Value-Creation through Crowdsourcing.
A thesis submitted in fulfillment of the requirements for the degree of Doctor of Philosophy

Michael Rowe
Bachelor of Commerce (University of Melbourne)
Master of Business Administration (Melbourne Business School)
Master of Marketing (Melbourne Business School)

Graduate School of Business and Law
College of Business
RMIT University

June 2018
Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone. The work has not been submitted previously, in whole or in part, to qualify for any other academic award. The content of the thesis/project is the result of work which has been carried out since the official commencement date of the approved research program. Any editorial work, paid or unpaid, carried out by a third party is acknowledged and ethics procedures and guidelines have been followed.

I further declare that this thesis is structured in a series of three separate studies. Although each study makes individual contributions to research, they all relate to a single core theme for coherence. I also declare that two multi-author works included in this thesis have been accepted for publication. The citation of the published papers and chapters are as follows:


My principal responsibility as lead author was original idea and theme development, conducting, writing up, and revising the research. I acknowledge that my co-authors
offered constructive feedback for refining the paper for publication. I have obtained the relevant authorisation from my co-authors to include the manuscripts in my thesis.

I acknowledge the support I have received for my research through the provision of an Australian Government research training Program Scholarship.

Michael Rowe

Date: 1 June 2018
Acknowledgement

An endeavor such as this requires a team and I will be forever grateful for the good fortune that saw Doug Thomson and Marta Poblet take on the task of supervising my research. The calm, measured wisdom and guidance they have provided has been instrumental in my development not just as a researcher but as a person. Working with them has been in every instance constructive and enjoyable.

Undertaking this research has been transformative in so many ways, and I appreciate the combined efforts of all who contributed. Professor Paul Gibson has worked tirelessly to provide an environment where the PhD candidates in his care felt valued and respected, and indeed everyone at RMIT’s Graduate School of Business and Law have demonstrated a level of warm inclusiveness so rare in modern workplaces. During my time as the student representative on the Business Research Committee I worked closely with Professor Adela McMurray from RMIT’s College of Business Doctoral Training Centre and enjoyed very much benefiting from her perspectives and experience. Associate Professor Colin Jevons from Monash Business School has been a dependable and sage sounding board as indeed have been all the academic staff I have encountered in the College of Business. My PhD candidate colleagues have been admirable company long the way, and the friendships forged under the pressure of milestone deadlines will I suspect be long lasting.

My mother, Freda did not live to see me finish this adventure. As I move through life I am increasingly aware of the indelible impact she had in forming my character and I hope and trust that the best I do may reflect faithfully the values she instilled in me. My father Stuart has forever been my role model and inspiration, and although his physical self has been diminished by age, the stimulating intellectual environment he has always
encouraged and his loving tolerance of my many idiosyncrasies, makes this his achievement also.

My own children, Hector, Charlie and Hugh who continue to give me far more pleasure, hope and satisfaction than I can ever hope to return have been a constant, wonderful presence during the drafting of this thesis. As I write this the world faces extraordinary uncertainties. The sheer quantity of hubris and ill-will that circulates through affairs of state globally has had a numbing effect. It is against this background that my research has been conducted. It has been an exercise in contrasts - a search for truth in the context of a world where truth has perhaps lost some currency. The contrast has been notable, and it has made the experience all the more valuable. That my tiny contribution to rational thought might inject in some minor way a little more truth into the world my children will inherit is all the justification needed for the effort expended.
Dedication

To Hector, Charlie, and Hugh for lifting my heart with every laugh, and my parents Freda and Stuart for all the sacrifices made along the way. They have not been taken for granted. Thank you.
Publications

**Study 1**: Study 1 has been submitted for publication in *Business Horizons* journal.

**Study 2: Book Chapter**


**Study 3: Conference Paper**

Thesis abstract

Crowdsourcing is defined as a ‘type of participative online activity in which an individual, an institution, a non-profit organisation…proposes to a group of individuals…via a flexible open call, the voluntary undertaking of a task’ (Estelles-Arolas and Gonzales-Ladron-de-Guervara, 2012). The findings of this research are presented in three studies investigating the circumstances that shape management decisions to adopt crowdsourcing techniques as a means of value-creation. The first study uses a structured literature review to provide a critical assessment of value-creation orientation in literature containing crowdsourcing models. It finds that value-creation has been overlooked in the formulation of crowdsourcing constructs. The second study explores the antecedent conditions that inform management decisions to adopt crowdsourcing as a means of value-creation through semi-structured interviews with respondents from a range of crowdsourcing settings. The conceptual model proposed in this study suggests that for crowdsourcing to be successful, three antecedent criteria must be met: the task being crowdsourced must be modular in nature; a community must be engaged; and a capability must exist within the organisation to enable the outcomes of crowd interaction to be utilized in a manner that creates value. The third study draws on interviews and a netnographic approach to explore characteristics of online communities and proposes a conceptual model of community management and development in the context of organisational value-creation. Taken collectively, these studies contribute new insights into the way crowdsourcing could be used to create value for organisations; factors to be considered in using crowdsourcing for value adding, and models for online community assisted value-creation.

Key Words: Crowdsourcing, value-creation, open-innovation, online community, social media.
Table of Contents

Declaration .......................................................................................................................... i
Acknowledgement ........................................................................................................... iii
Dedication ......................................................................................................................... v
Publications ...................................................................................................................... vi
Thesis abstract ................................................................................................................ vii
Key Words ......................................................................................................................... vii
Table of Contents ............................................................................................................ viii
Table of Figures ............................................................................................................... xii
List of Tables ................................................................................................................... xiv
List of Acronyms ............................................................................................................... xv
Glossary ............................................................................................................................. xvi

Chapter 1: Introduction ..................................................................................................... 1

1.1 Background ................................................................................................................... 1
1.2 Crowdsourcing definition analysis .............................................................................. 3
1.3 ‘Value’ defined .............................................................................................................. 8
1.4 Research aim and Questions ....................................................................................... 10
1.5 Significance of this research ..................................................................................... 13
1.6 Stakeholder interactions as innovation ....................................................................... 14
1.7 Web 2.0 ....................................................................................................................... 16
1.8 The evolution of stakeholder interaction .................................................................... 21
  1.8.1 Relationship marketing ......................................................................................... 21
  1.8.2 Mass customisation .............................................................................................. 22
  1.8.3 Open Innovation ................................................................................................... 23
  1.8.4 Service-Dominant logic ....................................................................................... 23
1.9 Value co-creation ........................................................................................................ 25
1.10 Importance of this research ...................................................................................... 26
1.11 Overview of thesis ..................................................................................................... 28
Study 1: Crowdsourcing models and value-creation – a survey of literature. ............... 28
Study 2: Creating value through crowdsourcing: the antecedent conditions ............... 29
Study 3: Curating the crowd – mapping value-creating online community interactions.. 30
Chapter 2: Literature Review .................................................................................. 32

2.1 Crowdsourcing ................................................................................................. 32
2.2 Participant involvement .................................................................................... 33
   2.2.1 A history of crowd interactions .................................................................. 34
2.3 Significance in post-industrial age ................................................................... 39
2.4 Conclusion ......................................................................................................... 40

Chapter 3: Methodology ....................................................................................... 43

3.1 Theoretical foundation of the research .............................................................. 43
3.2 Ontological and epistemological consideration ................................................ 43
3.3 Methodological approaches ............................................................................. 44
   3.3.1 Positivism .................................................................................................. 44
   3.3.2 Qualitative approach ................................................................................ 44
   3.3.3 Post-positivism ........................................................................................ 45
3.4 Application of methodological approach in this thesis ...................................... 46
3.5 Design Science Methodology .......................................................................... 47
   3.5.1 ‘Artifacts’ .................................................................................................. 48
   3.5.2 Process methodology ................................................................................ 49
3.6 Emergent/ambiguous context .......................................................................... 51
3.7 Data Collection .................................................................................................. 53
   3.7.1 Preparation Phase ..................................................................................... 54
   3.7.2 Interviews .................................................................................................. 55
   3.7.3 Crowdsourcing Participation ..................................................................... 56
   3.7.4 Crowdsourcing email newsletter lists ....................................................... 58
   3.7.5 Participation in and measurements of online communities ....................... 59
   3.7.6 Analysis of Fortune 500 companies ............................................................ 61
   3.7.7 Structured Literature Review .................................................................... 62
3.8 Conclusion ......................................................................................................... 63

Chapter 4: Study 1 - Social Media, Crowdsourcing and the Creation of Value......... 65

4.1 Abstract ............................................................................................................. 65
4.2 Introduction ....................................................................................................... 65
| 4.3 | A broad field of endeavor ........................................................................................................ 67 |
| 4.4 | Value destruction and creation .............................................................................................. 69 |
| 4.5 | Methodology .......................................................................................................................... 71 |
| | 4.5.1 Preliminary survey - analysis of literature reviews ..................................................... 72 |
| | 4.5.2 Determination of search terms ......................................................................................... 77 |
| 4.6 | Assessment of content ........................................................................................................... 78 |
| 4.7 | Keyword Analysis ................................................................................................................. 81 |
| 4.8 | Reporting .............................................................................................................................. 84 |
| 4.9 | Gaps in the research and implications .................................................................................... 88 |
| 4.10 | Conclusion ............................................................................................................................ 90 |

**Chapter 5: Study 2 - Creating Value through Crowdsourcing: The Antecedent Conditions** .................................................................................................................................................................................. 92

| 5.1 | Abstract .................................................................................................................................. 92 |
| 5.2 | Introduction ........................................................................................................................... 93 |
| 5.3 | Literature and Methodology ............................................................................................... 94 |
| 5.4 | Task Nature .......................................................................................................................... 96 |
| 5.5 | Stakeholder engagement or community conversations ....................................................... 98 |
| 5.6 | Issues .................................................................................................................................... 99 |
| 5.7 | Decision-making approach ................................................................................................. 100 |
| 5.8 | Sensemaking attitudes ......................................................................................................... 102 |
| 5.9 | Three antecedents for crowdsourcing .................................................................................. 102 |
| 5.10 | Decisions to resource crowdsourcing ................................................................................... 109 |
| 5.11 | Conclusions .......................................................................................................................... 110 |

**Chapter 6: Study Three - Curating the crowd – mapping value-creating online community interactions** .................................................................................................................................................................................. 112

| 6.1 | Abstract .................................................................................................................................. 112 |
| 6.2 | Introduction ........................................................................................................................... 113 |
| 6.3 | Research Questions .............................................................................................................. 114 |
| 6.4 | Literature review .................................................................................................................. 114 |
| 6.5 | Structure ................................................................................................................................ 116 |
| 6.6 | Forms of Community ............................................................................................................. 117 |
6.7 Factors of Commitment ................................................................. 120
6.8 Crowdsourcing ........................................................................ 120
6.9 Communities or crowds? .......................................................... 121
6.10 Methodology .......................................................... 121
6.11 On value ........................................................................ 123
6.12 Towards a comprehensive model ............................................... 124
6.13 Organisational factors .............................................................. 124
6.14 Community type ..................................................................... 130
6.15 Schema of Community type ..................................................... 130
   6.15.1 Community typologies ..................................................... 132
6.16 Community Factors ................................................................. 137
6.17 The empirical end-to-end model ............................................... 140
6.18 Dynamics of Forums ................................................................ 141
6.19 Conclusion ........................................................................ 145
6.20 Future research ..................................................................... 145

Chapter 7: Conclusion and Future Research ...................................... 147

7.1 Introduction ........................................................................ 147
7.2 Theoretical Implications .......................................................... 148
7.3 Managerial Implications ............................................................ 155
7.4 Future research ..................................................................... 159

References ............................................................................. 166

Appendix 1: Ethics notice of approval ............................................. 186

Appendix 2: Participant Information and Consent Form ..................... 187
Table of Figures

Figure 1: Internet Archive entries for www.rolexforums.com showing commencement of inclusion in the archives, and frequency and distribution of updates ...................... 59

Figure 2: Detailed map of meta-analysis process adapted from Brereton (2007) .............. 63

Figure 3: Detailed map of meta-analysis process adapted from Brereton (2007) ............ 72

Figure 4: Summary of de-duplicated and 'clean' list of publication source by date .......... 78

Figure 5: Wordcloud of author keywords from papers published 2010-2012 ............... 82

Figure 6: Wordcloud of author keywords from papers published 2013-2016 .............. 82

Figure 7: Categorisation of crowdsourcing participation models by community ............ 99

Figure 8: Organisational factors of online communities ........................................ 125

Figure 9: Empirical schema of community type .................................................. 131

Figure 10: Blog typology ..................................................................................... 132

Figure 11: Market typology ................................................................................... 133

Figure 12: Forum typology .................................................................................. 134

Figure 13: Ecosystem typology ........................................................................... 136

Figure 14: Community factors of online communities .......................................... 137

Figure 15: End-to-end model of online communities ............................................. 140

Figure 16: Distribution of replies per thread, per forum ......................................... 143

Figure 17: Organisational factors as they apply to the engagement of crowdsourcing communities ........................................................................................................ 157
Figure 18: Community types.............................................................................................................. 157
Figure 19: Community factors............................................................................................................ 158
Figure 20: End-to-end community interactions.................................................................................. 159
List of Tables

Table 1: Number of publications in each innovation-oriented domain over time .......... 18

Table 2: Summary of the development of open innovation practice with reference to innovation-oriented domains ................................................................. 20

Table 3: Summary of notable activities that were precursors to modern crowdsourcing efforts ................................................................................................................................................. 37

Table 4: Listing of participants in face-to-face interview process ................................ 55

Table 5: Crowdsourcing sites participated in by researcher ........................................ 57

Table 6: Description of sources of crowdsourcing mailing lists contributing to this research ................................................................................................................................................................................. 58

Table 7: Archive measurement details for targeted online forum communities .......... 60

Table 8: Measurements made of selected large forums ................................................. 61

Table 9: Measurements made of selected small forums .................................................. 61

Table 10: Categorisation of crowdsourcing related literature reviews ......................... 76

Table 11: Basis of comparison between differing model types adapted from Börner et al. (2012) ................................................................................................................................................................................. 85

Table 12: Archive measurement details for targeted online forum communities .......... 142

Table 13: Wenger’s Five Stages of Community Development (Wenger, 2002) ............... 144
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI</td>
<td>Artificial Intelligence</td>
</tr>
<tr>
<td>AFOL</td>
<td>Adult fan of LEGO</td>
</tr>
<tr>
<td>CoP</td>
<td>Communities of Practice</td>
</tr>
<tr>
<td>DSM</td>
<td>Design Science Methodology</td>
</tr>
<tr>
<td>IS</td>
<td>Information Systems</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>LUG</td>
<td>LEGO User Group</td>
</tr>
<tr>
<td>LUGNET</td>
<td>LEGO User Group Network</td>
</tr>
<tr>
<td>OBC</td>
<td>Online Brand Community</td>
</tr>
<tr>
<td>OC</td>
<td>Online Community</td>
</tr>
<tr>
<td>S-D Logic</td>
<td>Service Dominant Logic</td>
</tr>
<tr>
<td>UGC</td>
<td>User-Generated Content</td>
</tr>
</tbody>
</table>
Glossary

**Co-creation**: the actions of multiple actors, often unaware of each other, that contribute to each other’s wellbeing (Vargo and Lusch, 2016).

**Crowd**: Participants in the solver side of crowdsourcing. An “undefined (and generally large) network of people (Howe, 2006a).

**Crowdsourcing**: Howe (2006a) provided the original definition of the term crowdsourcing, as ‘the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals.’ (Howe 2006a)

Estelles-Arolas and Gonzales-Ladron-de-Guervara (2012) undertook a comprehensive survey of definitions appearing in the literature and synthesized a definition of crowdsourcing as a ‘type of participative online activity in which an individual, an institution, a non-profit organisation…proposes to a group of individuals…via a flexible open call, the voluntary undertaking of a task’ (Estelles-Arolas and Gonzales-Ladron-de-Guervara, 2012) following an extensive review of literature.

**Engagement**: an emotional involvement or commitment (Merriam Webster Dictionary, 2017).

**Mass customisation**: a production process that combines elements of mass production with those of bespoke tailoring. Products are adapted to meet a customer's individual needs, so no two items are the same.

**Open innovation**: Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology.
**Relationship marketing:** An approach to marketing that aims to develop strong connections with customers by providing them with information directly suited to their needs and interests and by promoting open communication.

**Service dominant logic (S-D Logic):** the concept that value is created for users not in the tangible embodiment of the goods but from the services the goods enable to be performed. All transactions are service-based.

**User-generated content (UGC):** any form of content created by consumers or end-users of social media platforms and made publicly available to other users of these platforms.

**Seeker:** an organisation or individual that seeks to have a question, problem or task addressed by a crowd (Howe, 2006a).

**Social media:** a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content (Kaplan and Haenlein, 2010).

**Solver:** the party or parties that perform the function of responding to the question, problem or task proposed by the seeker (Howe, 2006a).

**Value:** any incremental improvement in the ability to achieve objectives obtained through a sacrifice considered to be less significant than the benefits associated with that improvement. The perceived value-in-use obtained in an exchange may be functional, social or hedonic in nature.

**Web 2.0:** the second iteration of the Internet which has enabled unsophisticated users to generate dynamic content and participate in social media. When combined with the near ubiquity of ‘always on, always connected’ Internet infrastructure, Web 2.0 has changed the traditional relationship and power orientation between stakeholders and business (O’Reilly, 2005; Constantinides and Fountain, 2008a)
Chapter 1: Introduction

1.1 Background

The way in which many organisations create value has changed significantly since the widespread adoption of social media and Web 2.0 technologies (Jiang et al. 2014). One aspect of this change is the increasing adoption of crowdsourcing, which has been defined by Estellés-Arolas & González-Ladrón-de-Guevara (2012, p.197) as:

…a type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage what the user has brought to the venture, whose form will depend on the type of activity undertaken.

Crowdsourcing is thus not one single activity or technique, rather it covers a variety of activities, behaviours and outcomes. Its emergence has been a byproduct of the widespread acceptance and usage of social media which has created a culture of
immediacy and interaction amongst individuals and communities. Boundaries between organisations and stakeholders have diminished and the expectation of interaction is higher than under legacy models (Aral, Dellarocas and Godes, 2013). That interaction forms the basis of crowd-based organisational structures and value-creation activities. It provides the opportunity for the voice of the customer, the need of the stakeholder, and the priorities and service requirements of constituents to be heard immediately, authentically and autonomously within an organisation (Constantinides, Romero and Boria, 2008; Sivarajah, Irani and Jones, 2014).

