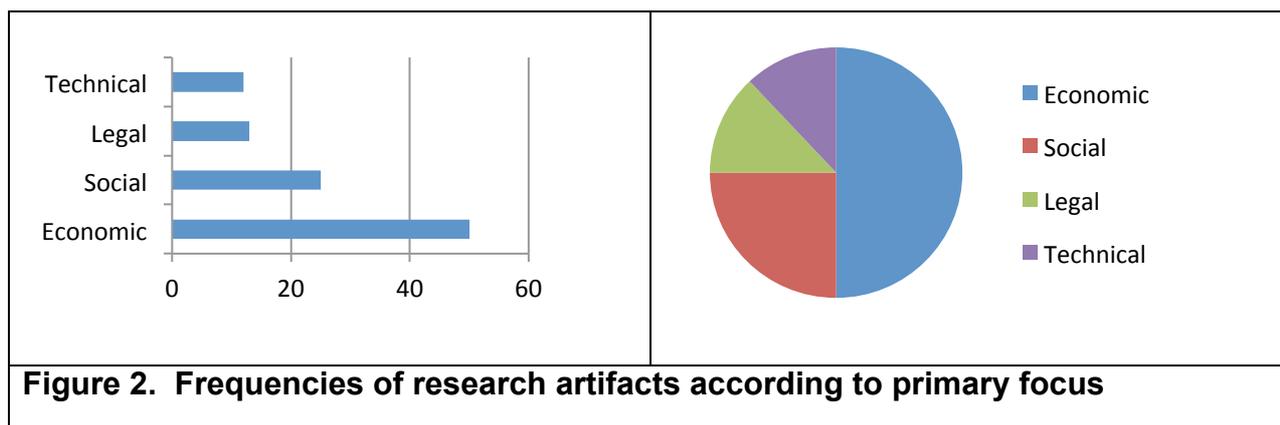
Figure 2. Frequencies of research artifacts according to primary focus

Unlike the taxonomy employed to determine the types of crowdfunding behavior studied, in which distinctions were relatively neat, the taxonomy for the primary focus of research artifacts required more subjective classification judgments based upon emphasis, rather than inclusion. This reflects the difficulty encountered when seeking to completely isolate social, technical, economic and regulatory concerns from one another (Peng et al. 2009).

This meant that a set of distinguishing criteria had to be developed to ensure consistency of coding (see Table 5).

To determine whether artifacts were more socially or economically focused, the authors questioned whether the majority of the phenomenon being explained (i.e. the 'dependent variable') was financial in nature. Put differently, where social phenomena were used to understand economic behavior, artifacts were classified as economic, whereas where economic phenomena were used to understand social behavior, artifacts were classified as social. This is exemplified in Lu et al. (2012), in which the impact of social influence on rates of loan default was investigated. Such a study contains both social and economic factors, yet as the rates of loan default represent a financial concern, the primary focus of the artifact was classified as more economic than social. Next, it was determined whether artifacts were more legally or technically focused. The authors questioned whether the impact of technological capabilities was being considered at the level of developers or of regulators. Lu et al. (2012) presented implications regarding the relationship between an individual's

likelihood of default and previous observations of peer default at the level of platform administration, rather than market administration. Thus, Lu et al. was concluded to be more technically than legally focused. Next was to consider whether artifacts were more economically or technically focused. This decision reflected whether changes were attributed directly to technological factors, such as individual features or capabilities of IT, or whether such features played a predominately mediating role. Lu et al. (2012) was therefore concluded to possess an economic primary focus, as the foremost theoretical relationships in that study were not fundamentally technological, but rather facilitated by technology.

Another distinction that had to be made was between artifacts with an economic and legal focus, such as Stemler's (2013) exploration of the economic implications of the JOBS Act. As with distinctions between technically focused artifacts, this decision reflected the centrality of legal factors, i.e. whether laws and regulatory mechanisms were considered mediating environmental factors or whether changes were attributed to them directly. Therefore, Stemler (2013) was classified as legally focused, as changes in market dynamics were attributed directly to the JOBS Act.