The increasing prevalence of social media has accelerated an existing tendency towards greater openness between organisations and their stakeholder communities (Lakhani, Assaf and Tushman, 2013). From initial research into relationship marketing carried out in the 1990s (Christopher, Payne and Ballantyne, 1991) through to the more recent development and application of customer co-creation techniques (Vargo and Lusch, 2004), theorists have demonstrated that blurring the boundary between stakeholder and organisation, and integrating customer and other stakeholder input into an organisation’s decision-making process can lead to enhanced customer value. Effective innovation practice requires the inclusion of customer perspectives in the formulation of strategy (Desouza et al. 2008), new product design and marketing activities (Christopher, Payne and Ballantyne, 1991). Those that learn how to engage and leverage the potential of these individuals and communities via crowdsourcing may be able to generate significant commercial advantage (Sawhney, Verona and Prandelli, 2005).

If the ultimate objective of any enterprise is to satisfy the needs of customers more effectively than its competitors (Webster, 1988), then competitive advantage is the reward that comes with achievement of that aim (Treacy and Wiersema, 1993). The
implications for organisations relates to the approach they take to customer intimacy - how well a company understands its prime stakeholders (customers among them) and how capable it is in not just addressing their needs, but also operationally integrating their attitudes and beliefs (Treacy and Wiersema, 1993). Into this context the role of the crowd - external from the company and with little prospect of exogenous recognition and reward – needs to be considered.

1.2 Crowdsourcing definition analysis

Xu et al. (2015) contends that there is no widely accepted definition of the crowdsourcing by the scientific community. Indeed the risk in attempting to define a diverse practice such as crowdsourcing is that any concisely worded definition may exclude key attributes whereas a definition that is all-embracing risks being too general to be of use.

Howe (2006a) is credited with originally proposing the term crowdsourcing. His definition is:

… the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers’ (Howe, 2006a).

In the years that have passed since Howe’s definition was coined a large number of alternative definitions have been proposed. Estelles-Arolas and Gonzales-Ladron-
de-Guervara (2012) considered 40 definitions of crowdsourcing culled from 32 publications. From this analysis a definition of crowdsourcing was constructed as:

…a type of participative online activity in which an individual, an institution, a non-profit organisation, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage what the user has brought to the venture, whose form will depend on the type of activity undertaken. (p. 197)

Comparing these two definitions is instructive. Howe (2006a) adopts a corporate perspective using the term ‘laborers’ working in place of employees – suggesting a limited range of applications. Estelles-Arolas and Gonzales-Ladron-de-Guervara’s approach attempts to be more inclusive, nominating specific usage cases and describing more of the characteristics associated with both seeker and solver, but perhaps loses focus in the process.

This perspective is not dismissive of the definition provided by Estelles-Arolas and Gonzales-Ladron-de-Guervara, but it could be observed that a tradeoff exists between the degree of detail employed and the ease of its application. For example Brabham (2008; in Roth, Brabham and Lemoine, 2015) covers much of the same
territory with a comparatively more elegant definition of crowdsourcing as an ‘…online, distributed problem solving and production model that leverages the collective intelligence of online communities for specific purposes’ (p. 16).

It is accepted however that the definition of crowdsourcing proposed by Estelles-Arolas and Gonzales-Ladron-de-Guervara (2012) represents a significant step forward and something of a ‘gold standard’ taking as it does competing definitions of crowdsourcing and arriving at inclusive, internally consistent and thoroughly supported, definition of crowdsourcing grounded in previous literature.

The definition proposed by Estelles-Arolas and Gonzales-Ladron-de-Guervara is useful and addresses many important and ancillary questions such as who forms the crowd, what the crowd does, what the crowd gets in return, who is the initiator, what the initiator gets in return, what type of process, what type of call is used, what choice of medium is available. As the practice has perhaps continued to evolve and new usage cases emerge aspects of the definition might now be seen to be incomplete. For example, the definition requires the crowd to be formed by “an individual, an institution, a non-profit organization, or company.” (p. 107). It might be argued that in limiting to either individuals or organisation the definition fails to contemplate spontaneously forming communities – ones that are independent of these organisational forms. The communities might relate to and be of value to, for example, a non-profit organisation but they are not formed by one. An example of this can be found in the spontaneous communities that arise following natural disasters, and the role they play in informing authorities and assisting communities.

Similarly crowdsourcing Google crowdsourcing traffic data to enable the display of real-time congestion on its map product is a case of crowdsourced data but not from a crowd formed by Google.
Additionally the definition states that the crowd undertakes the work voluntarily and brings its “work, money, knowledge and/or experience” (p. 107) to the process. This raises the question of whether “opinions” be added to this list? One example of this could be Governments crowdsourcing legislation— a process that creates greater satisfaction and democratic legitimacy (Budge, 2012). Another example might be that of involuntary crowd contributions such as are provided by users of Facebook, and similar data-collecting enterprises.

It is noted that Brabham (2013) specifically distinguishes big-data analytic techniques from crowdsourcing approaches to problem solving. It could however be proposed that because the crowd is not participating in the analysis of the data, it does not follow that the crowd is not actively participating in the collection of the data. Here again the lack of clear agreement on the foundations of the construct of crowdsourcing perhaps clouds progress.

When it comes to what the crowd gets in return, Estelles-Arolas and Gonzales-Ladron-de-Guervara state they get “satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills.” (p.107). But how does this sit in respect of the role of the crowd in disaster relief? Crowdsourcing enables capable participants to perform a range of various tasks from sophisticated management to simply confirming information (Gao, et al. 2011). For example using the crowd to establish the location of high-priority needs following a natural disaster is becoming a more regular occurrence (Zook, 2010), but the motivations for this participation is perhaps absent from the definition. Participation may thus not always be driven by ‘needs’ be they practical, financial or psychological.
The general awareness of crowdsourcing has increased as growth in social media has made examples of crowd-centric activities more visible and mainstream. As the practice of crowdsourcing has passed from being a perhaps a niche practice to one more generally understood in the public domain dictionaries and encyclopaedias have provided their own definitions. These include; ‘the practice of obtaining needed services, ideas, or content by soliciting contributions from a large group of people and especially from the online community rather than from traditional employees or suppliers’ (Merriam Webster Dictionary, 2017), and ‘to give tasks to a large group of people or to the general public, for example by asking for help on the Internet, rather than having tasks done within a company by employees’ (Cambridge Dictionary, 2017). Again, these can be seen to be generally correct but fail to accommodate many usages that are found in practice. A more abstracted approach is called for.

Crowdsourcing is perhaps best characterised as being founded on the interaction between a ‘seeker’ and a ‘solver’ (Brabham, 2008) as the fulcrum of a value creating process. Why undertake an activity such as this if not in the pursuit of value? Should not the creation of that value be a central element to a definition of crowdsourcing?

One of the key characteristics of the crowdsourcing relationship is that it solvers can be largely autonomous. Internal crowdsourcing surely recognises that the value added in this process comes from the delivery of autonomous perspectives which would not be likely/possible in more commercial arrangements.

Kietzman (2017) uses the benefit of the perspective afforded by 11 years of practice to comment on some of the inadequacies of Howe’s (2006a) definition. He notes that crowdsourcing now includes functions that were never previously undertaken.
by employees of an organisation, and that crowdsourcing campaigns need not appeal to an undefined network of people. Kietzman (2017) identifies that many crowdsourcing campaigns now closely target participants. He goes on to note that crowdsourcing activities are no longer only external to the organisation, and that participants need not be people – data can play a role in outsourced decision-making. Proprietary platforms co-exist with pure open-sourcing and stand-alone applications now figure prominently in many approaches to crowdsourcing.

1.3 ‘Value’ defined

The term ‘value-creation’ appears frequently in business literature but is rarely defined. Schumpeter (1942) saw value-creation as a product of innovation through advances in technology. He recognised that new and different combinations of resources become the basis for new production methods and products. These developments create new markets and expand existing ones leading to the inevitable creation of value. This approach linked the idea of value specifically to financial performance, a perspective amplified by Porter (1985) who saw value as:

the amount buyers are willing to pay for what a firm provides them. Value is measured by total revenue ... A firm is profitable if the value it commands exceeds the costs involved in creating the product.

The development of the resource-based view of the firm extended the consideration of value to contributions of all resources controlled by the firm. Barney (1991) considered a firm resource as being valuable if it enabled a customer need to be better satisfied, or for that need to be satisfied at a cost lower than that of its competitors (Barney, 1991). Hollebeek (2017) makes a link between engagement and value creation through resource integrating processes, while Bowman and
Ambrosia (2000, in Lepak et al. 2016) considered value from a more abstract perspective identifying that value is created for the user through the use of the product or service. This they called ‘value in use’. An additional value construct – ‘value in exchange’ - recognises the concurrent financial value that is created through exchange of money for goods and services. These concepts were built upon by Vargo and Lusch (2004) who cemented the idea of the value-creation process being a two-way street, acknowledging that the perspective of all participants in a transaction need to be considered. Priem (2007) saw value-creation as involving innovation that establishes or increases the consumer's valuation on the benefits of consumption (increases use value), a position that also aligned with Vargo and Lusch’s (2004) belief that,

at the organisation level, the value-creation process includes any activity that provides a greater level of novel and appropriate benefits than target users or customers currently possible.

This definition transcends innovation-based approaches and moves beyond the consideration of financial returns as being important aspects of value, embracing instead the idea of ‘benefits’ accruing to the participants in the transaction. However, the question remains what are these ‘benefits’ referenced to? An advantage for one person may be considered an impediment to another.

Value in this context goes beyond simple financial returns, and instead embraces utilitarian (derived from the functional aspects of the exchange), social (derived through interactions associated with the exchange) and hedonic (benefits associated with pleasure derived from the exchange) dimensions (Abdul-Ghani et al. 2011). With this in mind, it is proposed that value be seen as features or outcomes that
assist an individual or organisation to move closer towards their objectives. Naturally there is a qualitative component in relation to cost. Eventually a tradeoff will occur when the marginal utility of the benefit received will be exceeded by the cost of acquiring that benefit. Typically, this will be financial but there may be other considerations – convenience, longevity of impact, exclusiveness, and so on.

The cost of achieving the benefit must then be recast as the sacrifice made. With that in mind ‘value’ may reasonably be defined for the purposes of this research as:

Any incremental improvement in the ability of an individual or organisation to achieve an objective through a sacrifice they judge to be less significant than the benefits associated with that improvement. The perceived value-in-use obtained in an exchange may be functional, social or hedonic in nature.

This definition of value provides context for the benefit and the motivation for seeking the benefit and transcends the mere financial.

This may translate into financial gain, but it may also lead to enhanced understanding, closer relationships, lower churn and other collateral benefits as or more strategically desirable than simply a short-term uplift in revenue. It is in this context that the nexus between engaging a crowd, is to be researched.

1.4 Research aim and Questions

The aim of this thesis is to examine factors that determine the effectiveness of crowdsourcing as a means of creating value, and from this develop a model of organisational value-creation.
Finding a research direction in a field as technologically complex, extensive and nascent as crowdsourcing is a difficult challenge. The through-line adopted in this research is that of value-creation. The research program has been undertaken firstly from the perspective of establishing and critiquing models already proposed in the literature, proposing the antecedent conditions required for the creation of value, and an analysis of drivers of performance of the online communities that enable crowdsourcing seekers to realize their objectives. Secondly observations, interactions and measurements provide the basis for the development of models and perspectives bearing on the value-creation process that may be employed to explain current performance of a range of crowdsourcing activities. Finally, this provides for the development of a model for the users of crowdsourcing to create value.

This thesis therefore presents its research through three distinct studies. The research themes addressed in these studies are:

**Study One: How has value-creation been identified in literature proposing crowdsourcing models?**

Immature disciplines such as crowdsourcing generally demonstrate a lack of foundational literature. Within the literature, many different voices are clamouring to be heard and time has not yet allowed for the voices of authority to become known. There is little consensus around concepts and definitions. Consequently, to understand the extent of the domain a systematic review of the literature is important. In this study literature that purports to present models explaining value-creation through crowdsourcing are critically examined to establish strengths and weaknesses in the body of literature, and to suggest future directions for research.

Specific research questions are:
1a: How might crowdsourcing models proposed in the literature be critically assessed in respect of value-creation focus;

1b: How has the crowdsourcing literature evolved over time; and

1c: What are the gaps in the literature and what can this thesis do to address them?

Study Two: What conditions enable the creation of value by organisations utilising crowdsourcing?

This conceptual study builds on the understanding of the domain of crowdsourcing explored in Study One and moves beyond crowdsourcing models to explore the conditions that need to be present for value to be created from crowdsourcing. The research question for this study is:

2 What antecedent conditions need to be satisfied for crowdsourcing to create value for an organisation?

Study Three: How might the crowd (or community) be engaged to provide management with greater value than may be available through alternative courses of action?

Studies 1 & 2 in this thesis critically assessed the models associated with crowdsourcing practice, and nominated the conditions needed for crowdsourcing to create value. Study 3 adopts the position that engagement is a factor moderating the relationship between crowdsourcing and value creation and focusses on the nature of online communities that undertake crowdsourcing activities. Implicit here is the perspective that the seeker is an organisation (business, government, society, club, association, etc) and the solver is a person who may be acting in one of a range of capacities from casual bystander to engaged expert participant. The study identifies relationships and dependencies between variables but doesn’t seek to quantify those
relationships. As such it adopts a qualitative perspective. This research results in a model that explores the drivers that contribute to the development of online communities, the relationships between ‘seekers’ and ‘solvers’ and the appropriation of value from their interaction. Research questions associated with this research are:

3a: What are the drivers and limiting factors that contribute to the development of online communities and the appropriation of value from them?

3b: How might the variables associated with online communities and the interactions between them be modeled?

Taken together these studies present a narrative that reflects on the current state of understanding in the domain, the factors that enable crowdsourcing to create value in practice, and a thorough exploration online community engagement that is both predictive and explanatory enabling value-creation from crowdsourcing to be strengthened.

1.5 Significance of this research

Organisational and business models, enabled by new technologies, such as crowdsourcing, will continue to emerge, just as eBay, Amazon, and Facebook have already changed the face of many industries. In many respects the genie is out of the bottle and the dynamic market forces that seek to optimize transactional efficiency will continue to push practice away from legacy models. A more integrated understanding of the mechanisms by which organisations can exploit crowd-based activities will provide an important contribution towards a cohesive vision for the future of crowd-facilitated value-creation. The research contained in this thesis reflects a topic thoroughly grounded in practice around which a complete academic
perspective has yet to form. It addresses gaps in our understanding about how value is created through crowd-based activities, what antecedent conditions are required for the creation of value through crowdsourcing and proposes a model for the creation of value through online community interactions. This requires an approach that combines concepts and proposes relationships that illuminate contemporary practice.

From a theoretical perspective this thesis provides a critical assessment of value-creation orientation in literature containing crowdsourcing models, explores the antecedent conditions that inform management decisions to adopt crowdsourcing as a means of value-creation, and proposes a conceptual model of community management and development in the context of organisational value-creation.

1.6 Stakeholder interactions as innovation

The choice to use crowdsourcing relies on a belief in the minds of seekers that outcomes obtained through this method will be in some measure better, cheaper or more favourably distinguished from outcomes realized through other means, particularly conventional outsourcing practice. The boundaries defining the opportunity to crowdsource are currently imprecise. Management perspectives of the practice of crowdsourcing, and the operational constraints that may impact on the technique’s ability to contribute to value-creation, are not well understood. It has been demonstrated that crowd-based inputs enable better decisions, are often less expensive, and can be more suitable to adaption than in-house equivalents (von Hippel, 2005; Ogawa and Piller, 2006; Barbier et al. 2012). As the diversity of application continues to grow, crowdsourcing is transitioning from its roots of being the fundamental business model of purpose-built entities to a stakeholder-engagement practice that can be selectively employed within parts of an enterprise to create value.
To understand the better the impact of crowdsourcing it’s helpful to research its origins. Crowdsourcing occupies a well-defined place in the continuum of changes that have occurred in the practice of innovation - ‘widely considered as the life blood of corporate survival and growth’ (Zahra and Covin, 1994) - over the past three decades.

A review of innovation practices may best start with Schumpeter (1942) who highlighted the critical role that innovation plays in the success of enterprise describing a ‘process … that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one’. This is recognised today as business model innovation (Chesbrough, 2010), an evolutionary process which leads to the creation of organisations capable of delivering significantly greater value than their immediate predecessors. New practices (often enabled by new technologies) can represent a sufficiently profound advantage that entire industries can be made redundant by ‘gales of creative destruction’ (Schumpeter, 1942). The automobile industry replaced the horse industry, and digital photography all but eliminated the use of film and associated requirements. Today, innovation remains a significant driver of change in the way organisations and industries create value. As one popular Internet meme has it:

The world's largest taxi firm, Uber, owns no cars. The world's most popular media company, Facebook, creates no content. The world's most valuable retailer, Alibaba, carries no stock. And the world's largest accommodation provider, Airbnb, owns no property (Goodwin, 2015).
From initial research into relationship marketing in the 1990s (Christopher, Payne and Ballantyne, 1991), through to the more recent development and application of customer value co-creation (Vargo and Lusch, 2004), many organisations are increasingly recognising that removing barriers that stand between it and its stakeholders and integrating customer and other stakeholder input into its decision-making process, can enhance value-creation.

1.7 Web 2.0.

An essential building block of stakeholder interactions has been the development of ‘Web 2.0’. First named in 2005, Web 2.0 (O’Reilly, 2005) enabled new methods of interaction by and between online users enabling the Internet to evolve into an environment where communication is no longer one-way, and where users and participants can continuously contribute to, and modify, content and applications (Kaplan and Haenlein, 2010a). This interactivity enables user-generated content (UGC) to reside on the web and has paved the way for the development and widespread use of social media.

The term ‘social media’ refers to highly interactive software platforms, enabled by Web 2.0 technologies and available across a range of devices and operating systems, on which individuals and communities ‘share, co-create, discuss, and modify user-generated content (Kietzmann et al. 2011a). This includes a range of UGC such as blogs, marketplaces, wikis, online communities, social networks and content sharing sites such as Pinterest, YouTube, and Instagram (Xiang and Gretzel, 2010). The increasing use of social media has created a culture of immediacy and interaction between individuals and within communities. This has led to into a greater
expectation of interaction between an organisation and its stakeholders than under legacy models (Aral, Dellarocas and Godes, 2013).