Table 5. Criteria for determining primary focus	
Criteria	**Social focus**
Is the dependent variable for the study financial in nature?	If yes: More economically than socially focused
	If no: More socially than economically focused
Is the impact of technological capabilities considered at the level of regulators, rather than developers?	If yes: More legally than technically focused
	If no: More technically than legally focused
Are changes attributed directly to technological capabilities, rather solely than mediated by them?	If yes: More technically than socially or economically focused
	If no: More socially or economically than technically focused
Are changes attributed directly to laws and regulatory mechanisms, rather solely than mediated by them?	If yes: More legally than socially or economically focused
	If no: More socially or economically than legally focused

Distinctions between socially and legally focused artifacts adopted a similar approach, in which a legal primary focus was attributed when changes were attributed directly to laws and regulatory mechanism. Interestingly however, no artifacts were found for which this comparison was necessary, i.e. no artifacts possesses a focus more social than economic, as well as more legal than technical. Lastly, distinctions between artifacts with a social and technical focus were also required. This was demonstrated by Livingston and Glassman (2009), in which a type of fixed-income fund was proposed to benefit in-debt students. Consistent with other comparisons, the authors considered whether changes were attributed directly to technological factors or whether technology played a mediating role. Hence the primary focus of Livingston and Glassman (2009) was classified as technical, as the proposed fixed-income fund was central to that study.

Within each of the four focus categories, there was considerable variety in terms of the themes investigated. Representative themes from each category are summarized in Table 6.

Table 6. Representative Themes from each Focal Category		
Category	**Themes**	
Economic	*To be added*	
Social	Funder Motivation (non-financial) Identification Bias Information Asymmetry Information Quality Information Transparency Lender/Borrower Relationships Reciprocity Reputation Risk Management	Social Benefits Social Entrepreneurship Social Exchanges Social Marketing Social Network Analysis Sustainability Tragedy of the Commons/Free Riding Trust Virtual Communities
Legal	Financial Services Regulation Gambling Regulation Impacts on Legal Profession	Intellectual Property Rights Legislation and Economic Development
Technical	Decision Support Systems Electronic Markets Fund Management Systems	Online Auctions User Interaction Design

3.3 Study Design

The sample was found to include both research artifacts of a purely theory-building/conceptual nature, as well as research artifacts in which theories were developed or tested on the basis of empirical findings. The distribution of research artifacts according to study design is illustrated in Figure 3. This figure identifies that 74 of the 100 artifacts were of an empirical nature, while the remaining 26 artifacts were not.
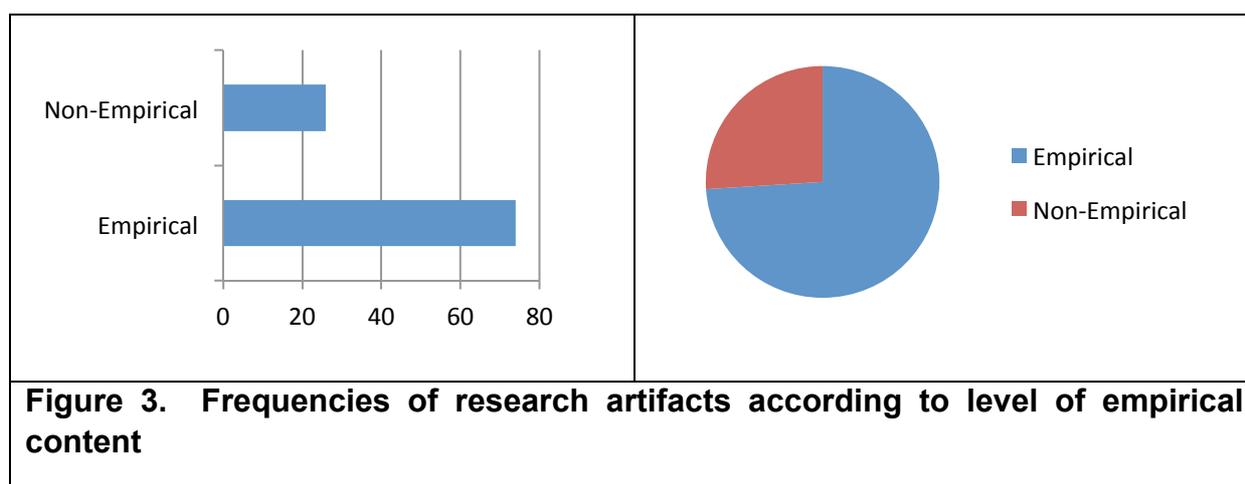

Figure 3.   Frequencies of research artifacts according to level of empirical content

The empirical studies demonstrated a range of data gathering and analysis methods. Fields studies were most popular, making up with 50 of 75 empirical artifacts. These field studies employed a range of data gathering and analysis methods, including direct measurements of both qualitative transaction data (e.g. Ley and Weaven 2011) and quantitative transaction data (e.g. Garman et al. 2008), as well as self-reported data from surveys (e.g. Dezső and G. Loewenstein 2012) and interviews (e.g. Chen and Han 2012). Case studies made up the next most popular method among the research artifacts, which represented 18 studies. Such case studies included both self-reported qualitative measurements from interviews (e.g. Ordanini et al. 2011) and the descriptive analysis of transaction data (e.g. Kappel 2008). Lastly, experimentation was used as a means of data gathering for 8 studies, including both laboratory experiments (e.g. Pasewark and Riley 2010) and field experiments (e.g. Greiner and Wang 2009). This demonstrates a significant reliance upon available transaction data among empirical studies of crowdfunding.

3.4 Type of Theory Developed

The sample was found to include research artifacts developing each of the five types of theories identified *a priori*. The distribution of research artifacts according to the type of theory developed is illustrated in Figure 4. This distribution demonstrates a tendency towards theories for *explanation and prediction*, which represented 39 of the 100 artifacts in the final sample, as well as theories for *explanation*, which represented 29 artifacts. Theories for *analysis* were presented 19 artifacts, theories

for *design and action* by 12 artifacts, and theories for *prediction* by only 1 artifact. The distribution of artifacts demonstrates that the two most popular types of theory are theories for *explanation and prediction* and theories for *explanation*, which combined make over two thirds of the research artifacts in the sample.
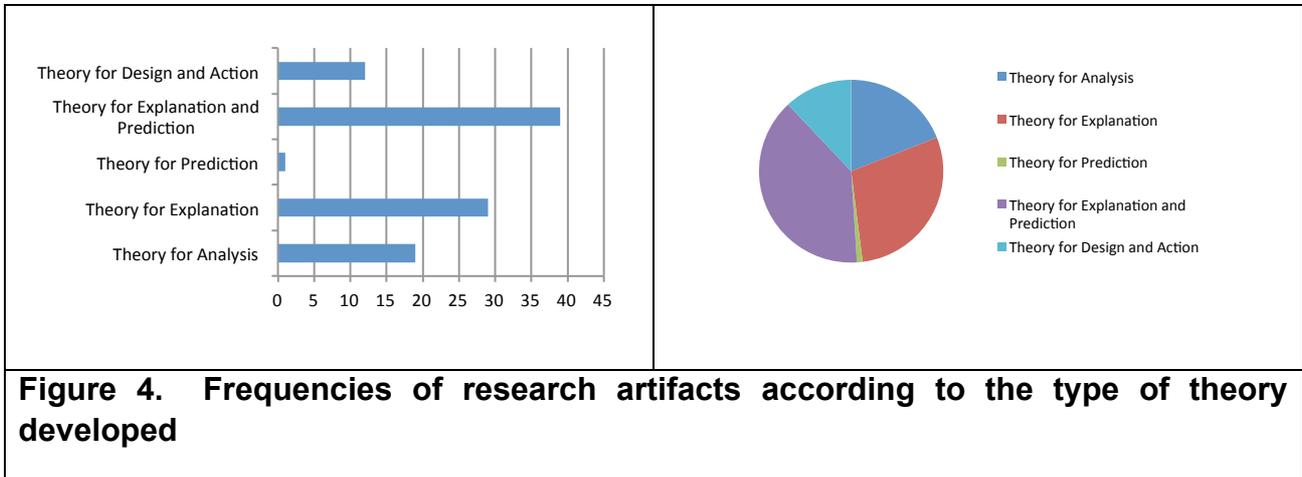

Figure 4.   Frequencies of research artifacts according to the type of theory developed

The types of theories produced by the sample of research artifacts were determined according to the criteria laid out by Gregor (2006), as illustrated in Table 7.

Table 7. Criteria for determining primary focus, based upon Gregor (2006)	
Criteria	**Type of theory developed**
Does the theory presented by the study extend beyond analysis and description, specify causal relationships or make predictions?	If no: Artifact produces a theory for analysis
Does the theory presented by the study provide explanations but not aim to predict with any precision?	If yes: Artifact produces a theory for explanation
Does the theory presented by the study present predictions and testable propositions but not have well-justified causal explanations?	If yes: Artifact produces a theory for prediction
Does the theory presented by the study present predictions, testable propositions, and causal explanations?	If yes: Artifact produces a theory for explanation and prediction
Does the theory presented by the study give explicit instructions for creating an IT artifact?	If yes: Artifact produces a theory for design and action

For transparency, the list below contains an example paper from each theoretical category.

- The case description of Zopa.com presented by Kupp and Anderson (2007) describes the emergence of that platform in the context of developing Web 2.0 dynamics. However, as it does not specify causal relationships or make predictions, that study represents a theory for *analysis*.

- An example of a theory for *explanation* can be seen in Puro et al.'s (2011) description of bidding strategies for small loan auctions. Puro et al. seek to categorize and understand the motivation behind various observed lending behaviors, yet they do not seek to predict future behavior with any precision.

- A study by Wheat et al. (2012) presents a theory for *prediction*, as those authors suggest that crowdfunding will become a key means of securing funding for scientific research in the near future, without justifying the causal mechanisms for this transition in any detail.