Table 2 shows the results of a simple Google Scholar key-word search identifying when the key descriptors: relationship marketing, mass customisation, open innovation, S-D logic and crowdsourcing first appeared in the title of publications, and then the frequency of occurrence in the years following. This provides a picture of the distribution of publications related to each of the innovation-oriented domains over time since 1983. It demonstrates the progression of research in each of these areas, along with the relative weighting of that activity over time.
<table>
<thead>
<tr>
<th>Year</th>
<th>Relationship Marketing</th>
<th>Mass Customisation</th>
<th>Open Innovation</th>
<th>S-D logic</th>
<th>Value Co-creation</th>
<th>Crowdsourcing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>22</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1984</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1985</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1986</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1987</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1988</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1989</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1990</td>
<td>14</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1991</td>
<td>37</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1992</td>
<td>19</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1993</td>
<td>41</td>
<td>40</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1994</td>
<td>124</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1995</td>
<td>116</td>
<td>22</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1996</td>
<td>130</td>
<td>29</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1997</td>
<td>177</td>
<td>68</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1998</td>
<td>166</td>
<td>74</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1999</td>
<td>230</td>
<td>96</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2000</td>
<td>279</td>
<td>130</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2001</td>
<td>170</td>
<td>138</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2002</td>
<td>209</td>
<td>185</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2003</td>
<td>232</td>
<td>273</td>
<td>53</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2004</td>
<td>195</td>
<td>258</td>
<td>54</td>
<td>0</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>2005</td>
<td>244</td>
<td>245</td>
<td>77</td>
<td>1</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>2006</td>
<td>246</td>
<td>251</td>
<td>158</td>
<td>49</td>
<td>8</td>
<td>81</td>
</tr>
<tr>
<td>2007</td>
<td>218</td>
<td>320</td>
<td>185</td>
<td>18</td>
<td>10</td>
<td>34</td>
</tr>
<tr>
<td>2008</td>
<td>253</td>
<td>206</td>
<td>331</td>
<td>41</td>
<td>19</td>
<td>69</td>
</tr>
<tr>
<td>2009</td>
<td>279</td>
<td>215</td>
<td>459</td>
<td>55</td>
<td>75</td>
<td>167</td>
</tr>
<tr>
<td>2010</td>
<td>273</td>
<td>204</td>
<td>564</td>
<td>51</td>
<td>97</td>
<td>344</td>
</tr>
<tr>
<td>2011</td>
<td>293</td>
<td>209</td>
<td>700</td>
<td>61</td>
<td>146</td>
<td>635</td>
</tr>
<tr>
<td>2012</td>
<td>309</td>
<td>194</td>
<td>704</td>
<td>70</td>
<td>127</td>
<td>833</td>
</tr>
<tr>
<td>2013</td>
<td>360</td>
<td>183</td>
<td>743</td>
<td>58</td>
<td>160</td>
<td>1130</td>
</tr>
<tr>
<td>2014</td>
<td>357</td>
<td>133</td>
<td>750</td>
<td>84</td>
<td>194</td>
<td>1300</td>
</tr>
<tr>
<td>2015</td>
<td>380</td>
<td>112</td>
<td>650</td>
<td>57</td>
<td>233</td>
<td>1350</td>
</tr>
<tr>
<td>2016</td>
<td>322</td>
<td>89</td>
<td>645</td>
<td>62</td>
<td>290</td>
<td>1340</td>
</tr>
</tbody>
</table>

Table 1: Number of publications in each innovation-oriented domain over time

Source: Google Scholar search

The recognition of the potential for value to be created through active engagement of stakeholders perhaps created an environment conducive to the development of
more open approaches to innovation. Table 2 provides a summary of the progression of increasing stakeholder interaction evident in innovation practice over the last 25 years.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Antecedent</td>
<td>Customer value orientation</td>
<td>Market segmentation</td>
<td>In-house or proprietary Innovation</td>
<td>Product Dominant logic</td>
<td>Open innovation</td>
<td>Outsourcing</td>
</tr>
<tr>
<td>Relationship Marketing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass-customisation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designed to develop strong connections with customers by providing them with information directly suited to their needs and interests and by promoting open communication.</td>
<td>Mass customisation is a production process that combines elements of mass production with those of bespoke tailoring. Products are adapted to meet a customer's individual needs, so no two items are the same.</td>
<td>Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology”.</td>
<td>Value is created for users not in the tangible embodiment of the goods but from the services the goods enable to be performed. All transactions are service-based.</td>
<td>Co-creation views markets as platforms for firms and active customers to share, combine and renew each other's resources and capabilities to create value through new forms of interaction, service and learning mechanisms.</td>
<td>Crowdsourcing is the process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, and especially from an online community, rather than from traditional employees or suppliers.</td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td>Enables the building of value networks through mutual problem solving.</td>
<td>In embracing flexible production methods to alter characteristics of product design, attributes of the product can be more closely aligned with the needs of individual consumers.</td>
<td>External parties can have superior knowledge and more intimate appreciation of what customer value looks like.</td>
<td>Create value by product as a service.</td>
<td>Entities integrating customer perspectives into all stages of their value-creation process are more likely to build sustainable competitive advantage.</td>
<td>Diversity of perspective and access to resources not owned or controlled by the firm. Division of significant problems into smaller problem sets for solving by parties external to the firm.</td>
</tr>
<tr>
<td>Six Markets Model:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Customer Markets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Referral Markets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Supplier Markets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Employee Recruitment Markets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Influencer Markets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Internal Markets</td>
<td>(Payne, 1993)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Collaborative Customisation - where companies work in partnership with individual customers to develop precise product offerings to best suit each customer's needs.</td>
<td>Funnel metaphor: Research, development and commercialisation are three stages of the process</td>
<td>Ten Founding Principles:</td>
<td>1. Ensure process creates value for stakeholders to encourage their participation</td>
<td>1. Knowledge Discovery and Management</td>
<td>1. Knowledge Discovery and Management</td>
<td></td>
</tr>
<tr>
<td>2. Adaptive Customisation - where companies produce standardized products that are customizable by the end-user</td>
<td>Inclusion of external technology base to the process enables out-licensing and technology spinoffs</td>
<td>2. Indirect exchange masks the fundamental basis of exchange.</td>
<td>2. Distributed Human Intelligence Tasking</td>
<td>2. Distributed Human Intelligence Tasking</td>
<td>2. Distributed Human Intelligence Tasking</td>
<td></td>
</tr>
<tr>
<td>3. Transparent Customisation - where companies provide unique products to individual customers without overtly stating the products are customized</td>
<td>This provides entity with: - Access other firm's market; - Access own new market; and - Build own existing market. (Chesbrough 2003)</td>
<td>3. Goods are a distribution mechanism for service provision.</td>
<td>3. Broadcast Search</td>
<td>3. Broadcast Search</td>
<td>3. Broadcast Search</td>
<td></td>
</tr>
<tr>
<td>4. Cosmetic Customisation - where companies produce standardized products but market the products in different ways to various customers (Pine, 1999)</td>
<td></td>
<td>4. Operant resources are the fundamental source of competitive advantage.</td>
<td>4. Peer-vetted creative production (Brabham, 2014)</td>
<td>4. Peer-vetted creative production (Brabham, 2014)</td>
<td>4. Peer-vetted creative production (Brabham, 2014)</td>
<td></td>
</tr>
<tr>
<td>Four choices of approach:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Knowledge Discovery and Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Distributed Human Intelligence Tasking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Broadcast Search</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Peer-vetted creative production (Brabham, 2014)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Summary of the development of open innovation practice with reference to innovation-oriented domains
1.8 The evolution of stakeholder interaction

1.8.1 Relationship marketing

First proposed in 1982, relationship marketing identified that organisations exist in the context of stakeholder groups, and that the value that these groups provide to the organisation is partly moderated by the value propositions that flow between them (Berry, 1983).

Payne et al. (2005) nominated six market domains which represent stakeholders which may be important to the organisation. These domains are: customer markets (comprising end-customers along with intermediaries and participants in the supply chain), internal markets (including the internal departments and staff of the organisation), referral markets (customers or business associates that advocate on behalf of the organisation and refer new business), influencer markets (comprised of various observers of the organisation’s activity such as financial analysts, shareholders, the business press, government and consumer groups), recruitment markets (including potential employees of the company along with the networks and actors that provide access to them), and supplier/alliance markets (those that supply tangible and intangible inputs and relationships to the organisation’s value adding processes).

Recognition of these markets represents a critical early step in recognising the web of interdependencies that surround organisations. Relationship marketing draws a distinction between discrete transaction based interactions within these markets demonstrating ‘distinct beginning, short duration, and sharp ending by performance’, and relational exchange which ‘traces to previous agreements [and] … is longer in duration, reflecting an ongoing process’ (Dwyer et al. 1987, in Morgan & Hunt 1994).
These relational exchanges take place within a structure of a series of partnerships between the organisation and its market domains. Value networks are created through mutual problem solving and value-creation. This stakeholder-centric approach was described as a ‘fundamental reshaping of the field’ (Webster, 1988), and by Kotler (1991) as a genuine paradigm shift.

1.8.2 Mass customisation

Combined with advances in flexible manufacturing methods and market segmentation techniques, the acceptance of a customer value proposition as a driver of value led firms to explore the idea of mass customisation, where the size of each market segment could be as small as one person. Four types of customisation were identified (Gilmore and Pine, 1997); collaborative where the organisation works one-on-one with individual customers to understand and satisfy their unique requirements, adaptive where a single platform is offered with the ability for the customer to use installed options to customize the outcomes for their own purposes, transparent where the customisation takes place as a result of an organisation observing its customers’ requirements or behaviours – the customer may be completely unaware that the product they purchase has been customized, and cosmetic where a standard product or service is presented in different ways to different customers providing the illusion of customisation. Implicit in any approach to mass customisation is the requirement that the business system shows elements of openness – that the nature of the end product is not pre-ordained or limited to a defined set of outcomes, but rather that it is built to be flexible and exist in a state where inputs from customers take precedence over those standard product settings (Piller, Moeslein and Stotko, 2004).

The development of flexible design and manufacturing processes integrated with input from online customers encouraged the development of mass-customisation. Mass customisation
grew out of process innovation that enabled differing individual user requirements or preferences to be incorporated into the fulfillment process with each customer’s needs being satisfied in a unique way. Defined as ‘developing, producing, marketing and delivering affordable goods and services with enough variety and customisation that nearly everyone finds exactly what they want’ (Gilmore and Pine, 1997) mass customisation represented another step along the path of organisations integrating their customers’ ideas and preferences into the value-creation process.

1.8.3 Open Innovation

A key premise of open innovation is that ‘valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well’ (Chesbrough, 2006, p. 2). Von Hippel (2005) noted this ‘general trend toward an open and distributed innovation process’ (p. 177) which he characterized as indicative of the democratisation of innovation and noted its applications beyond software - where the transactional costs are low, to physical products as well. Two technical trends were identified as driving this activity. The first was the availability of flexible design and manufacturing processes made possible by developments in associated technologies. The second was the ability for users to engage resources such as the Internet and social media platforms to combine and coordinate those activities (von Hippel, 2005). This recognition of the role of new and emerging technologies is an important factor in why this had not happened before, and to the extent of the potential gains an organisation may enjoy through correctly utilising open innovation methods.

1.8.4 Service-Dominant logic

An amalgam of mass customisation and open innovation, a marketing approach identified as the ‘new dominant logic’ in marketing (Vargo and Lusch, 2004) emerges. Service-Dominant
logic (S-D logic) re-contextualised the existing perspective that value is created in the exchange of outputs of production (usually ‘goods’) on a transactional basis through the exchange of tangible value and embedded resources and instead considered value-creation as a service. According to Vargo and Lusch (2004) value is conferred through use, not embedded and conveyed in exchange. Using S-D logic the customer is the co-producer of value. As Gummesson (1994) noted, ‘Customers do not buy goods or services. They buy offerings which render services, which create value…activities render services, things render services’. S-D logic’s emphasis on the co-creation of value in use intersects with stakeholder interaction domains such as mass customisation and open innovation, but it extends the application of these to make the consumer of the output of the organisation an instrumental element in the value-creation process. It identifies a partnership between producer and consumer that challenges the authority of the firm in unilaterally controlling product attributes when satisfying the needs of the customer. This is a turning point in the way markets can function. Blurring the boundary between customer (or stakeholder) and firm (or organisation) challenges the patriarchal nature of market relationships (Seccombe, 1986) and opens up effective organisations to the opportunity of creating shared value from beyond the confines of the factory or office.

That this evolution of practice is taking place in the first decade of the twenty-first century is no coincidence. Without the enabling influence of the Internet there would likely have been no externality compelling such change. Web 2.0 and social media have enabled unsophisticated users (i.e. those without specific training in computer programming, networks or other specialised technical knowledge) to generate dynamic content and participate in social media. When combined with the near ubiquity of ‘always on, always connected’ internet infrastructure, and UGC, Web 2.0 has ushered in a permanent change in
the relationships and power orientations that sit between stakeholders and business (O’Reilly, 2005; Constantinides and Fountain, 2008b).

1.9 Value co-creation

The foundation of S-D logic is customer value co-creation, which stresses joint creation of value by the customer and the organisation. Prior to the development of S-D logic the prevailing view (goods-dominant logic or G-D logic) was that value was created in exchange through the manufacture and sale of goods. The emphasis in this model was one of accessing mass markets and concurrently seeking ways of lowering the cost of production to enable lower prices thus increasing the ‘attractiveness’ of the firm’s products to consumers (Vargo et al. 2008). G-D logic focuses on the good itself, whereas S-D logic focuses on maximising the utility of the good but the precise nature of this value is always determined by the beneficiary (e.g. the customer) (Vargo et al. 2008). S-D logic proposes the view that value is instead created in use (Vargo and Lusch, 2004), and that all exchange is based on the service provided by the use of the product. Involving the customer in the co-creation of the attributes of the good being exchanged therefore leads to increase in value. So in contrast with G-D logic view where the purpose of the firm is to produce and distribute value, in the case of S-D logic the purpose of the firm is to propose and co-create value (Vargo et al, 2008). Not simply, an arm’s length relationship nor a relationship conducted through intermediaries, rather value co-creation in this context is an exercise in ‘joint problem definition and problem-solving’ (Prahalad and Ramaswamy, 2004: P8).

Straub et al (2013) defined five roles that that customers can play in co-creation that were considered to be most relevant to industry. These are: co-designer - the customer is engaged to consult with the organisation during the processes of making decisions and designing the company’s outputs; service-specifier - the customer both specifies and triggers the service
delivery; *co-marketer* - the customer supports the marketing efforts of the firm particularly through word-of-mouth or impartial third-party observer status; *quality controller* – the customer provides feedback to the firm in relation to levels of quality of the finished product and/or suggestions for developmental changes; and *co-producer* – the customer provides inputs to the production including tangible and intangible resources. The relationship between customer and employee in this case is comparable to employer and part-time employee. (Straub et al, 2013)

The benefits from aligning decision-making in the firm with the needs of customers are many - decreased costs, increased customer satisfaction and improved market performance – notably market share (Prahalad and Ramaswamy, 2004).

As a result, co-creation builds on the movement towards increasing interaction between stakeholder and organisation. It formalises ways in which customers can interact and the bases upon which they impact upon the firm. But an open architecture is of little value without a population to fill it.

1.10 Importance of this research

Crowdsourcing exists in the context of a world, until recently defined by commercial paradigms, dating back to the industrial revolution and supported by the notion of safety in mass markets, and ‘too big to fail’ thinking (Prasch and Warin, 2013). It may be conjectured that many of those at the helm of large organisations today lack the awareness of the new technologies’ potential and business modalities. As a consequence, they may not well anticipate the effects of the discontinuous change in value-creation opportunities underway in the market (Christensen 2013). Nor do their incentive schemes and other drivers of performance encourage them to do so (Yanadori and Cui, 2013). While those managers that are forward-thinking can perhaps see the inevitability of the change they may also see the
challenge as one of how to adapt existing business models (Baxter and Connolly, 2014). The reality is likely to require not so much an adaptation as a re-invention of the way business is carried out. Could it be that those seeking to adapt rather than re-invent are likely to fail?

It is reasonable to expect that new and paradigm-changing organisational and business models will continue to emerge from the disruptive changes enabled by Web 2.0 capabilities, much as eBay, Amazon and Facebook have already changed the face of many industries. Integrative understanding of the crowdsourcing mechanisms by which organisations today drive value-creation will provide a valuable theoretical stepping stone towards a cohesive vision for the future of enterprise.

Challenges facing organisations include developing understandings of how sustainable strategic advantage can be appropriated through meaningful engagement with customers, and what kinds of interactions will generate value. Importantly from a resourcing perspective is an understanding of what courses of action are unlikely to deliver anticipated outcomes, or indeed outcomes that destroy rather than create value, and how these might be avoided. Understanding drivers of performance and techniques to mitigate risks through research such as this is important to the ongoing survival and success of organisations both in Australia and globally.

This thesis contributes a combination of concepts that can illuminate these new areas of practice. It presents a catalogue and critical analysis of crowdsourcing models of value-creation extant in the literature, a practice-based determination of the antecedent conditions necessary for the creation of value from crowdsourcing, and proposes a model explaining the creation of value arising from online community interactions.
1.11 Overview of thesis

This research will be embodied in a ‘thesis by papers’ and will largely comprise three studies that explore aspects of the creation of value through use of crowdsourcing techniques. While these studies are interrelated, each is presented with its own discrete aim, theoretical basis, methodological approach and conclusion. The first paper is a critical analysis of literature, the second and third papers are conceptual studies.

Study 1: Crowdsourcing models and value-creation – a survey of literature.

Objective: To conduct an analysis of crowdsourcing models appearing in the literature and the variables that comprise them, and critically assess the nature and inter-relationships of the variables proposed in the creation of value.

Research consideration: How has value-creation figured in literature proposing crowdsourcing models?

Specific research questions are:

1a: How might crowdsourcing models proposed in the literature be critically assessed in respect of value-creation focus;

1b: How has the crowdsourcing literature evolved over time; and

1c: What are the gaps in the literature and what can this thesis do to address them?

The newness of the field and relative lack of definition of key terms and concepts makes surveying the current state of understanding challenging. ‘Value’ in this context can be viewed as any incremental improvement in the ability of an individual or organisation to achieve an objective through a sacrifice judged to be less significant than the benefits associated with that improvement. The perceived value-in-use obtained in an exchange may be functional, social or hedonic in nature (Abdul-Ghani et al. 2011). The value created by
crowdsourcing has largely been overlooked in the formulation of models and constructs. Value in this context goes beyond simple financial returns, and instead embraces utilitarian (derived from the functional aspects of the exchange), social (derived through interactions associated with the exchange) and hedonic (benefits associated with pleasure derived from the exchange) dimensions (Abdul-Ghani et al. 2011). This study finds the models proposed in the literature consist of relatively few stages, and these individual stages generally contain few variables. Many of these models are essentially descriptive in nature and without explanation of dependencies or value creating interactions between variables. Emerging research questions relate to the need for greater understanding of the antecedent conditions that lead to the creation of value through crowdsourcing, the nature of question problem or task being addressed, and the ability for an organisation to operationalise the results of their crowd interactions.

**Study 2: Creating value through crowdsourcing: the antecedent conditions**

**Objective:** To explore the antecedent considerations that inform management decisions to adopt crowdsourcing as a means of creating value.

**Research consideration:** What conditions enable the creation of value by organisations utilising crowdsourcing?

The research question for this study is:

2: *What antecedent conditions need to be satisfied for crowdsourcing to create value for an organisation?*

The benefits of crowdsourcing are becoming more widely understood and there is a methodological move towards organisations using ‘participatory models’ to engage stakeholder communities and align decision-making more closely to the needs of stakeholders. Many tasks can now be distributed to ‘the crowd’ for action. This research
aims to investigate the antecedent conditions that inform management decisions to adopt crowdsourcing techniques as a means of value-creation. It is suggested that to be successful, three antecedent criteria must be met – the task being crowdsourced must be modular in nature, a community of interest must be engaged, and there needs to be a structural capability within the organisation to be able to facilitate the engagement of the crowd and utilise the output from the crowd in a manner that creates value.

**Study 3: Curating the crowd – mapping value-creating online community interactions.**

**Objective:** To propose drivers and limiting factors which contribute to the development of online communities and the appropriation of value from them.

**Research consideration:** How might the crowd (or community) be engaged to provide management with greater value than may be available through alternative courses of action?

Specific questions associated with this research are:

3a: *What are the drivers and limiting factors that contribute to the development of online communities and the appropriation of value from them?*

3b: *How might the variables associated with online communities and the interactions between them be modeled?*

This paper proposes a conceptual model of online community management and development in the context of organisational value-creation. Online communities demonstrate distinct characteristics and an empirical model can be developed by integrating topologies of various community types with critical decision points bounded by organisational, structural and community dimensions. Drawing upon a multiple methods approach embracing digital ethnography this research proposes an end-to-end normative model describing the variables associated with the development of online communities and appropriation of value therefrom has been proposed.
The final summary, conclusion and future research chapter ties together the empirical findings from the studies in a way which is both theoretically and managerially relevant and provides a starting point for further exploration of some of the key themes defining value-creation through crowdsourcing.
Chapter 2: Literature Review

2.1 Crowdsourcing

The integration of stakeholder input with companies’ activities led directly to the coining of the term ‘crowdsourcing’ by Wired journalist Jeff Howe (2006b). Howe’s article recognised the increasing practice of companies:

- taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call (Howe, 2006b).

Given the rate of development of crowdsourcing since 2006, Howe’s description appears somewhat limited in scope. Crowdsourcing has branched into a wide variety of practice areas and is no longer characterised by a pure outsourcing orientation. Online communities of stakeholders have created new categories of interaction and present the potential for different means of value-creation. Understanding the factors that drive formation and development of online communities and mediate the participation of their membership is an important precondition of understanding value-creation by these communities.

Virtual communities are ‘online social networks in which people with common interests, goals, or practices interact to share information and knowledge, and engage in social interactions’ (Chiu, Hsu and Wang, 2006, p. 1873). Interactions take place through online platforms, forums (discussion boards), markets or other central virtual meeting places. These are perhaps the most natural extension of communities of practice and could be called communities of appreciation. Physical communities are bound by geographical proximity; communities of practice are bound by common interest.
Individual membership in these communities moves through a series of stages which can be identified through linguistic changes appearing in the posts of members over time. This change occurred on two levels – both the member of the community, and the community itself changed over time. The language evolves over time with a reduction in the use of first person tense, while the use of vocabulary specific to the interest of the forum increases over time. The forum itself also has its own ‘linguistic trajectory’. Danescu-Niculescu-Mizil et al (2013, p.4) found that users of these discussion boards follow a two-stage lifecycle characterised by a dynamic learning stage followed by a more conservative phase in which their attitudes and behaviours become set and are no longer influenced by changes in community norms.

One defining aspect of the crowd is that it is generally amateur in nature. The belief that its outputs are of lesser value is common, but it is also incorrect. Brabham (2012a) notes that participants attracted to crowd-based projects are predominantly self-selected experts, and that there are consequences therefore for the nature of employment in specialist areas in the future. If an organisation can achieve expert insights through outsourcing a task (and usually for little financial if any outlay), then why would it contemplate incurring the costs and compromised performance associated with having those capabilities in-house?

2.2 Participant involvement

One of the most interesting characteristics of crowdsourcing is the potential forms and mechanisms by which the consumer or stakeholder can be integrated into the decision-making processes of the organisation. Crowdsourcing represents the potential shift away from mass-transactional dynamics between an enterprise and its customers towards a more intimate, personalized relationship based on the mutuality of interest, which is consistent with the concept of service-dominant logic and value co-creation proposed by Vargo and
Lusch (2004). In a crowdsourced model, fewer barriers between an enterprise and its stakeholders exist, when compared with traditional business forms. Indeed, crowdsourcing offers potential for the seamless integration of the stakeholders into the organisation. This provides prospective supporters of an enterprise with the opportunity to interact with management and provide inputs to decision-making at many different levels. The impact of this could be to potentially reduce the risk and uncertainty of new strategic directions or courses of action. Crowdsourcing can thus potentially be seen as a pivot point around which organisational dynamics can form.

2.2.1 A history of crowd interactions

Here it is worthwhile highlighting the distinction between involvement and engagement. Involvement is simple participation, whilst engagement represents a state where the actor demonstrates an emotional commitment that transcends detached participation. Engagement is an all-encompassing term that reflects the quality of interaction within the context of S-D logic. It has subtle but important differences from related concepts involvement and participation.

Engagement comprises four specific components which are: a) absorption: the extent to which the actor is focused on the engagement object, b) dedication: the strength of connection felt by the customer – this is the emotional dimension, c) vigor: the degree of energy and resilience present in the customer’s interaction with the focal object, and d) interaction: the extent of the two way communication between focal object and customer. Of these the last two dimensions, vigor and interaction represent what might be considered the behavioural dimension of engagement (Patterson, Yu, and de Ruyter, 2006). Brodie, Hollebeek, Jurić, and Illić, (2011) provide a compelling distinction between ‘participation’ and ‘involvement’ noting the contribution of a customer’s particular psychological state
derived from the history of experiences with the focal object, and the individual approaches to the co-creation of value as factors that differentiates engagement.

While the term ‘crowdsourcing’ is relatively new, citizen participation has played an important role in the conduct of societies and organisations throughout history. Electing governments is a form of crowdsourced decision-making, market research is a form of crowdsourcing opinions, calls for tender are a way of crowdsourcing capability, and conducting a lottery is a variety of crowdfunding, itself a subset of crowdsourcing. These examples have been commonplace around the world for a long time. Table 3 presents a summary of notable value-creation activities that were precursors to modern crowdsourcing efforts.

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Extract</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Century CE</td>
<td>Finnish talkoot</td>
<td>‘People getting together for joint work efforts, based on voluntary participation, and collective reward through hospitality and enjoying of the shared work performance.’</td>
<td>Köppä (2009, p. 3)</td>
</tr>
<tr>
<td>1714</td>
<td>Longitude prize</td>
<td>‘The British Parliament, in its famed Longitude Act of 1714, set the highest bounty of all, naming a prize equal to a king’s ransom (several million dollars in today’s currency) for a ‘Practicable and Useful’ means of determining longitude.’</td>
<td>Sobel (2007, p. 8)</td>
</tr>
<tr>
<td>1792</td>
<td>Gaspard de Prony calculator</td>
<td>‘With the assistance of a small group of mathematicians, Prony divided the computations into a series of additions and subtractions. He then hired 96 [people] to do the arithmetic. Most of these ... had served the former aristocracy as personal servants and knew only the basic rules of arithmetic.’</td>
<td>Grier (2001, p. 29)</td>
</tr>
<tr>
<td>Date</td>
<td>Activity</td>
<td>Extract</td>
<td>Reference</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>1795</td>
<td>Canned food</td>
<td>The preserving of food in containers has a long history but canning, on which modern industry depends, was invented by Nicholas Appert in response to an appeal of the Directoire in 1795 for contributions to solving the problems created by France’s war situation.</td>
<td>Goody (1997, p. 75)</td>
</tr>
<tr>
<td>1857</td>
<td>Oxford English Dictionary</td>
<td>‘It has to be remembered that this was a dictionary that relied, quite centrally and pivotally, on the amassment of readers, on the hundreds upon hundreds of readers who were cajoled into action by the public exhortations of the editors, and who supplied the slips and presented the quotations that revealed the meanings that were ultimately to be defined in the thousands of pages of the Dictionary.’</td>
<td>Winchester (2004 p. 188)</td>
</tr>
<tr>
<td>1869</td>
<td>Invention of Margarine</td>
<td>‘Margarine, developed as a result of a challenge launched by Napoleon III in 1866 relying on the idea that an edible fat should be safe, cheap and easy to preserve. The commercial target was to feed the newly emerging poor working class as well as the armies.’</td>
<td>Parmentier (2007, p. 1051)</td>
</tr>
<tr>
<td>1870</td>
<td>Piecework</td>
<td>The earliest…example of arm's-length, market mediated relationships were the…putting out system, where the merchant played the role of co-ordinator- providing materials to the workers and paying them based on finished product (minus material costs).</td>
<td>Cappelli (2002, p. 11)</td>
</tr>
<tr>
<td>1936</td>
<td>Toyota Logo contest</td>
<td>‘In the 20th century, crowdsourcing continued to take hold. In 1936, the famous Japanese motor corporation Toyota offered a logo design competition for the crowd to redesign its logo. They received about 27,000 submissions and the winning logo was the three Japanese katakana letters for 'Toyoda' in a circle [6]. The company name was later changed to 'Toyota'.’</td>
<td>Yuan et al. (n.d., p. 11)</td>
</tr>
<tr>
<td>1938</td>
<td>Mathematical Tables Project</td>
<td>‘The Mathematical Tables project was originally devised to provide employment for workers on public relief, which by energetic leadership was able to continue its activities and transform itself into an independent organisation, selling its services as professional mathematical table makers.’</td>
<td>Michelucci (2013 p. 18)</td>
</tr>
</tbody>
</table>
1937 - 1960  Mass Observation Movement  ‘Mass Observation was a UK social research organisation founded in 1937 and operated until the mid-1950 (revived in 1981 at the University of Sussex) with a view to record all aspects of everyday behaviour in the country. At its peak, over two thousand volunteers created records and diaries of their everyday activities and participation in public events in minute detail which now represent an invaluable source of material of everyday life.’  Angus et al. (2008, p. 10)

1949  Pillsbury Bake-off  ‘Established in 1949, the Pillsbury Bake-Off is an annual baking contest designed by Pillsbury primarily to publicise existing products; Nevertheless, more than 25% of that firm's current line of cake mixes are packaged mix versions of the recipes of two Bake-Off winners.’  von Hippel (1981, p. 2)

1979  Zagat survey  ‘The Zagat Survey is the ancestor of user reviews such as Trip Advisor and Amazon. Launched in 1979 by Tim and Nina Zagat, the Zagat guide collected ratings of restaurants by diners. The first contributors were the Zagats’ friends. By 2005, the Zagat Survey included information on more than 70 cities and reviews based on the input of 250,000 contributors.’  Dimitrova (2013 p. 12)

Table 3: Summary of notable activities that were precursors to modern crowdsourcing efforts

The ancient Babylonians crowdsourced medical advice by placing the ill citizens in public and seeking opinions from passers-by (Nemet-Nejat, 1998); first century Finns formed ‘talkoots’ to engage communities in problem solving (Köppä, 2009). One of the earliest attempts to engage the crowd to solve a specific problem came in 1714. The government of the United Kingdom had sought an answer to the vexing question of enabling ships to be able to establish their location (longitude) at sea. The scientific resources employed by the government to resolve this problem had been unsuccessful and the problem appeared to be one without a solution. A significant financial incentive was offered to the public at large and this elicited, over time, the eventual solution bringing with it significant advances on
horology (Sobel, 2007). In the late eighteenth-century, crowdsourcing techniques were used by the French government to solve pressing issues of the day such as the calculation of mathematical tables and how to preserve food for use on demanding army incursions (Goody, 1997; Grier, 2001). The mid-nineteenth century saw the task of providing definitions for the *Oxford English Dictionary* being opened up to anyone who cared to make a contribution (Winchester, 2004), the crowdsourced development of margarine (Parmentier, 2007), and the use of crowdsourced piecework or ‘putting-out’ small parts of large jobs to a local and undifferentiated workforce to undertake using their own resources (Cappelli, 2002).

What is clear from this historical listing of crowdsourced solutions is that it is not necessarily the crowd as an aggregate that makes the contribution. Instead, these are effectively opt-in arrangements where either one exemplar is selected, or tasks are distributed for individual attention. No attempt is made to harness the potential of the collective of individuals that comprise the crowd; instead the crowd is a medium from which participants may be sourced.

The English polymath Sir Francis Galton observed an interesting phenomenon at a county fair around 1907. A weight-judging competition was being held at which participants could, for a modest fee, put forward their estimate of the weight of an ox after it had been slaughtered and ‘dressed’ (Galton, 1907; Ostrowski, Helfert and Gama, 2014). The nature of the competition ensured that no participant could know the actual answer in advance. Galton observed that despite the fact that no individual guessed the correct weight, the average of all of their guesses – what Galton called the *vox populi* – was accurate to within 0.8 percent. He concluded his analysis with the comment that, ‘This result is…more creditable to the trustworthiness of a democratic judgment than might have been expected’ (Galton, 1907). Galton’s work reinforces the idea that the crowd in aggregate may be more accurate than each or any of the crowd individually. It is this insight which forms the basis of many contemporary aggregate crowdsourcing activities.
2.3 Significance in post-industrial age

A way in which effective organisations drive performance is through the inclusion of stakeholder perspectives in their strategic decision-making. The development of online technologies has been a significant and dynamic driver of change in the way many markets function. Social media has helped create a culture of immediacy and interaction amongst communities and individuals. These factors enable the voice of the stakeholder to incorporated into the way enterprises function in an authentic, immediate and low-cost way. Organisations that learn how to leverage these interactions through crowdsourcing may be able to generate significant strategic advantage.

It is important to recognise the potential for crowdsourcing to overturn a fundamental precept of business; one that has shaped the way markets have been cultivated since the industrial revolution. Pre-industrial economies were largely reliant on agriculture with production limited to immediately available resources and what could be produced by small firms operating in ‘cottage industries’ (Brenner, 1976; Houston and Snell, 1984). There was little division in labour and ‘scientific management’ techniques were yet to emerge (Taylor, 1914).

The technological revolution of the late 18th-century, known as the industrial revolution, provided businesses with access to capital and machinery, enabling the production of large quantities at lower costs. A greater scale of manufacture provided a lower marginal cost of production and this led businesses to harness large sums of capital to enable cost efficiencies. Large scale production, combined with improved transportation systems, led to more unified markets. The advent of train services played heavily into the rise of nationally branded goods and the rise of national or even international markets. Consumers were aggregated into large geographical markets to support the scale of enterprise (Ashton, 1997). Manufacturers offered less choice in models or varieties in order to increase production runs and keep costs
down. This was the beginning of the age of mass-consumerism. The firm benefited by accessing mass markets and was rewarded by profits that could sustain even greater investments in productive capacity and subsequently further increased market share. As the scale of the enterprise grew the ability for any individual consumer to impact on the course taken by the organisations business diminished. This resulted in the tendency for the management of the enterprise to become remote from the customer and their needs.

Market research techniques evolved in response to this, to fill the void in direct understanding of customer needs, and advertising evolved from art to science in order to deliver the right messages to the right target markets at the right time.

But, in the process, the requirements of the individual customer became subjugated to the needs of the market as a whole. This effect is exemplified perhaps by Henry Ford’s message that ‘Any customer can have a car painted any color that he wants so long as it is black’ (Ford and Crowther, 2005), satisfaction of customer needs was pursued at the market level, not the level of individual customer. If the Industrial Revolution is dated from 1750 (Hobsbawm and Wrigley, 1999), then the internal logic of maximizing competitive advantage through aggregated markets and capital has held strongly for some 250 years and at least in part, continues to dominate today. However, the advent of new technologies is beginning to unravel the ‘one-size-fits-all’ approach, enabling mass customisation to deliver more personalised goods and services which ultimately leads to improved market share and customer value.

2.4 Conclusion

Crowdsourcing is an emergent and complex value-creation domain. Its development has been made possible by Web 2.0 technologies and the ubiquitous nature of social media platform which has enabled stakeholder communities to form in an authentic and low-cost
way. These developments have been concurrent with an opening up of innovation and other practices within organisations – there has been an increasing recognition that there is perhaps a greater depth of resources outside the organisation than within it and techniques continue to be developed to harness those resources. Amongst these is crowdsourcing, which can be seen as a natural ‘next step’ in this progression towards openness, of blurring the boundaries that have long separated the roles of organisation and stakeholder.

This thesis explores factors that determine the effectiveness of crowdsourcing as a means of creating value through three studies. These studies explore how value-creation has been identified in literature proposing to document crowdsourcing models, what conditions enable the creation of value by organisations utilising crowdsourcing, and how the crowd might be engaged to create value to an organisation.