- Yum et al. (2012) demonstrated a tendency among lenders to rely decreasingly upon the wisdom of crowds in peer-to-peer lending environments as more information becomes available on lenders. Yim et al.'s study represents a theory for *explaining and predicting*, as predictions, testable propositions, and causal explanations are all presented.

- Lastly, a theory for *design and action* is presented by Kuo and Gerber (2012), as the set of design principles they provide prescribe how to develop crowdfunding platforms to emulate the success of Websites such as Kickstarter and RocketHub.

4. The Findings from Inter-paradigm Analysis

In this section, we proceed to the third phase of metatriangulation – paradigm bridging – and analyze interactions between facets of the paradigmatic lenses to identify patterns, bring to light interdependencies, and reveal underdeveloped research areas. This study performs the required "leaps to a level above and beyond paradigms" (Lewis and Grimes 1999, p.683) for crowdfunding research by first examining two-way interactions between individual paradigms statistically. The results of these tests are presented in Table 6 with significant interactions presented at a 95% confidence level.

	Primary focus of study	Lending type studied	Type of theory developed	Empirical vs. non-empirical
Table 6. Analysis of the two-way interactions observed between paradigms				
Primary focus of study		$p = 0.017$ (Fisher's Exact)*	$p < 0.001$ (Fisher's Exact)*	p = 0.001 (Fisher's Exact)*
Lending type studied			$p = 0.32$ (Fisher's Exact)	x^2 (2, N = 100) = 6.578, p = 0.037*
Type of theory developed				$p < 0.001$ (Fisher's Exact)*
Empirical vs. non-empirical				
** Significant where Alpha = 0.05				

This analysis identifies five significant two-way interactions, namely between (1) focus of study and type of crowdfunding, (2) focus of study and type of theory developed, (3) focus of study and study design, (4) type of crowdfunding and study design (5) study design and type of theory developed.

4.1 Focus of Study vs. Type of Crowdfunding

Analysis of the interaction between the primary focus of studies and the type of crowdfunding studied reveals that studies with an economic, social or technical focus have predominantly investigated lending-based models (with little work done in the equity and patronage domains) while research with a legal focus has focused heavily on equity investment, with little research on lending and none addressing patronage, as illustrated in Figure 5.
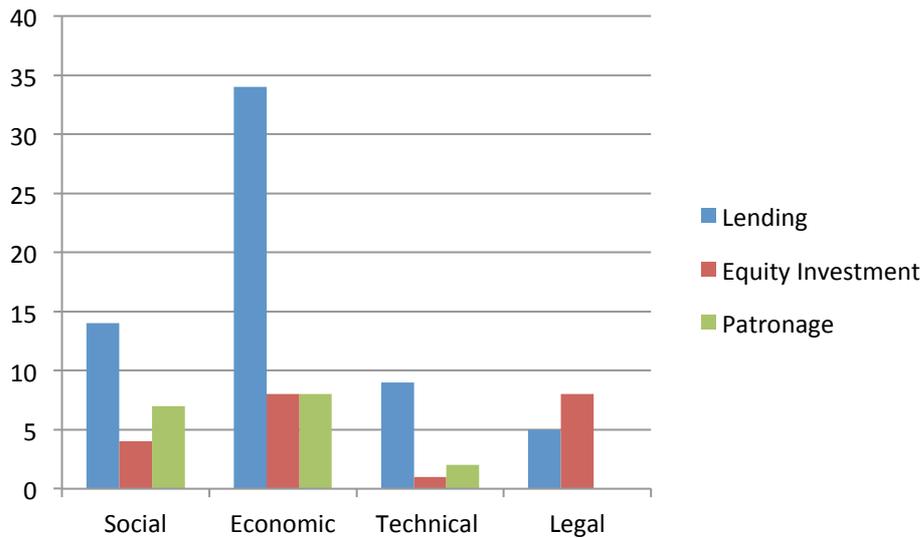
Figure 5. Focus of Study vs. Type of Crowdfunding

The data demonstrate that a significantly higher proportion of artifacts with a social primary focus studied crowdfunding behavior associated with equity investment (8 of 13) than artifacts with an economic, social, or technical primary focus (13 of 87), p = 0.001 (Fisher's Exact). This suggests that the methods for studying crowdfunding behavior associated with equity investment are likely to be more developed in artifacts with a legal primary focus. Most notable to this difference in methods is the significantly higher proportion of non-empirical studies among artifacts with a legal primary focus, p = 001 (Fisher's Exact). Such a trend suggests that either theorizing as regards crowdfunding behavior associated with equity investment is less mature (Weick 1995), or simply that data is less obtainable for crowdfunding behavior associated with equity investment than other forms of crowdfunding. In either case, this suggests that a greater proportion of research could be facilitated with a social, economic, or technical primary focus that studies crowdfunding behavior associated with equity investment, if such research increases the proportion of conceptual/non-empirical studies.