It is noted that, while many definitions of crowdsourcing have been proposed in the literature and these have been analysed resulting in the synthesis of a definition of crowdsourcing as a ‘type of participative online activity in which an individual, an institution, a non-profit organisation…proposes to a group of individuals…via a flexible open call, the voluntary undertaking of a task’ (Estelles-Arolas and Gonzales-Ladron-de-Guervara, 2012) ‘Value’ in this context is any incremental improvement in the ability of an individual or organisation to achieve an objective through a sacrifice they judge to be less significant than the benefits associated with that improvement. The perceived value-in-use obtained in an exchange may be functional, social or hedonic in nature (Abdul-Ghani et al. 2011). This definition is consistent with the continuum of open innovation practice starting with the development of relationship marketing approaches in the early 1990s through stages including mass-customisation, open innovation, service-dominant logic and value co-creation.
Crowd-derived outcomes have shown up through history, although only since the development of Web 2.0 technologies has crowdsourcing emerged as a distinct domain. The definitions set out in the first edition of the *Oxford English Dictionary* were crowdsourced, as was the technique enabling the calculation of longitude, enabling ships to be accurately located at sea. It is the development of Web 2.0 technologies – also known as the interactive web – that has facilitated widespread adoption of crowdsourcing by organisations in the service of value-creation.

The use of crowdsourcing holds considerable implications for the way value is created within and by organisations. Unique skills and perspectives can be accessed in a way that is immediate, authentic and very low cost. Online communities can participate in the value-creation process and thus relieve organisations from the burden of owning key resources and perhaps reduce the risks associated in addressing questions, problems or tasks.
Chapter 3: Methodology

3.1 Theoretical foundation of the research

The aim of this research is to explore aspects of the creation of value through use of crowdsourcing techniques. This chapter provides an overview of methodological considerations, overall research design and data collection. While each of the studies that comprise this thesis adopted specific methodologies, the exploration of themes associated with crowdsourcing generally was guided by the methodology described here.

Identification of a single methodology that could account for the amount of territory this thesis aimed to cover was initially problematic. While methodological rigour has been a primary concern in the undertaking of this research I have frequently found myself exploring areas for which the orthodox methodological approaches might be considered ill-fitting. Exploring practice-based areas in the absence of a base of strong foundational literature, in the absence of a universally applicable methodology, where the practice area has ill-defined boundaries and at a time when many of the key determinants of the practice are still emergent does not make for an easy ride!

3.2 Ontological and epistemological consideration

All research is informed and guided by the researcher’s choice of basic beliefs (Guba and Lincoln, 1994). The researcher’s view of reality can never be absolute and in inquiry is guided by three related questions. These are: the ontological question - what is the nature of reality; the epistemological questions - what is the relationship between the knower and the known; and the methodological questions – how can the researcher go about discovering that which he or she believes can be known (Guba and Lincoln, 1994). Taken together the three questions of ontology, epistemology and methodology form the research paradigm the
purpose of which is to ‘direct, inform and govern’ the researcher’s approach to observing phenomena and resultant actions (Mertens, 2007).

3.3 Methodological approaches

3.3.1 Positivism

For much of the course of human history enquiry into the natural world has been based around the so-called ‘hard sciences’ including chemistry, physics, biology and astronomy. Pursuit of these involved the measurement, classification and analysis of things that were considered to be objective parts of ‘reality’ (Caldwell, 2013). The presumption was of one absolute reality that could be measured and understood. Mathematics was considered ‘the queen of science’ and quantification of observations permitted the use of deductive reasoning in the creation of conclusions based on the observations and previously known facts (Weintraub, 2002). This positivistic approach is used by researchers to verify hypotheses using measurements and various mathematical and statistical tools.

3.3.2 Qualitative approach

Guba and Lincoln (1994) have critiqued what they call the ‘received wisdom’ of positivism and note a number of challenges to the primacy of quantitative data. They note that quantitative data is devoid of context, meaning and purpose. They propose that this limits the quality of the subsequent analysis and may potentially exclude from consideration important non-quantifiable factors that may have significance in influencing the behaviours of the phenomena under investigation. They further surmise that taking an outsider (or etic) perspective in a study of behaviour of individuals or groups denies the researcher the rich perspectives offered to an insider (or emic) observer. Qualitative observations and inductive theory building therefore have their place in domains such as this.
3.3.3 **Post-positivism**

A third approach was also worthy of consideration here. Post-positivism builds on and amends the pure positivistic approach by recognising the role of the attitudes, beliefs and actions of the research as having impact in the collection and analysis of the data. It also importantly moves the test of validity from verifiability to falsifiability. Instead of the positivistic approach that attempts to ‘verify’ truths on the basis of observation post-positivism recognises that proof of a hypothesis is not possible, and that it may only be disproved. Guba and Lincoln (1994) demonstrated this by noting ‘Whereas a million white swans can never establish, with complete confidence, the proposition that all swans are white, one black swan can completely falsify it’. Post-positivism is therefore grounded in falsifiability. However, in emerging areas of study such as crowdsourcing the domain is not sufficiently well defined to enable a post-positivist approach.

The research presented in this thesis does not contemplate a single objective truth. Crowdsourcing takes place through a complex network of interrelationships and there is little that can be assessed with any degree of objectivity or measured directly. The reality of crowdsourcing resides in the minds of the participants and observers of the activity, and each may have a different perception or understanding. This suggests a qualitative research approach adopting a relativistic ontology and constructivist epistemology.

Hathaway (1995) characterised the epistemological difference between the quantitative researcher and the qualitative equivalent as that between onlooker and actor. The qualitative researcher interacts with that which is being observed and in so doing brings their knowledge of the observed events to augment the understanding of the situation (Hathaway, 1995). This is especially relevant for the exploration of new and emergent phenomena, where the use of
extant theoretical frameworks and categorisations may constrain enquiry or lead to results inconsistent with emerging themes expressed in the data.

While the mission of science research is to understand i.e., to describe, explain, and possibly predict (Emory and Cooper, 1985), an additional element may be to create shared understanding (Rickman, 1960). To do so requires the adoption of a constructivist paradigm but that does not preclude the inclusion of positivist elements in the synthesis of a more compelling perspective.

3.4 Application of methodological approach in this thesis

The nature of the studies presented in this thesis required a methodology that embraced at once the subjective and objective as well as the theoretical and the practical. Research approaches oriented to the development of pure theory, lacking an eye to practical application, only go part way to unlocking the complexity of an emergent topic such as crowdsourcing. Observation of phenomena that spontaneously arise as the solution to a real-world problem suggests a role for both theoretical and managerial approaches enabling both descriptive and predictive outcomes. As van Aken (2004, p. 220) notes, ‘understanding a problem is only halfway to solving it’. The solution in this case need not be a single point source ‘correct answer’ but a model or conceptual framework that categorises and explains relationships and interactions of elements and artifacts. To do so will require inductive theory building.

Recasting conceptual approaches as paradigms, van Aken (2004) has evolved the definition to ‘the combination of research questions asked, the research methodologies allowed to answer them, and the nature of the resultant products’. He nominates three alternative general paradigms: the formal sciences: described by Carnap (1938) as consisting of ‘analytic statements established by logic and mathematics. Included in this classification are
philosophy and mathematics; the exploratory science: the objective of which is to describe and possibly predict observable phenomena. Examples include: the natural sciences and mathematics; and the design sciences: the ultimate aim of which is the creation of ‘valid and reliable knowledge to be used in designing solutions to problems’. According to van Aken (2004) the purpose of this branch of the sciences is to solve ‘construction problems’ and ‘improvement problems’.

3.5 Design Science Methodology

Design Science Methodology (DSM) arises out of information systems (IS) research. It has been presented as a paradigm (Iivari, 2007) that seeks to ‘create innovations that define the ideas, practices, technical capabilities and products through which the analysis design implementation management and use of information systems can be effectively and efficiently accomplished (Denning, 1997; Tsichritzis, 1998 in Hevener et al, 2004).

Iivari (2007) uses Popper’s Three Worlds (1979) as an ontological basis for DSM. In the Three Worlds model Popper proposes three types of worlds.

1. The first world is the world of material objects, events, and processes, including the domain of biology.

2. The second world comprises mental events, processes, and predispositions– the world of beliefs and other psychological phenomena. This is a departure from the classical Cartesian Dualism approach.

3. The third world is the world of the products of the human mind. These include institutions and theories and human artifacts. It is within this domain that this research is situated.

The predominant application of DSM to the IS domain perhaps raises its relevance in the social sciences. IS is indeed a diverse area of study. It is characterized by connections to a range of other disciplines including management, organisational behavior, and socio-
technical systems (Hasan & Kazlauskas, n.d.). The emergent nature of crowdsourcing suggests a research direction that is not concerned so much with exploring an existing reality but sensemaking and constructing knowledge within and between groups participating in and associated with crowdsourcing. Design science methodology (DSM) falls within the preceding ‘design sciences’ paradigm. Thus while design science methodology arose out of IT research, its methods do not vary from those used in natural or behavioural sciences (Wieringa, 2010). A design science methodology is appropriate for research in domains that are ill-defined and emergent and was used to create valid and reliable knowledge.

3.5.1 ‘Artifacts’

Under DSM, empirical research can be applied to either the validation or evaluation of what Wieringa (2010) calls ‘artifacts’. Artifacts have been described as ‘things’ – conceptually this means they are ‘entities that have separate existence’ (Ostrowski, Helfert and Gama, 2014). March and Smith (1995; in Iivari, 2007) proposed that artifacts be classified into four categories: constructs; models; methods; and instantiations. Artifacts, defined in this way, are consistent with elements of a value chain or interactions of players in a market. They represent the externalised totemic norms associated with crowdsourcing practice.

Empirical research can play two roles in respect of artifact design. That of validation of the artifact before it is integrated into the system being researched, and evaluation of the performance of that artifact once it is in the system. Noriega and d’Inverno (2014) describe crowd-based systems to be socio-cultural in nature and identify one dimension of these systems as having interactions that are mediated by technological artifacts. Identification of these artifacts is critical to developing and understanding the cognitive maps that attach themselves to practice in this domain.
3.5.2 Process methodology

Peffers et al (2007) proposed a DSM process methodology based on seven papers from IS and other domains. The current research followed the six sequential steps as outlined by Peffers et al (2007):

**Activity 1** - Problem identification and motivation: In this activity the specific research problem is defined and the value of the solution justified. Peffers (2007) notes that the problem definition will be central to the development of artifacts to provide solutions and so careful dissection (he uses the word atomisation) is required in order for the solution to adequately address the complexity of the problem. In the case of the current research the problem identification is represented by the research question.

**Activity 2** - Definition of the objectives for a solution: The objectives for the solution are inferred on the basis of what is ‘possible and feasible’. These objectives may be quantitative (improving outcomes from existing systems) or qualitative (how a new artifact may support approaches to problems not previously sought) in nature. In the case of this research a model set of criteria to identify the circumstances under which crowdsourcing may create value are being sought.

**Activity 3** - Design and Development: This activity involves the creation of the artifacts and includes an assessment of the artifact’s anticipated functionality and architecture and then the creation of the artifact itself. For this research artifact creation includes identifying and interrogating sources of data appropriate to the research question, sorting and sensemaking that data in the context of emergent behaviours of the actors involved, then the development of explanatory and/or predictive models using inductive reasoning.

**Activity 4** - Demonstration: In this activity the use of the artifact to address instances of the research problem is a demonstrated. A range of options are available for doing this including:
case study, simulation, or experimentation. In the case of this research the artifacts and models developed will be compared back to field observations to demonstrate congruence with observed situations.

Activity 5 - Evaluation: In the evaluation activity the researcher observes and measures how well the artifact supports the solution to the problem. The objectives of the solution are compared to the results obtained by using the artifacts. In practice, this could take many forms including empirical evidence or logical proof. At the conclusion of this activity researchers may choose to revert to Activity 3 in order to improve the effectiveness of the artifact.

Activity 6 - Communication: The final activity anticipates the need for all five of the activities above to be presented in scholarly research papers as a cohesive methodology.

The approach as detailed in the preceding section, provides for the depth of exploratory and conceptual investigation required by the questions required by this research.

DSM methodology was used as it provides a method for understanding emergent phenomena. This research requires the inductive development of conceptual frameworks that include diverse, creative and iterative steps. Complementary multi-method approaches were adopted in order to handle complexity, uncertainty, user engagement and differing assumptions in a dynamic and emergent environment. Design Science Research (DSR) was demonstrated in the literature a suitable approach to fulfil these needs (Gerber, Tucker and Hofer, 2018).
3.6 Emergent/ambiguous context

It was apparent at the outset that practitioners, while often evangelical, energetic and committed, lacked a strong grasp of the evolutionary forces that were driving the successful implementation of their approach. They were more engaged in the work of the moment, using crowdsourcing to build businesses. While all were convinced of the power of crowdsourcing, few were able to give a substantive account of the context in which that power was derived. It was evident that tying practice too closely to theory would be counter-productive. This imbued interactions with these practitioners with what could colloquially be called a ‘wild west’ flavor. Exaggerated claims could be made by their activities because there was little in the way of contradictory evidence. The fact there was little in the way of supporting evidence either was usually quickly glossed over. Collecting data in these circumstances called for patience and restraint. The temptation to jump to conclusions in the absence of clearly defined guiding principles, to potentially separate the wrong signal from the noise in the data, was great. The research challenge, here was one of sensemaking from the research interviews recognising that any two practitioners might have completely different understandings, perspectives and motivations for their actions despite the fact that they may indeed be describing the same thing. Observations then required validation through further investigation by naturalistic involvement in crowdsourcing, and appropriate numerical analysis of associated measurements from websites and other sources.

One of the defining characteristics of the practice of crowdsourcing is the recency of its development. It has been a little over a decade since the term was first applied to a then nascent practice by Howe (2006), enabled by the emergence and adoption of Web 2.0 technologies. In the decade since, academics and practitioners alike have involved themselves in forming a common view on what crowdsourcing is, and how it may be
explained. This has left the researcher with a wide range of approaches to consider but the relative lack of a body of foundational research upon which to build.

As much of the data collection took place in industry, approval from the university ethics committee was a significant process. The committee was concerned that comments made by industry participants would be documented and, when subsequently published, might become the cause of unexpected problems for these individuals. Undertaking research that was significantly industry-based was seen as risky and a range of protections needed to be put in place including anonymisation of records and secure data storage protocols before approval was granted. This resulted in a understanding of the importance of maintaining the confidence of those that provided interviews and focused the handling of the data on the range of potential implications that could potentially flow from too casual an approach.

Research on crowdsourcing to date has been largely exploratory in nature. While a range of theoretical perspectives map out the many overlaps between crowdsourcing and more established domains (relationship marketing, mass customisation, open innovation, customer co-creation, service dominant logic) a compelling internal logic exploring and modeling crowdsourcing types, relationships and processes is yet to appear.

The data collected was subject to iterative analysis and interpretation, a process that sought to take observations from often chaotic and disordered environments, impose structure and order upon these data, and construct a supporting narrative with an academic tone. While initial interviews were coded and subject to analysis through qualitative data analysis software NVivo, it became apparent that the sheer diversity of application and approach made the development of coherent and meaningful themes difficult. For example, all of the practitioners were aware of the need for an engaged community to participate on the crowdsourcing but few were able to characterise those communities in any lucid or
meaningful way. Little consideration had been given to any formal structured approach to
crowdsourcing and so commonalities were difficult to identify.

As a consequence, the research presented in this thesis often ventures into territory for which
the theoretical underpinning is still developing. As the practice of crowdsourcing evolves and
dominant paradigms emerge a better understanding of the place and function of
crowdsourcing will establish itself in the literature. In the absence of this, and in recognition
of the ambiguous context in which this research is taking place, the use of proxies or
analogies may be required to bridge chasms of understandings which are unsupported by a
cohesive and integrative base of literature.

3.7 Data Collection

Consistent with a 'design science’ approach, data for this research were collected from a
range of sources, including: the conduct of semi-structured interviews with people active in
the crowdsourcing domain; participation by the researcher in online crowdsourcing activities;
subscription to industry newsletters and forums and significant quantitative data collection
and mining through analysis of archives of online forums, and an analysis of the companies
comprising the Fortune 500 list. In order to enhance the trustworthiness of data collection
and analysis the following framework presents the methodology adopted by the research in a
manner proposed in Elo et al (2014).

Extending my data collection to participation on both the seeker and solver sides of the
crowdsourcing activity added to my experience base and gave me a first-hand view of the
forces that shape participation and drive outcomes in a manner which builds on the roots of
ethnography and is broadly consistent with the tenets of netnography (Kozinets, 2010). The
steps associated with sound digital ethnography methodology include development of
specific research questions, identification of appropriate online groups or activities,
observation, data collection, analysis and reflection, and theory building through generalisation of data (Boellstorff et al. 2012). Participation in online forums led to a quantitative ‘deep-dive’ to better understand how crowd-based platforms, and the activity they support, changed over time. This consolidated my understanding of the factors mediating participation and contributed to the development of the model of online community participation that is presented in Study 3. A further detailed analysis of the community activities associated with the Fortune 500 group of companies was instrumental in enabling me to test the underlying assumptions implicit in the community participation model and refine further when inconsistencies or ill-fitting data was identified.

3.7.1 Preparation Phase

Prior to undertaking this research, a thorough desktop review was undertaken to provide an understanding of the degree of academic research that crowdsourcing had attracted. It became clear that while crowdsourcing (in particular crowdfunding, a subset of crowdsourcing) was attracting interest in the mainstream media, it was less well represented in the academic literature. To address this, I sought out representatives of a number of academic institutions to understand better where crowdsourcing might fit in the overall sweep of academic research and found there was a degree of variability in the way the subject was viewed. Some located crowdsourcing squarely in the IT domain, others considered it to be a business operations, others considered it a sub-category of innovation. This uncertainty suggested that there was a need for research into this area - to lay foundations for future investigation, and for a better understanding of both the short and long-term implications of crowdsourcing for business.
3.7.2 **Interviews**

Fifteen semi-structured interviews were conducted with a range of individuals who had a direct connection with crowdsourcing. Interviewing was discontinued when theoretical saturation was reached. Respondents were sought from organisations active in crowdsourcing practice; organisations that actively consult to businesses with the potential to adopt crowdsourcing processes, and branches of government with an interest in adopting crowdsourcing to facilitate enhanced outcomes. Interview candidates were identified using three methods: purposeful sampling, which uses an iterative process with the aim of maximising the richness and depth of the data (DiCicco-Bloom and Crabtree, 2006), recommendations from expert informants (Tongco, 2007), and snowball sampling (Creswell, 2013). Interview participants are listed in Table 4.

<table>
<thead>
<tr>
<th>Interviewee Title</th>
<th>Area of Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Founder</td>
<td>Crowdfunding business</td>
</tr>
<tr>
<td>Operations Manager</td>
<td>Incubator</td>
</tr>
<tr>
<td>Regional Director of Digital</td>
<td>Global consumer brand</td>
</tr>
<tr>
<td>Crowdsourcing Manager</td>
<td>Global consulting firm</td>
</tr>
<tr>
<td>Innovation Manager</td>
<td>Large financial institution</td>
</tr>
<tr>
<td>Innovation Manager</td>
<td>Capital city council</td>
</tr>
<tr>
<td>Director, Alumni and Philanthropy</td>
<td>Major Australian university</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Global consumer brand</td>
</tr>
<tr>
<td>Unit Manager</td>
<td>Specialist medical facility</td>
</tr>
<tr>
<td>Crowdsourcing consultancy owner</td>
<td>Global consultancy</td>
</tr>
<tr>
<td>Senior Executive – Risk</td>
<td>Insurance industry</td>
</tr>
<tr>
<td>Business Owner</td>
<td>Global consumer brand</td>
</tr>
<tr>
<td>Regional Director (APAC)</td>
<td>Crowdsourcing platform vendor</td>
</tr>
<tr>
<td>Senior Executive – Innovation</td>
<td>Insurance industry</td>
</tr>
<tr>
<td>Manager – Innovation and Community</td>
<td>Global services company</td>
</tr>
</tbody>
</table>

Table 4: Listing of participants in face-to-face interview process

Interview participants were provided with a ‘Participant Information and Consent Form’ (see Appendix 1) in advance of the interview. This document described the background and
context of the interview, the rights of the participant, identification of all parties involved in the research, and privacy and security provisions. Interviewees signed and returned a copy of the form prior to the commencement of the interviews.

Interviews were guided by a list of pre-determined questions, although once underway, the conversations were largely permitted to progress as the circumstances allowed i.e., unexpected direction changes were not discouraged and frequently topics diverged into side conversations that were valuable from the perspective of their potential to add value and perspective to the main thrust of the conversations. Each interview lasted around an hour.

The conversations were recorded on a digital recording device. At the conclusion of the interview, the data file was uploaded to a password-protected folder on one of the university’s secure servers. The file on the recorder was then erased. The recording was then transcribed (omitting identifying data) and a copy of the transcription referred back to the interviewee to ensure that the transcript represented a true record of the conversation, and that there was no sensitive content that might be potentially prejudicial to the wellbeing of the interviewee. None of the interviewees proposed changes to the transcriptions.

The transcription, along with those from the other interviews, was initially subject to content analysis using NVivo 11 to identify themes, interrelationships, and other characteristics relevant to addressing the research objectives.

3.7.3 Crowdsourcing Participation

Participation is a general ‘umbrella term’ intended to accommodate more usage cases than would use of the term engagement. The researcher participated in the conduct of online crowdsourcing activities hosted or mediated by the eleven organisations detailed in Table 5.
<table>
<thead>
<tr>
<th>Name of Organisation</th>
<th>URL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>eYeka</td>
<td><a href="https://en.eyeka.com">https://en.eyeka.com</a></td>
<td>eYeka positions itself as a global community of talented creators who ‘love to solve brands’ challenges with fresh thinking, creative ideas and shareable content’.</td>
</tr>
<tr>
<td>Re-Imagi</td>
<td><a href="http://www.re-imagi.co">http://www.re-imagi.co</a></td>
<td>Re-imagi uses audience-led communities to ‘experiment with unmet human needs and develop new ideas that will have a direct and in-direct impact on every industry’.</td>
</tr>
<tr>
<td>Estimize</td>
<td><a href="https://www.estimize.com/">https://www.estimize.com/</a></td>
<td>Estimize is a crowdsourced financial estimates platform offering a ‘true view of market expectations on 1,500+ stocks’</td>
</tr>
<tr>
<td>Unu</td>
<td><a href="http://unu.ai/">http://unu.ai/</a></td>
<td>Unu allows users to join together to participate in ‘swarm intelligence’ based responses to questions set by third parties.</td>
</tr>
<tr>
<td>Innocentive</td>
<td><a href="https://www.innocentive.com/">https://www.innocentive.com/</a></td>
<td>Innocentive is a commercial crowdsourcing platform connecting expert resources with companies and teams seeking problem solving.</td>
</tr>
<tr>
<td>PledgeMusic</td>
<td><a href="http://www.pledgemusic.com/">http://www.pledgemusic.com/</a></td>
<td>PledgeMusic is a ‘direct-to-fan music platform, which brings artists and fans together to share in the experience of music as it happens’.</td>
</tr>
<tr>
<td>Volition Beauty</td>
<td><a href="http://www.volitionbeauty.com">www.volitionbeauty.com</a></td>
<td>Volition Beauty crowdsources concepts for new cosmetic products and, in the case of those products that reach commercialisation, share the proceeds with the original contributor(s).</td>
</tr>
<tr>
<td>Fiverr</td>
<td><a href="http://www.fiverr.com">www.fiverr.com</a></td>
<td>Fiverr is ‘the world’s largest marketplace for digital services’. Various services are offered by specialist providers for the price of US$5.</td>
</tr>
<tr>
<td>Pozible</td>
<td><a href="http://www.poszible.com">www.poszible.com</a></td>
<td>Australian crowdfunding platform. Pozible provides the platform for project creators to present their ideas to a connected audience, worldwide.</td>
</tr>
<tr>
<td>Zooniverse</td>
<td><a href="https://www.zooniverse.org/">https://www.zooniverse.org/</a></td>
<td>Citizen science site that uses unskilled participants to identify structures in photographs from deep space.</td>
</tr>
<tr>
<td>Mindhive</td>
<td><a href="https://mindhive.org/slp/">https://mindhive.org/slp/</a></td>
<td>MindHive uses collective knowledge to ‘solve the most pressing strategy and policy challenges’</td>
</tr>
</tbody>
</table>

Table 5: Crowdsourcing sites participated in by researcher
All of these sites rely on communities of individuals to respond in some way to questions or challenges proposed by or on behalf of individuals or client companies. Participation in these activities is purely voluntary and prospective participants are free to opt in or out without penalty or threat of being excluded from the community. Each of these sites is in regular email contact with members of their communities to prompt activity and promote involvement.

3.7.4 **Crowdsourcing email newsletter lists**

There are a number of organisations that position themselves as thought leaders and active promoters and enablers of crowdsourcing. These organisations generally issue daily or weekly newsletters via email. Such newsletters provide commentary on crowdsourcing practice around the world and a focus for discussions and the promotion of interactions. Table 6 provides a listing of the organisations’ mailing lists that were subscribed to.

<table>
<thead>
<tr>
<th>Name</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AltFiNews</td>
<td>Provides news and insights into developments relating to alternative finance practice including such topics as crowdfunding, P2P lending, online invoice lending, etc.</td>
</tr>
<tr>
<td>Crowd Companies</td>
<td>Crowd Companies aims to be a catalyst for change in large companies. Crowd Companies maintains a council comprising membership from many established global brands. The organisation provides access to an innovation network and a range of educational services.</td>
</tr>
<tr>
<td>Crowdfund Insider</td>
<td>Crowdfund Insider is a news and information web site covering disruptive finance including crowdfunding, peer-to-peer / marketplace lending and other forms of Fintech. The newsletter provides news coverage, editorial, and perspective from contributors from around the world.</td>
</tr>
<tr>
<td>Crowdsourcing Week</td>
<td>Crowdsourcing Week connects people with the ideas and practices in crowdsourcing and crowd innovation globally. It helps organisations to understand the ‘new economy’ through conferences &amp; summits, online educational programs, workshops and consultancy.</td>
</tr>
</tbody>
</table>

Table 6: Description of sources of crowdsourcing mailing lists contributing to this research
3.7.5 Participation in and measurements of online communities

Many online community forums have been captured in Internet archives along with metrics that enable the development of these communities over time to be mapped. As an investigation into the nature of the kinds of communities these forums attract formed a significant part of this research, taking data from these archives provided a rich source of quantitative data. Forums were selected for study by entering the search term ‘online forum’ into Google. A selection of candidate sites was obtained and these were then entered into the Internet Archive site (www.archive.org) to establish the quality of historical data available. Quality of data in this sense refers to the start date of entries into the archive, and the frequency and distribution of updates. Figure 1 shows an example of the reporting available on the site which provides an overview of the data quality by detailing frequency of updates

![Internet Archive entries for www.rolexforums.com showing commencement of inclusion in the archives, and frequency and distribution of updates. (Source: http://web.archive.org/*/rolexforums.com)](image)

and distribution of updates over time. Where the amount of data relating to a particular forum was insufficient to provide meaningful contribution to this research the site was discarded and the next forum on the list was submitted.
Table 7 depicts the number of measurements taken, including the year of the earliest data point that was obtained, and the total number of threads and posts available for inclusion in the analysis.

<table>
<thead>
<tr>
<th>History</th>
<th>Measurements</th>
<th>Earliest</th>
<th>Number of Threads</th>
<th>Number of Posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-Camera Forum</td>
<td>17</td>
<td>2007</td>
<td>291,214</td>
<td>2,715,235</td>
</tr>
<tr>
<td>SDMB</td>
<td>19</td>
<td>2000</td>
<td>684,891</td>
<td>17,795,204</td>
</tr>
<tr>
<td>Coffee Snobs</td>
<td>19</td>
<td>2005</td>
<td>29,918</td>
<td>375,023</td>
</tr>
<tr>
<td>Rolex</td>
<td>23</td>
<td>2004</td>
<td>380,694</td>
<td>5,598,061</td>
</tr>
<tr>
<td>R1 Forum</td>
<td>38</td>
<td>2001</td>
<td>362,317</td>
<td>5,658,060</td>
</tr>
<tr>
<td>Atheist Foundation</td>
<td>14</td>
<td>2010</td>
<td>18,543</td>
<td>394,345</td>
</tr>
<tr>
<td>Arcade Controls</td>
<td>22</td>
<td>2004</td>
<td>132,123</td>
<td>1,474,336</td>
</tr>
<tr>
<td>Smith &amp; Wesson</td>
<td>17</td>
<td>2009</td>
<td>338,188</td>
<td>3,607,219</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>169</strong></td>
<td></td>
<td><strong>2,237,888</strong></td>
<td><strong>37,617,483</strong></td>
</tr>
</tbody>
</table>

Table 7: Archive measurement details for targeted online forum communities

Further data collection took place to identify the nature of forum usage including number of participants and views of forum posts. This required a different set of forums for analysis as the research required a contrasting view of usage behaviours between large and small forums. Forums were selected following a simple Google search. The forum platform needed to be of a type that enabled measurements to be made consistently over time. Forum topics were selected more or less at random with a balance between consumer products, lifestyles, and attitudes and beliefs sought.
Tables 8 and 9 detail the data that was obtained to support the analysis of online forum-based communities.

<table>
<thead>
<tr>
<th>Straight Dope Message Board</th>
<th>GQ</th>
<th>IMHO</th>
<th>Café Society</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of threads</td>
<td>179,143</td>
<td>99,249</td>
<td>123,764</td>
</tr>
<tr>
<td>Total number of views</td>
<td>387,206,007</td>
<td>225,407,429</td>
<td>298,507,629</td>
</tr>
<tr>
<td>Total number of replies</td>
<td>2,244,077</td>
<td>2,752,503</td>
<td>3,078,772</td>
</tr>
<tr>
<td>Views per reply</td>
<td>173</td>
<td>82</td>
<td>97</td>
</tr>
<tr>
<td>Mode</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Average number of views</td>
<td>2,161</td>
<td>2,271</td>
<td>2,412</td>
</tr>
<tr>
<td>Average number of replies</td>
<td>13</td>
<td>28</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maxima Forum</th>
<th>Rolex Forum</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of threads</td>
<td>121,898</td>
<td>112,561</td>
</tr>
<tr>
<td>Total number of views</td>
<td>76,535,734</td>
<td>156,249,165</td>
</tr>
<tr>
<td>Total number of replies</td>
<td>1,206,139</td>
<td>2,739,594</td>
</tr>
<tr>
<td>Views per reply</td>
<td>63</td>
<td>57</td>
</tr>
<tr>
<td>Mode</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Average number of views</td>
<td>628</td>
<td>1,388</td>
</tr>
<tr>
<td>Average number of replies</td>
<td>10</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 8: Measurements made of selected large forums

<table>
<thead>
<tr>
<th>Knitting</th>
<th>Poodle Food</th>
<th>Amateur Rocketry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of threads</td>
<td>899</td>
<td>971</td>
</tr>
<tr>
<td>Number of views</td>
<td>2,123,400</td>
<td>1,209,928</td>
</tr>
<tr>
<td>Number of replies</td>
<td>5,627</td>
<td>10,326</td>
</tr>
<tr>
<td>Views per reply</td>
<td>377</td>
<td>117</td>
</tr>
<tr>
<td>Mode</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Average number of views</td>
<td>2,373</td>
<td>1,246</td>
</tr>
<tr>
<td>Average number of replies</td>
<td>6</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 9: Measurements made of selected small forums

3.7.6 Analysis of Fortune 500 companies

The Fortune 500 is an annual list of the 500 largest companies in the United States ranked by gross income. While companies appearing on this list are generally public companies, privately held companies may also be included if reliable data is available in respect of their revenues. The list has become a popular snapshot view of the drivers of growth in the US.
economy and presence on the list is considered a proxy for financial strength and operational excellence. The list comprises companies that are categorised as both business to consumer (B2C) and business to business (B2B). All publish websites which provide insights into the positioning, primary markets, and customer orientation of the firms. The 2015 Fortune 500 list was used as the primary source of data for this research. The model specified in Study 3 was then validated against a sample of data from the 2017 Fortune 500 list.

3.7.7  **Structured Literature Review**

A structured literature review was undertaken involving an initial identification and analysis of crowdsourcing-related literature reviews, followed by a detailed search for and analysis of papers matching selection criteria addressing the aim of this research. This approach provides the advantage of both an overview of prior thinking as well as a comprehensive targeted review of contemporary research.

Consistent with Brereton et al (2007) the methodology adopted divided the process into three phases: the planning phase; conducting the review; and reporting the review. The activities that were undertaken in each of these phases are detailed in Figure 2.
From an initial pool of 270 papers, a total of 40 were ultimately subject to analysis.

3.8 Conclusion

The studies comprising this thesis each adopt specific methodologies that are subsets of the overall methodological approach adopted in this research. Crowdsourcing does not exist as a single objective truth and exploration using ‘hard-science’ or positivist methodologies would be inappropriate. Rather crowdsourcing is comprised of an amorphous set of activities and behaviours and for participants there is not one universal experience, nor one single objective truth. The reality participants experience is one that exists in the context of individual, community and cultural norms and is suitable to a constructivist epistemology. While this
suggests a qualitative approach, there are positivistic elements included to provide greater
definition and support to the inductive development of theory. A design science methodology
is appropriate for research in domains that are ill-defined and emergent and was used to
create valid and reliable knowledge.

Data collection took place through interviews, naturalistic participation in crowdsourcing
activities from the perspective of both ‘seeker’ and ‘solver’, subscription to industry
publications and thought leaders, and participation in and measurement of online
communities. Further data in relation to online communities and the appropriation of value
was facilitated by analysis of the list of 2015 and 2017 Fortune 500 companies.
Chapter 4: Study 1 - Social Media, Crowdsourcing and the Creation of Value.

4.1 Abstract

This is the first of three papers comprising this thesis. The aim of this paper is to examine literature that proposes crowdsourcing models, conduct an analysis of those models, and provide a critical assessment of the interrelationships of the variables in the creation of value. The newness of the field and relative lack of definition of key terms and concepts makes surveying the current state of understanding challenging. ‘Value’ in this context can be viewed as any incremental improvement in the ability of an individual or organisation to achieve an objective through a sacrifice judged to be less significant than the benefits associated with that improvement. The perceived value-in-use obtained in an exchange may be functional, social or hedonic (Abdul-Ghani et al. 2011) in nature. Our research finds the models proposed in the literature consist of relatively few stages, and these individual stages generally contain few variables. Many of these models are essentially descriptive in nature without explanation of dependencies or value creating interactions between variables. Emerging research questions relate to the need for greater understanding of the antecedent conditions that lead to the creation of value through crowdsourcing, the nature of question problem or task being addressed, and the ability for an organisation to operationalise the results of their crowd interactions.

4.2 Introduction

The aim of this paper is to examine literature that proposes crowdsourcing models, conduct an analysis of those models, and provide a critical assessment of the interrelationships of the variables in the creation of value. The research implicitly adopts the perspective of value-in-use (Vargo and Lusch, 2004) but moves beyond transactional exchange approaches to value and instead considers the ‘advantage’ associated with the interaction. ‘Value’ in this context
can consequently be viewed as any incremental improvement in the ability of an individual or organisation to achieve an objective through a sacrifice judged to be less significant than the benefits associated with that improvement. The perceived value-in-use obtained in an exchange may be functional, social or hedonic in nature (Abdul-Ghani et al. 2011).

This research finds the models proposed in the literature consist of relatively few stages, and these individual stages generally contain few variables. Many of these models are essentially descriptive in nature without explanation of dependencies or value creating interactions between variables. Emerging research questions relate to the need for greater understanding of the antecedent conditions that lead to the creation of value through crowdsourcing, the nature of question problem or task being addressed, and the ability for an organisation to operationalise the results of their crowd interactions.