4.2 Focus of Study vs. Type of Theory Developed

Analysis of the interaction between the primary focus of studies and the type of theory developed reveals that studies with a legal or social primary focus manifest comparatively few theories for explanation or theories for explanation and prediction. Only 3 of 13 legal-focused artifacts developed these kinds of theory, along with only 6 of 12 artifacts with a technical primary focus. This contrasts with 17 of 25 artifacts with an social focus, and 42 of 50 artifacts with a technical focus. This is illustrated in Figure 6.
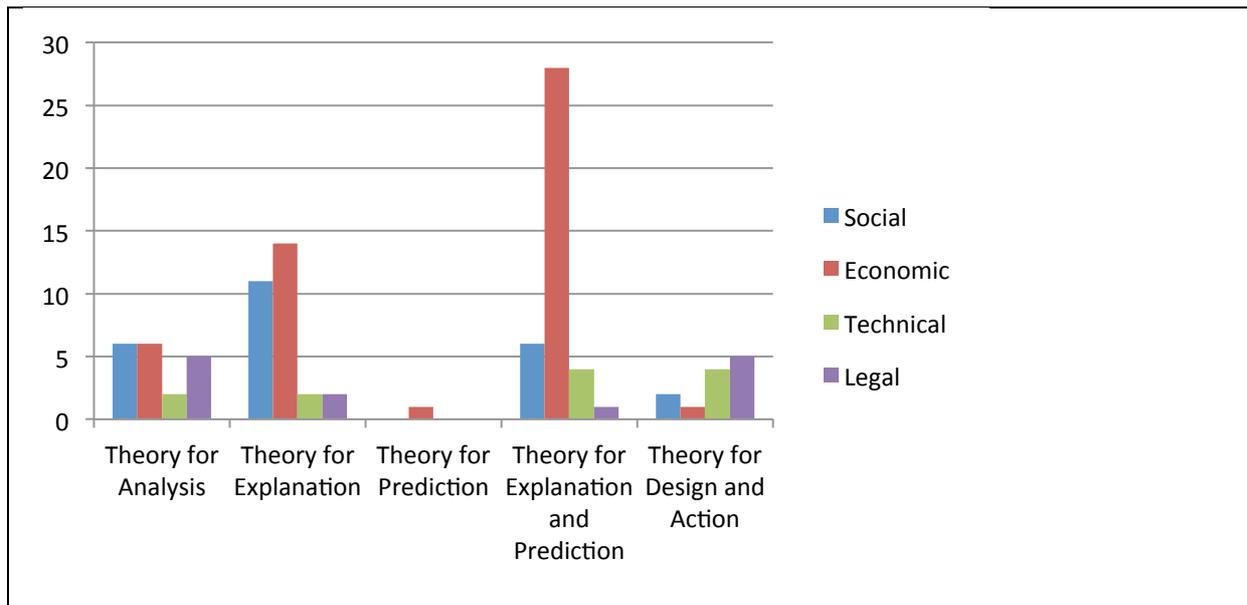
Figure 6. Focus of Study vs. Type of Theory Developed

Almost half (33 of 74) of the artifacts containing empirical findings involved the quantitative analysis of direct (i.e. not self-reported) measurements from field studies. Moreover, the data demonstrate that artifacts with an economic or social primary focus were significantly more likely to make use of this combination of data gathering methods than artifacts with a legal or technical focus, χ^2 (1, N = 74) = 7.622, p = 0.006. This goes some way to accounting for the greater capacity of artifacts with an economic or social primary focus to produce theories for explanation and theories for explanation and prediction. This is because artifacts making use of quantitative data based on direct measurements from field studies were significantly more likely than to produce these types of theories than other empirical methods, χ^2 (1, N = 74) = 9.802, p = 0.002. This suggests that a greater number of artifacts with a legal or technical focus should utilize gather and quantitatively analyze available online transaction records.

4.3 Focus of Study vs. Study Design

Analysis of the interaction between the primary focus of studies and whether those studies contained empirical validation demonstrates an underrepresentation of empirical work among studies with a social, legal, or technical focus. While 55 of 73 artifacts with an economic focus (75%) contained empirical validation, only 21 of 34 artifacts with a social focus (62%), 7 of 14 artifacts with a technical focus (50%), and 2 of 11 artifacts with an economic focus (18%), were empirical in nature. This is illustrated in Figure 7.
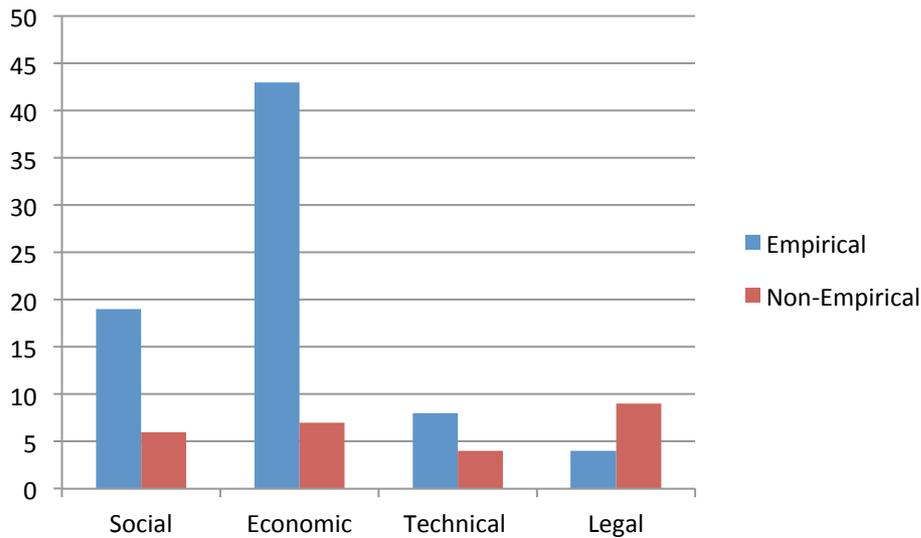
Figure 7. Focus of Study vs. Study Design

Given the significantly higher representation of artifacts with a social or economic primary focus containing empirical validation than artifacts with technical or legal primary focus, χ^2 (1, N = 100) = 11.712, p = 0.001, this begs the question as to how such artifacts with a social or economic primary focus have achieved this higher proportion of empirical work. The solution for artifacts with a technical focus can again be related to the significantly lower proportion of artifacts making use of available online transaction records. Regardless of whether data is analyzed qualitatively and/or quantitatively, artifacts with a social or economic focus are significantly more likely to make use of direct measurements from field studies than artifacts with a technical or legal focus, χ^2 (1, N = 74) = 5.885, p = 0.015. This suggests that research with both legal and technical focus is not exploiting available online transaction records to the same extent as research with an economic or social focus.

4.4 Type of Crowdfunding vs. Study Design

Analysis of the interaction between the types of crowd funding studied and whether those studies contained empirical validation demonstrates a lower proportion of empirical work among studies of equity investment. While an empirical element was included in 50 of 62 artifacts studying lending and 13 of 17 artifacts studying patronage, only 11 of 21 artifacts studying equity investment were empirical in nature. This is illustrated in Figure 8.
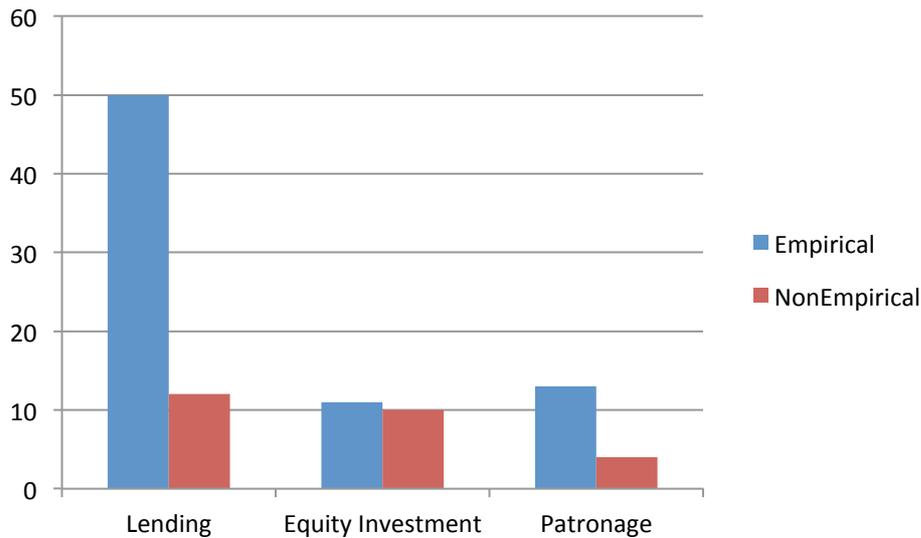
Figure 8. Type of Crowdfunding vs. Study Design

This proportion of artifacts studying behavior associated with lending and patronage that contain empirical validation is significantly higher than the proportion of artifacts study behavior associated with equity investment that contain empirical validation, χ^2 (1, N = 83) = 6.433, p = 0.011. Why this should be the case is not immediately obvious. Equity investment studies have also made use of the quantitative analysis of direct measurements from field studies, as 4 of 11 empirical artifacts studying behavior associated with equity investment have employed such methods. One possible explanation is that there is less online transaction data available for behavior associated with equity investment. This is consistent with the higher proportion (6 of 11) of artifacts studying behavior associated with equity investment that included self-reported data, than that of artifacts studying behavior associated with lending or patronage (14 of 64).