The increasing prevalence of social media has accelerated an existing tendency towards greater openness between organisations and their stakeholder communities (Lakhani, Assaf and Tushman, 2013). From the initial research into relationship marketing in the 1990s (Christopher, Payne and Ballantyne, 1991) through to the more recent development and application of customer co-creation techniques (Vargo and Lusch, 2004) theorists have demonstrated that blurring the boundary between stakeholder and organisation, and integrating customer and other stakeholder input into an organisation’s decision-making process can lead to enhanced customer value. Effective innovation practice requires the inclusion of customer perspectives in the formulation of strategy (Desouza et al. 2008), new product design and marketing activities (Christopher, Payne and Ballantyne, 1991). Those that learn how to engage and leverage the potential of these individuals and communities via crowdsourcing may be able to generate significant commercial advantage (Sawhney, Verona and Prandelli, 2005). Emerging research on stakeholder engagement (Alexander, Jaakola, and Hollebeek, 2018) identifies the need for the current view of customer engagement to be broadened to include other stakeholders.
Finding a research direction in a field as complex, extensive and emerging as crowdsourcing is a difficult challenge. The through-line adopted in this research is that of value-creation. The research program has been tackled from the perspective of establishing and critiquing models already proposed in the literature, proposing the antecedent conditions required for the creation of value, and an analysis of drivers of performance of the online communities that enable crowdsourcing seekers to realise their objectives. The underlying fabric of observations, interactions and measurements provide the basis for the development of novel models and perspectives bearing on the value-creation process that may be employed to explain current performance of a range of crowdsourcing activities, and provide a conceptual framework providing options for the users of crowdsourcing to change their approach in ways that enhance the efficacy of their process.

In this manuscript, we undertake a survey of literature related to crowdsourcing models, conduct an analysis of those models and the variables that comprise them, and provide a critical assessment of the nature and inter-relationships of the variables in the creation of value.

Given that crowdsourcing lacks a solid body of foundational literature, it is important to understand the boundaries of the domain with a systematic review of the literature. In this study literature that presents models explaining value-creation through crowdsourcing are critically examined to establish strengths and weaknesses in the body of literature, and to suggest future directions for research.

4.3 A broad field of endeavor

The coining of the term ‘crowdsourcing’ is attributed to Howe (2006). Crowdsourcing was a label derived from the perspective of practice - Howe’s (2006) article was published in Wired magazine, not an academic journal, the author is a journalist, not a trained researcher, and the article itself consists of four vignettes of how crowdsourcing was disrupting established industries. The article lacks the theoretical perspectives to serve as the foundation of further research unlike articles in related fields such as Vargo and Lusch (2004) in service-dominant
logic, Payne Christopher and Ballantyne (2005) in relationship marketing, and von Hippel (2005) and Chesbrough (2006) in open innovation. Awareness of crowdsourcing’s nascence was the product of journalism and entrepreneurship, not academic endeavor, and this orientation still pervades.

This paper adopts the definition of crowdsourcing as a ‘type of participative online activity in which an individual, an institution, a non-profit organisation…proposes to a group of individuals…via a flexible open call, the voluntary undertaking of a task’ (Estelles-Arolas and Gonzales-Ladron-de-Guevara, 2012). The newness of the field and relative lack of definition of key terms and concepts makes surveying the current state of understanding challenging.

The range of activities that satisfy the definition of crowdsourcing is large, and it is considered to be a fragmented and emergent domain (Zhao and Zhu, 2014). The fact that early descriptions of crowdsourcing were grounded in the popular press and came into being in the absence of strong methodological or theoretical support, compounds the difficulty of using the existing literature in direction-finding for new research. In this sense, perhaps crowdsourcing may be considered the ‘bastard child’ of open innovation with currently little claim to strong theoretical provenance.

While an impressive corpus of literature has been developed in the interim, it may be argued that there’s perhaps an absence of settled foundational literature, beyond that which seeks to chart the practice. In its place there are diverse viewpoints not yet consolidated which generate significant amounts of knowledge but also much variation in things such as definitions, concepts and descriptors. Indeed Estellés-Arolas & González-Ladrón-de-Guevara (2012) state in their abstract: ‘Crowdsourcing’ is a relatively recent concept that encompasses many practices. This diversity leads to the blurring of the limits of crowdsourcing that may be identified virtually with any type of internet-based collaborative activity, such as co-creation or user innovation…’
Kaplan (in Sutton and Staw, 1995) proposed that theory and data assumed different roles in social science research. Data described, theory explained. Data set out which empirical patterns were observed, while theory provided an explanation as to why those same patterns formed. But what if the data set is effectively incomplete? The task then of the literature reviewer must become more of accounting for the inventory of relevant publications rather than proposing theoretical explanations.

The overall question addressed by this study is how has value-creation been identified in literature proposing crowdsourcing models? The aim of this study is to explore literature that proposes crowdsourcing models, conduct an analysis of those models and the variables that comprise them, and provide an understanding as to the value-orientation they display. As the term ‘crowdsourcing’ covers a large number of diverse practices a general survey may lack sufficient detail to be authoritative, whilst an approach that starts with specific and detailed perspectives may be bound to particular usage cases and not be generalizable.

4.4 Value destruction and creation

The term, ‘value-creation,’ appears frequently in business literature but is rarely defined. Schumpeter (1942) saw value-creation as a product of innovation through advances in technology. He recognised that new and different combinations of resources become the basis for new production methods and products. These developments create new markets and expand existing ones leading to the inevitable creation of value. This approach linked the idea of value specifically to financial performance, a perspective amplified by Porter (1985) who saw value as:

the amount buyers are willing to pay for what a firm provides them. Value is measured by total revenue... A firm is profitable if the value it commands exceeds the costs involved in creating the product.

The development of the resource-based view of the firm extended the consideration of value to contributions of all resources controlled by an organisation. Barney (1991) considered a firm resource to be valuable if it enabled a customer need to be better satisfied, or for that
need to be satisfied at a cost lower than that of its competitors. Bowman and Ambrosini (2000 in Lepak et al. 2016) considered value from a more abstract perspective identifying that value is created for the user through the use of the product or service. This they called ‘value in use’. An additional value construct - value in exchange - recognises the concurrent financial flow that is created through exchange of money for goods and services. These concepts were built upon by Vargo and Lusch (2004) who cemented the idea of the value-creation process being a two-way street, acknowledging that the perspective of all participants in a transaction needs to be considered. Priem (2007) saw value-creation as involving innovation that establishes or increases the consumer's valuation of the benefits of consumption, a position that also aligned with Lepak, Smith and Taylor’s (2007) belief that, at the organisation level, the value-creation process includes any activity that provides a greater level of novel and appropriate benefits than target users or customers currently possess.

This definition supersedes innovation-based approaches and moves beyond the consideration of financial returns as being important aspects of value, embracing instead the idea of ‘benefits’ accruing to the participants in the transaction. However, the question remains: to what are these ‘benefits’ referenced? An advantage for one person may be considered an impediment to another. A small sporty car may appeal to the bachelor – the benefits being image and performance, but this may have little applicability to the family man whose needs are practical in nature. With this in mind, ‘value’ perhaps constitutes features or outcomes that assist an individual or organisation to move closer towards their objectives. Here there is a qualitative component in relation to cost. Eventually a tradeoff will occur when the marginal utility of the benefit received will be exceeded by the cost of acquiring that benefit. Typically, this cost will be financial in nature but there may be other considerations and trade-offs – convenience, longevity of impact, exclusiveness, and so on. The cost of achieving the benefit must then be recast as the sacrifice made. Based on the preceding discussion, I propose that a superior (or more comprehensive) definition of value is: ‘any
incremental improvement in the ability of an individual or organisation to achieve an objective through a sacrifice they judge to be less significant than the benefits associated with that improvement.’ The perceived value-in-use obtained in an exchange may be functional, social or hedonic in nature (Abdul-Ghani et al. 2011).

This definition of value provides context for the benefit and the motivation for seeking the benefit and transcends simply financial considerations. For example, a firm may be keen to understand better the motivations of its most faithful customers and indeed this may translate into financial gain, but it may more importantly lead to enhanced understanding, closer relationships, lower churn and a range of other collateral benefits more strategically desirable than simply a short-term uplift in revenue. It is in this context that the nexus between engaging a crowd, and creating value becomes clear.

4.5 Methodology

The approach adopted in this research involves an initial identification and analysis of crowdsourcing-related literature reviews, followed by a detailed search for and analysis of papers matching selection criteria addressing the aim of this research. This approach provides the advantage of both an overview of prior thinking as well as a comprehensive targeted review of contemporary research.

Consistent with Brereton et al (2007) the methodology adopted by this paper divides the process into three phases: the planning phase; conducting the review; and reporting the review. The activities that were undertaken in each of these phases are detailed in Figure 2.
A Google Scholar keyword search conducted late in 2016 identified 17 crowdsourcing-oriented literature reviews, the earliest of which was published just six years after the term ‘crowdsourcing’ was coined in 2012. The most recent literature review found was dated July 2016. While the specific objective of each of these publications varied, four general types of papers were observed. The papers presented either a categorisation of factors relevant to crowdsourcing, a definition of crowdsourcing or aspects thereof, an explanatory model, or a keyword analysis performed on a selected body of literature. All papers reviewed could be described as ‘foundational’ in that they examined an emerging issue that would benefit from
exposure where contribution would arise from developing a conceptual model (Webster and Watson, 2002; in Pedersen et al. 2013). A number of the papers adopted a purely descriptive approach, nominating key trends or usages based on the literature without further interpretation or analysis. Several restricted their search to a small number of conferences and journals – an approach most evident in research published in Information Systems (IS) related journals. Many publications focused on single applications such as educational environments or embraced single dimensions such as ethics.

Two distinct insights arose from this initial analysis. The first relates to the type of literature review undertaken. Almost all the publications featured a systematic approach that sought to quantify, assess and refine the body of relevant literature prior to establishing a final set of papers to subject to closer analysis. The second noteworthy insight involved the sources used in the review. Authors in many cases declined to use a meta-index such as Google Scholar, instead using proprietary search engines linked to specific publishers or aggregators of publications such as Web of Knowledge. This approach is supported by Gustini and Boulos (2013) who found that despite a consistent track record of improved accuracy over time, Google Scholar returned an incomplete listing of around 95% of the available papers that satisfied the search criteria. It was therefore concluded that Google Scholar is ‘not up to the required search standard for systematic reviews’ (Gustini and Boulos, 2013). Notwithstanding this finding, Gray et al (2012) determined Google Scholar’s suitability for ‘initial and supplemental information gathering’ and so it was considered appropriate for the initial exploration of the literature in this research.

Table 10 provides a summary of the crowdsourcing-related literature reviews containing models along with a categorisation of type, scope and result. Of specific interest are those papers whose authors synthesised a crowdsourcing model as the outcome of their research. Of the sources reviewed, seven derived crowdsourcing models consistent with the definition of model proposed by Börner et al (2012) ‘a systematic description of an object or phenomenon that shares important characteristics with its real-world counterpart and
supports its detailed investigation’. These seven papers are denoted in the table with an asterisk (*).
<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Reference</th>
<th>Type</th>
<th>Title</th>
<th>Scope of review</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Salminen, 2012</td>
<td>Categorisation of relevant factors</td>
<td>Collective Intelligence in Humans: A Literature Review</td>
<td>1051 papers from the Web of Knowledge.</td>
<td>Categorisation of three levels of analysis encompassing 19 themes.</td>
</tr>
<tr>
<td>2*</td>
<td>Hetmank, 2013</td>
<td>Explanatory model</td>
<td>Components and Functions of Crowdsourcing Systems – A Systematic Literature Review.</td>
<td>Review of 8 databases of peer-reviewed conference proceedings and journal papers since 2006.</td>
<td>A total of 17 definitions related to crowdsourcing were found and categorised into a descriptive model.</td>
</tr>
<tr>
<td>3</td>
<td>Horita, Degrossi, Assis, &amp; Albuquerque, 2013</td>
<td>Categorisation of relevant factors</td>
<td>The use of volunteered geographic information (VGI) and crowdsourcing in disaster management: a systematic literature review</td>
<td>Seven databases, final pool of 21 papers.</td>
<td>Quantitative analysis of volunteered geographic information in the context of disaster management.</td>
</tr>
<tr>
<td>6*</td>
<td>Natalicchio, Messeni Petruzzelli, &amp; Garavelli, 2014</td>
<td>Explanatory model</td>
<td>A literature review on markets for ideas: Emerging characteristics and unanswered questions</td>
<td>Nine search strings across five databases.</td>
<td>Three-pillar framework, addressing dynamics and emerging characteristics of idea crowdsourcing markets.</td>
</tr>
<tr>
<td>7</td>
<td>Ranard et al. 2014</td>
<td>Categorisation of relevant factors</td>
<td>Crowdsourcing—Harnessing the Masses to Advance Health and Medicine, a Systematic Review</td>
<td>Peer reviewed health research from three data sources</td>
<td>Four distinct types of research needs addressed by crowdsourcing.</td>
</tr>
<tr>
<td>8</td>
<td>Tripathi, Tahmasbi, Khazanchi, &amp; Najjar, 2014</td>
<td>Categorisation of relevant factors</td>
<td>Crowdsourcing Typology: A Review of IS Research and Organisations.</td>
<td>Crowdsourcing papers from top 3 IS conferences and the top 11 IS journals.</td>
<td>Summary of crowdsourcing practice areas and academic research foci.</td>
</tr>
<tr>
<td>9*</td>
<td>Zhao &amp; Zhu, 2014</td>
<td>Explanatory model</td>
<td>Evaluation on crowdsourcing</td>
<td>Peer reviewed literature in eight</td>
<td>A conceptualisation framework of</td>
</tr>
<tr>
<td>#</td>
<td>Author(s)</td>
<td>Model/Method</td>
<td>Literature Review Details</td>
<td>Findings/Contributions</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------</td>
<td>---------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Hossain, 2015</td>
<td>Categorisation of relevant factors</td>
<td>Crowdsourcing in business and management disciplines: an integrative literature review.</td>
<td>Content analysis - crowdsourcing's relation to open innovation.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Rechenberger, Jung, Schmidt, &amp; Rosenkranz, 2015</td>
<td>Categorisation of relevant factors</td>
<td>Utilising the Crowd – A Literature Review on Factors influencing Crowdsourcing Initiative Success</td>
<td>Identification of 41 direct and indirect factors that contribute to the success of crowdsourcing efforts.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Thuan, Antunes, &amp; Johnstone, 2016</td>
<td>Categorisation of relevant factors</td>
<td>Factors influencing the decision to crowdsource: A systematic literature review</td>
<td>Nine influencing factors yielding sixteen sub-factors or properties.</td>
<td></td>
</tr>
</tbody>
</table>

Table 10: Categorisation of crowdsourcing related literature reviews
While Google Scholar provided an initial exploration of the literature, the results it returns are not sufficiently comprehensive to reliably identify the full range of appropriate publications (Gustini and Boulos, 2013). For that reason, ACM, Ebsco, Emerald, Proquest, Sage, Science Direct, Scopus, and SpringerLink databases were consulted in addition to Google Scholar. These represent the primary databases that had also been consulted by authors of the literature reviews analyzed earlier in this paper.

### 4.5.2 Determination of search terms and databases (Figure 2)

The second variable directly affecting the range of publications returned through this search was the search terms employed. As this research seeks to identify the variables associated with crowdsourcing models, the words ‘crowdsource’, ‘model’, ‘variable’ and ‘value’ along with wildcard-driven variations thereof, were used as search terms.

Each database was searched with a combination of the defined search terms. Zotero ([www.zotero.com](http://www.zotero.com)) was used to scrape the data from the search engines and convert into a .CSV file. Types of item returned included articles in-press, books, book chapters, book sections, conference papers, dissertations and theses, journal articles, magazines, newspapers, trade journals, and wire feeds. Because some publications appeared on multiple databases, there were a large number of duplicates. The list of candidate papers was thus de-duplicated and reviewed to establish categories of publication type. The publication types were then evaluated in respect of whether each had sufficient rigor to be considered authoritative. Content that was peer reviewed remained in the dataset along with dissertations and theses, while content originating from magazines, newspapers, trade journals, and wire feeds was excluded. Many publications, whilst listing relevant keywords, did not actually contain content relevant to this search. All of the remaining papers were reviewed and evaluated against the selection criteria. Figure 3 identifies type of publication and year of publication of authoritative articles in the final ‘clean’ and de-duplicated list to provide a picture of the development of literature on this topic over time.
Criteria were established to guide the process of either including a publication in the final list of candidates to be subject to detailed analysis or excluding it from further consideration. To be considered the publication must broadly have included an explanatory model proposing interrelationships between variables associated with crowdsourcing processes from end-to-end and not just a single element, subject focus, or application. In addition, the model presented needed to be general in nature, not specific to a single industry or usage case.

From an initial pool of 270 papers a total of 40 papers were identified as sufficiently consistent with the selection criteria to enable a critical assessment of the nature and interrelationships of the variables proposed in their crowdsourcing models. Figure 3 identifies type of publication and year of publication of authoritative articles in the final ‘clean’ and de-duplicated list to provide a picture of the development of literature on this topic over time.

4.6 Assessment of content

An assessment of these 40 articles supports the perspective that crowdsourcing is a new domain. No dominant model has been established model, upon which authors can build theories or hypotheses, nor is there a single orthodox approach to defining the domain to provide a common starting point for analysis. While a number of papers could be considered purely theoretical in their approach, the majority were grounded in establishing insight to
practice. Various labels were used to address the key differentiation offered by the domain of crowdsourcing, however all of these represent different sub-genres of the same basic ideas: open innovation (Seltzer and Mahmoudi, 2012), swarm intelligence (Walter and Back, 2011), human computing (Ranard et al. 2014), social computing (Chen, Xu and Whinston, 2011), collective intelligence (Amrollahi, 2015) are all representative labels that arise in the literature, and all were used in a sense that suggests significant commonality (Poblet, García-Cuesta and Casanovas, 2017). The lack of a defined nomenclature, or rather the presence of a large body of terms lacking significant differentiation, is perhaps indicative of the early stage of development at which crowdsourcing currently stands. As is typical with emergent phenomena, a period of ferment leads to a consolidation within the domain before dominant models and widely acknowledged labels emerge.

Most of the models that were proposed demonstrated low resolution, in other words the individual components that comprised the models were broad in scope and contained little detail. For example, a model may include reference to a ‘community’ as being a component of the crowdsourcing process, but not contain additional information in respect of attributes, characteristics or interdependencies that constituted communities. While models with fewer components were perhaps easier to assimilate, their usefulness was diminished through their inherent lack of descriptive power. A minimal range of potential variables associated with components resulted in a very ‘broad brush’ interpretation of often interactions that are often complex in practice with a consequent decrease in meaning. Definitions were often either quite general or missing altogether. Models were purely narrative and descriptive without consideration of the way variables within the models might interact or the implications of those interactions.