4.5 Type of Theory Developed vs. Study Design

Lastly, analysis of the interaction between the type of theory developed and whether those studies contained empirical validation demonstrates a lower proportion of empirical work among studies developing theories for analysis and theories for design and action. Empirical data was analyzed in 38 of 39 artifacts developing theories for explanation and prediction and in 22 of 29 artifacts developing theories for explanation. Yet the same was only true of 9 of 19 of artifacts developing theories for analysis and 5 of 12 artifacts developing theories for design and action. This is illustrated in Figure 9.
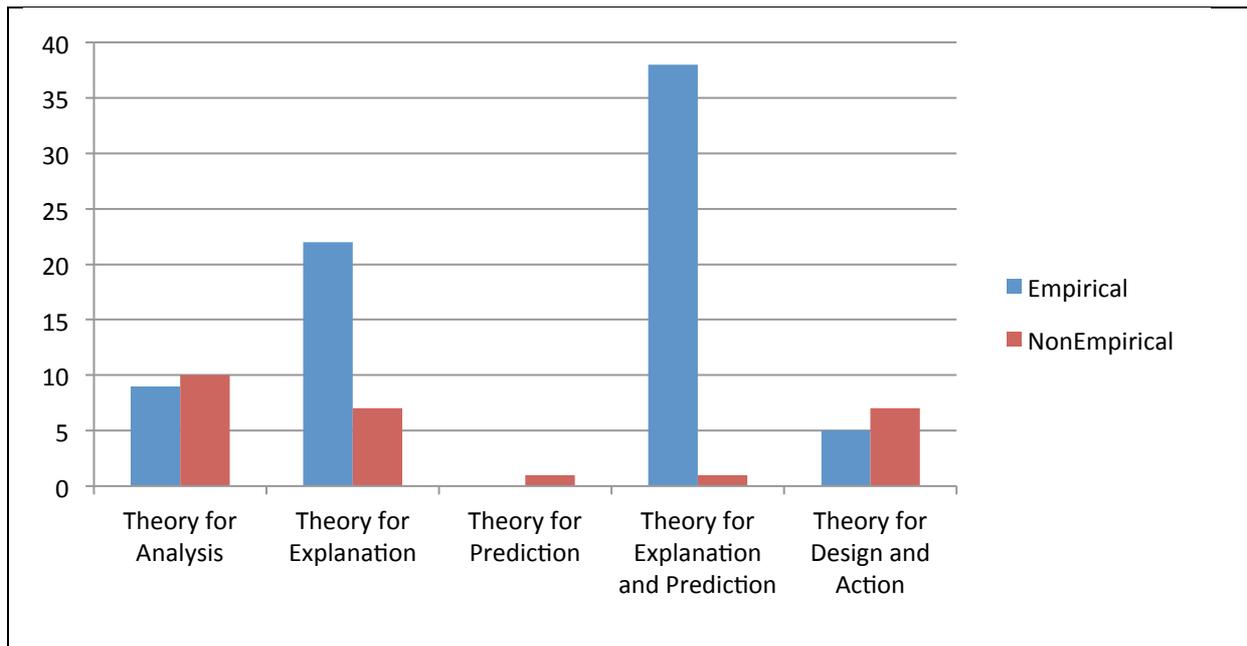
Figure 9. Type of Theory Developed vs. Study Design

While the first four interactions are attributable to the nature of the crowdfunding literature, the authors of this study argue that the same conclusions can't be drawn from the fifth interaction, i.e. the lower proportion of artifacts developing theories for analysis and theories for design and action. This is because such theories are often more exploratory in nature (c.f. Gregor 2006), meaning theorizing may not be advanced enough to always involve empirical testing. This is reflected by the significantly higher proportion of both case studies for artifacts developing theories for analysis and theories for design and action, p = .029 (Fisher's Exact), as well as the significantly lower proportion of artifacts including quantitative data, χ^2 (1, N = 99) = 6.655, p = 0.01. This suggests that this interaction is not immediately relevant to the goal of this study.

5. Discussion

In this section, we reflect on our findings from both the paradigm bracketing and paradigm bridging phases, in order to articulate meta-conjectures about the analyzed sample. Again, this study constituted a metatriangulation of research artifact metadata rather than of the findings reported in the artifacts, thus our comments and metaconjectures reflect a normative theorization of how the research community might more effectively research crowdfunding phenomena.

At the level of paradigm bracketing, we have four less formal responses to the analysis of the research artifacts within each paradigm.

First, we would note the disproportionate attention given to lending systems over other forms of crowdfunding. In response, we would argue that the research community should give greater attention to equity based crowdfunding for two

reasons. Equity based investments represent, in many ways, a more complex and ambiguous regulatory space than lending, and also creates a more complex and ambiguous relationship between financier and finance seeker. For both of these reasons, we would argue that this space has a great potential to provide novel insight into the transformative impact on these technologies and phenomena on investment activities. Similarly, we'd argue that patronage based crowdfunding – largely without significant returns for the financier – warrants deeper investigation as it begs the same questions of motivation and sustainability as other primarily volunteer forms of peer production and crowdsourcing such as open source software and open content production.

Second, in terms of focus of study, we note the dominance of studies with an economic focus, which, though not surprising, we consider problematic for three key reasons. Firstly, due to the collective and largely informal nature of the phenomena, we would argue that the community would benefit from more systematic investigation of social perspectives. Secondly, we would argue that the regulatory nature of financial services – particularly lending and venture capital investing – calls for a greater legal focus. Thirdly we would posit that multi-focus studies are what are truly needed; studies that recognize the interconnected nature of the legal, social, economic and technological systems enabling crowdfunding phenomena.

On a more formal level, we offer the following metaconjectures in response to the findings from our paradigm bridging phase. These findings revealed four key research gaps within the crowdfunding literature. The four metaconjectures that follow are proposed as a means of addressing these research gaps, based upon the assimilation of research approaches and methods across paradigms. In order to attain a multiparadigm and multifaceted perspective, individual paradigm accounts must be combined in such a way that identifies interplay between those areas (Gioia and Pitre 1990, Adriaanse and Voordijk 2005). These interactions serve to characterize existing research in the crowdfunding space and identify areas of underrepresentation, and so form the basis for a proposed research agenda. However, in building a research agenda it must be acknowledged that certain areas of research are likely to be more challenging than others (e.g. Wand and Weber 2002). For this reason, we present four metaconjectures not only describe underrepresented areas of research for crowd funding, but also present some directives as to how research in such areas can be carried out.

First, we address the interaction of focus of study and type of crowdfunding. In the absence of other explanations, the data suggest that the variety of methods employed by studies with a social primary focus is more conducive to studying the full range of crowdfunding behaviors. Thus we offer:

Metaconjecture #1: Crowdfunding researchers with an economic and technical primary focus should employ a greater variety of methods, specifically those that gather qualitative data, in order to facilitate studies across the full range of crowdfunding behavior.

Second, we address the interaction of focus of study and type of theory developed. We note that the methods that have been successful in developing theories for *predicting* and theories for *explaining and predicting* for research artifacts with an economic focus, should also be leveraged in studies with a legal and social primary focus. Thus we offer:

Metaconjecture #2: A greater proportion of research with a legal and social primary focus should gather quantitative data based on direct measurements from field studies, in order to facilitate more theories for predicting and theories for explaining and predicting.

Third, we address the interaction of study design and focus of study. Noting the significant inconsistencies in terms of empirical richness across the different focal perspectives, we offer:

Metaconjecture #3: A greater proportion of research with a legal and social primary focus should gather quantitative data based on direct measurements from field studies, while a greater proportion of research with a technical primary focus should gather qualitative and self-reported data, in order to increase these studies' level of empirical validation.

Fourth, we address the interaction of study design and type of crowdfunding. Again we note the significant inconsistencies in terms of empirical richness across the different type of crowdfunding. Thus we offer:

Metaconjecture #4: A greater proportion of research studying funding behavior associated with equity investment and patronage should utilize available data based on direct measurements from field studies, in order to increase these studies' level of empirical validation.

6.   Conclusions

This study has performed a metatriangulation of 100 research artifacts concerned with crowdfunding. The study reveals in consistencies and inequalities in the literature's coverage of the kinds of crowdfunding (lending, equity and patronage

based) and across four areas of focus (legal, technological, social and economic) and further analyzes the literature based on empirical vs conceptual design and type of theory produced. Based on this analysis we are able to make several normative comments and metaconjectures about the literature. Thus, this study makes two important contributions to the IS community. First, our definition of the phenomenon of interest presents the desired cohesive view for the crowdfunding space. Second, our analysis through and between paradigmatic lenses enabled the articulation of metaconjectures forming a foundation for future research agenda and strategy in the crowdfunding space.

7. Acknowledgements

8. Request for Feedback

This is a working paper and as such we are actively seeking to expand and improve on it. If you believe you have identified factual or other errors in the work or have suggestions for the improvement of the work, please contact us at totoproject@ucc.ie.

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