A noticeable change in emphasis in the content of the papers occurs over time. The earliest papers predominantly sought to describe crowdsourcing and link it to open innovation and innovation practice in industry, including recognition of crowdsourcing’s relationship with collective intelligence (Sharma, 2010) and the concept of the ‘wisdom of crowds’, (Walter and Back, 2010). Huang and Wang (2011) sought to address deficiencies in popular
conceptions of crowdsourcing especially in relation to the quality and usefulness of ideas contributed to industry-based ideation initiatives. They found that ideas contributed in this context decreased in number yet increased in quality over time. However, the modeling to support this view is very specific to the case being investigated and not easily generalizable. This potentially restricts understanding of the broader context in which value may be created.

As the field began to mature crowdsourcing models evolved around concepts consistent with the application of open innovation (Chesbrough, 2003). Crowdsourcing based business models were explored (Marjanovic, Fry and Chataway, 2012) through case study analysis of a number of companies involved in the practice. The modeling resulting from this is very much a description of the roles and players, rather than analysis of the mechanisms through which these actors interact and create value. Again, the research references open innovation – a valid approach but one that ties the observations to purely innovation-oriented activities. Crowdsourcing disaster relief for example would not be considered under such a categorisation.

Building on these approaches, more recent literature starts to address tightly targeted usages of crowdsourcing techniques. The thrust of these articles is less concerned with naming the parts of the value-creation process in favor of investigating in detail specific applications of crowdsourcing in fields as diverse as translation services (Resnik et al. 2013), citizen science (Maher et al. 2014; Grace et al. 2015), library operations (Li, 2014), mobile brokerages (Soliman, 2014), fashion (Chun, Song and Ko, 2014), e-Government (Cupido and Ophoff, 2014) and automotive design (Saldanha, Cohendet and Pozzebon, 2014). This represents a step forward in understanding the various usages to which crowdsourcing techniques may be applied.

Papers seeking to understand better the machinery of crowdsourcing (Vale, 2014; Zou, Gil and Tharayil, 2015) start to broaden the toolkit used in the analysis. Zou, Gil and Tharayil (2014) adopt a Model Driven Engineering approach using a Platform Independent Model to represent concepts of business logic independent of technological details. The resulting
model provides software developers with a roadmap for developing context-aware crowdsourcing platforms. The methodology used in this research focuses on breaking down the steps associated with executing crowdsourcing on a platform but does little to provide an understanding of the nature of the interrelationships that support that activity in the broader context. Vale (2014) adopts a different approach identifying crowdsourcing as a complex system and applying Agent Based Modeling to study it. This moves research into a software-based behavioural context using software ‘agents’ to study a specific platform – in this case Amazon Mechanical Turk - and observe changes in performance metrics related to properties of task, characteristics of workers, and performance metrics. The research direction changes then from a ‘what’ orientation to one that considers the questions of ‘why’ and ‘how’. The model it explores however is limited, comprising only four actors: requestor, worker, task and environment. Notwithstanding this is a legitimate representation of crowdsourcing process, it lacks compelling realism in describing the many dynamic facets that shape crowdsourcing systems as they are found in practice.

Contrast this with the model proposed by Thuan (2014) which, whilst absent the behavioural complexity of an Agent Based Modeling approach, captures more of the detail of actual crowdsourcing process, including identifying a number of variables that influence each component of the process. While it is a step forward it could still be argued that the model shows a lack of resolution. To take one example, while ‘Task Design’ (Step 2A) is a critical aspect of successful crowdsourcing, the nature of that design, constraints, barriers and forms that it might take are left unexplored.

4.7 **Keyword Analysis**

Figures 4 and 5 show wordclouds of the keywords from the total pool of papers reviewed. The first wordcloud shows keywords from papers published in the period 2010 - 2012. The second shows keywords from papers published 2013 - 2016. Clearly illustrated is the shift over time from keywords centered on innovation-based concepts to those with an orientation towards usages. Noticeably absent is reference to value or value-creation.
Amongst the later papers (2013 to 2016) a clear emphasis emerges dividing the literature into two streams. The first explores usage-specific models (4 papers), while the second proposes a number of generally applicable models (4 papers). The general models in these papers all have a distinct bias towards software development perspectives. This reflects the fact that a necessary enabler of crowdsourcing is the software upon which interactions are mediated. The design of this software must be congruent with the processes and actors that constitute crowdsourcing. It is prudent to keep in mind that the priorities that attach to software
development are often different from those that guide creation of value in an organisational context and so the models expressed in these papers may have less applicability in the general sense.

An, et al. (2015a,b) are represented in the sample by two publications, one a journal article (2015a) and the other a conference paper (An, et al. 2015b). The papers describe the use of Mobile Crowd Sensing (MCS) which is defined as the collection of data from mobile device users to ‘unveil hidden information such as group behaviour patterns, network architecture and service attributes’ (Zhang, Dantu and Cangussu, 2011 in An et al. 2015b). The potential exists when adopting the MCS model proposed by An et al (2015a) for participants to contribute indirectly and without their direct knowledge through remote monitoring. An example of this is Google Maps which uses anonymous data from cell phone companies to determine how freely traffic is moving along roads. This information is published in real time and it is fair to say that most of the contributors of this data would be unaware of their own participation. This application does not appear to have been anticipated in the commonly cited definition of crowdsourcing by Estellés-Arolas and González-Ladrón-de-Guervara (2012) as the ‘voluntary undertaking of a task’ and one that requires that the participant ‘bring their work, money, knowledge, and/or experience’.

Two different papers that propose general models also represent a growing degree of differentiation within the field. Zakariah et al (2016) describe an approach to leveraging the economic activity generated by crowdsourcing as a means of fostering employment and growth in developing economies. Their tripartite model identifies the crowdsourcer, the crowd worker, and the platform as the perspectives that contribute to an understanding of the crowdsourcing model for low-income communities. A further 16 factors that contribute to these perspectives are nominated by the author but there is relatively little exploration of these factors or the interactions between them. Yaoqi (2016) approaches the development of a crowdsourcing model using Generalizable Stochastic Petri Nets (GSPN). GSPN is a performance analysis tool based on a graphical system representation (Chiola and Marco, 1993). Using this technique, the authors identified a series of criteria for optimising the
efficiency of crowdsourcing. This represents another progression in the literature from simple descriptions of the elements in a crowdsourcing system, to an understanding of the determinants and influencers of performance in that system. Notwithstanding this evolution of emphasis, the model addressed is one that examines the components of the process without reference to various states each of those might take, nor the interactions between each component.

The second group of papers adopts a different approach reflecting the greater diversity of uses to which crowdsourcing is being applied. Each addresses the potential for crowdsourcing elements to augment an existing operational system. The applications covered are diverse and include crowdsourced emergency response systems (Cuong, Mehta and Voisard, 2015) new idea generation for the fashion industry (Mehtala et al. 2016), establishment of ‘Smart City’ projects (Cilliers, Flowerday and Mclean, 2016), and medical diagnosis (Ghosh and Sen, 2015).

The primary direction of the models presented in these papers emphasises more the industry problem being addressed than the complexities of crowdsourcing process. Crowdsourcing is, in many cases, treated as something of a ‘black box’ where outputs from the process are represented as inputs to the industry-specific process flow without deeper investigation. An exception to this is Cuong (2016) who applies an existing crowdsourcing model entirely and unchanged into the context in which it is to be applied. While this provides a tighter integration of crowdsourcing and industry context, it also fails to add any new value-creation dimensions or insights to the existing model.

4.8 Reporting

Börner et al (2012) proposed a schema for categorising model types which proved helpful in enabling comparison of models proposed in the literature and subsequent selection of papers for detailed analysis (Table 11).
Using Börner’s (2012) schema the model sought by this research demonstrates qualitative, inductive, stochastic, descriptive and universal dimensions. A total of nine papers identifying models and variables associated with value-creation in crowdsourcing and demonstrating the appropriate dimensions emerged from this review process.

Bozzon et al (2012) develop a model-driven approach to crowdsourcing responses to questions. Their research identified the Information Technology (IT) related mechanics of developing a crowdsourcing platform. It is worth noting that this analysis is independent of important contextual factors such as community formation and interaction, the interface between the organisation and the crowdsourced task and how the output of the process might be integrated into the organisation's value-creation decision-making process.

Cullina, Morgan and Conboy, (2016) identified a crowdsourcing framework suitable for selecting, formulating and evaluating crowdsourcing practices. However, this model contains comparatively little detail regarding variables associated with each step of the process. The process flow is presented in isolation and without reference to the broader context in which each activity is taking place. The nature of the interactions governing the process is also left

| Qualitative | Use verbal and non-quantifiable descriptions of general behaviour |
| Deductive | Top-down or analytical – starting with a theory then seeking to identify an unknown particular through its conformance to a known set of facts |
| Deterministic | Describes models where a given output is a predictable and stable function of the inputs. |
| Descriptive | Describes major features via tables, charts or maps. |
| Universal | Aim to simulate processes that are consistent across differing settings and datasets. |
| Quantitative | Use measurable properties as the basis for describing and explaining. |
| Inductive | Bottom-up or synthetic builds a model out of observation and measurements. Determining general principles from specific data |
| Stochastic (probabilistic) | Describes models where the behaviour or output of a system is probabilistic including the influence of random variables. Ranges of values apply to each input variable. |
| Process | Aims to describe the mechanisms and dynamics associated with specific networks and dynamics. |
| Domain-specific | Aim to replicate the performance of a dataset in a specific setting. |

Table 11: Basis of comparison between differing model types adapted from Börner et al. (2012)
unexplored. The underlying structure is ‘input-process-output’ which perhaps fails to acknowledge some of the unique differentiators of crowdsource-based activity. The model is also essentially static and presumes the application of crowdsourcing purely in the context of innovation practice. It denotes ‘process’ and ‘participants’ but fails to map interactions within and between elements.

Erickson (2012) presents a framework from which researchers can build understanding of the dynamics observed when integrating crowd inputs into existing organisational processes. This high-level descriptive model reflects a basic tripartite view comprising task characteristics, crowd characteristics and organisational characteristics. The article stops short of reflecting the nature of the interactions between elements in the model, nor does it explore potential value-creating structural aspects of the process flow.

Kohler (2015) examines the building blocks of effective crowdsourcing-based business models. Qualitative aspects of crowdsourcing activity are integrated into the existing Business Model Canvas (Osterwalder and Pigneur, 2010) framework. This approach demonstrates valuable insights into redefining roles of customer and company, along with a perspective on changes in the way value is created and captured. The article presents a range of interesting and valid perspectives but ultimately reconciles them only with the Business Strategy Canvas model instead of incorporating them into a more comprehensive end-to-end model. In this case the platform is taken as the key variable and the makeup of community, with the nature of value-creating interactions between community and organisation not considered.

Kuijpers (2013) identifies the critical success factors of a crowdsourcing strategy in an SME context. This research refers to an earlier subjective study (Walter and Back, 2011) and adapts it in accordance with data received from a number of in-depth interviews. The subsequent model reflects qualitative aspects, rather than considering the actual process considerations of crowdsourcing. It takes the form of a sequential series of recommendations rather than a model explaining relationships between actors. Value-creation in this model is
given as a product of the quality of submission and number of submissions and this perspective perhaps oversimplifies the dynamic nature of crowdsourcing in practice.

Moraes et al (2014) aim to develop a meta-model to fit generic solutions related to a specific subset of crowdsourcing – participatory sensing. They arrive at a simple model considering requestor (seeker), participant (solver) and evaluator. Two additional models are proposed which relate to the specifics of programming activity but are without regard to rationale, interactions or the context in which the activity takes place.

Murturi et al (2015) present a 'cloudified' four-phase reference model for crowdsourcing along with a generic workflow for crowdsourcing development however this model is very low resolution. High-level variables are integrated into a simple process map with little exploration of variables applicable to each step, or the potential for value-creation beyond that obtainable through conventional practice. The resultant cloud-based model is an IT systems design diagram with limited applicability to generalizable organisational circumstances.

Thuan et al (2014) aimed to develop a model supporting the establishment of business process outsourcing. The model presented in the article is based on a literature review in the absence of primary data. The model represents a starting point to build upon however many of the variables associated with each step of the process remain unexplored, as does the nature of the value sought.

Tranquillini et al (2015) discuss a flexible crowdsourcing platform and associated programming language to enable a variety of tasks to be undertaken. The model derived uses Business Process Modelling Notation (BPMN) to identify IT-based components of a crowdsourcing system. The article identifies three 'tactics' or platforms upon which crowdsourcing can take place: marketplace, contest, and auction. It then goes on to examine system-based considerations rather than organisational based considerations. The model does not consider the variables associated with each task beyond those that are required for coding and so has limited applicability in a general context and no reference to value-creation.
4.9 Gaps in the research and implications

None of the papers surveyed investigated the nature of the value that organisations sought to create by employing crowdsourcing techniques in preference to existing alternatives. Central to this is an assessment of the antecedent conditions necessary for the creation of value through crowdsourcing. The analysis in every case started with the presupposition that crowdsourcing was an appropriate vehicle for the undertaking of a task. There was no consideration of the circumstances under which crowdsourcing might be considered as an alternative approach, nor was there consideration of the circumstances under which crowdsourcing might be inefficient or indeed destroy value.

Similarly, there was an absence of exploration of the nature of the ‘solvers’ engaging in crowdsourcing, and little recognition that these individuals may form communities based on their interest in the topic or task at hand. Explicit recognition that these communities exist purely online, and investigation of the challenges and opportunities that this presents for organisations, was similarly neglected by the literature.

In addition, the essence of the value-creating task or activity undertaken by the crowd was not considered. This raises the question of modularity – how questions, problems or tasks may be framed for processing by a crowd, and in what ways may boundaries that determine levels of detail associated with the task be conceptualised? For example, a seeker organisation would not turn to a community to design a car in toto, although it may well seek input on interior designs, feature sets, and price points. The question of why one set of problems is appropriate for the crowd but another may not be, suggests a role for analyzing modularity in the context of task setting – how a problem can be conceptualised in a way that presents an opening for input from the crowd without unduly changing the nature of the desired overall outcome. This is an important consideration, as without a framework to guide the modularisation of a task an organisation may not recognise the dimensions along which value may be created. Solvers, looking to assist, might find the task too great, too insignificant or too outside a single domain skill-set to be of interest.
The final area receiving little consideration in the literature relates to the ability of the organisation to incorporate the actions of the solver community into the fabric of the organisation itself. The demarcation between what an organisation’s management and staff do and what is opened up for participation from outside the organisation in is typically characterised as a divide. Organisational design has generally isolated decision-makers from their stakeholder communities. In many cases no organisational structure exists to integrate input from outside the organisation. Without this a successfully executed crowdsourcing activity will not necessarily move an organisation closer to its goals and thus create value.

Cullina et al (2016) proposed that existing models fall short because they contain one or more of the following deficiencies. The first of these is lack of clarity. This is apparent when key terms are not consistently defined, concepts have not been communicated in a clear and understandable manner. Secondly, lack of theoretical glue which points to the lack of a strong theoretical or logical underpinning to the model constructs. The third deficiency identified is the lack of cumulative tradition. This is when frameworks and models do not build on prior art and there is not consequently an evolution of understanding, rather each model exists independently of previous theory. The fourth factor is the lack of parsimony. There has not been evidence of active refinement of models to remove factors that provide little additional value in understanding the phenomenon. Finally, the fifth factor is limited applicability. Many of the models are domain-specific with little ability to stand generalisation across different practice areas. All of the models set out in the various literature review papers considered by this chapter demonstrated one or more of the deficiencies above.

In summary each of the models proposed by the candidate papers fails to address broader issues of the antecedent conditions required for crowdsourcing to create value, the nature of the interactions sought with members of the online solver communities, the way in which the task or challenge set for solvers reflects a modular approach to the problem being addressed, and the issues and barriers that may be experienced when organisations attempt to
incorporate external inputs into what has traditionally been a strictly internal decision-making process. These factors are discussed in subsequent chapters of this thesis.

4.10 Conclusion

If the ultimate objective of any enterprise is to satisfy the needs of customers more effectively than its competitors (Webster, 1988), then competitive advantage is the reward that comes with achievement of that aim (Treacy and Wiersema, 1993). The implications for organisations relates to the approach they take to customer intimacy - how well a company understands its prime stakeholders (customers among them) and how capable it is in not just addressing their needs, but also operationally integrating their attitudes and beliefs (Treacy and Wiersema, 1993). Into this context the role of the crowd - external from the company and with little prospect of exogenous recognition and reward – needs to be considered.

Crowdsourcing can be defined a definition of crowdsourcing as a ‘type of participative online activity in which an individual, an institution, a non-profit organisation…proposes to a group of individuals…via a flexible open call, the voluntary undertaking of a task’ (Estelles-Arolas and Gonzales-Ladron-de-Guervara, 2012). The aim of this paper was to examine literature that proposes crowdsourcing models, conduct an analysis of those models and the variables that comprise them, and provide a critical assessment of the nature and inter-relationships of the variables in the creation of value.

An initial appraisal of prior literature reviews suggested an appropriate format and sources for a comprehensive survey. Through application of systematic methodology, nine databases were then interrogated with key words reflecting the research aims of this paper. The subsequent analysis revealed that many of the papers were written from an IT perspective and focused on IT related mechanics independent of important contextual factors such as the nature of value created, community formation and how the output of the process might be integrated into an organisation's decision-making process.

Comparatively little detail regarding variables associated with each step of the crowdsourcing process was provided. The nature of the external forces governing the process
was also generally left unaddressed and there was a lack of exploration into the nature of the interactions between elements in the model, or structural aspects of the process flow. The process flow of the models was frequently presented in isolation and without reference to either the broader context in which the activity was taking place, or the value being sought. A significant shortfall was that interactions between community and organisation were generally not considered and were without regard to rationale, interactions or the context in which the activity takes place. In addition, the essence of the task or activity undertaken by the crowd was not considered by the literature. The question of why one set of tasks is appropriate while another lies outside the bounds of reason suggests a role for a general model of value generating modularity but this was not examined by any of the reports.

The importance of systems and processes enabling the outputs of the crowdsourcing process to be incorporated into the value-creation operations of an organisation is left for further research and model development.
Chapter 5: Study 2 - Creating Value through Crowdsourcing: The Antecedent Conditions

5.1 Abstract

The benefits of crowdsourcing are becoming more widely accepted and there is an increasing willingness from organisations to use ‘participatory models’ to engage stakeholder communities and align decision-making more closely to the needs of those communities. Many questions, problems and tasks are now being distributed to ‘the crowd’ for consideration. This research examines the antecedent conditions that inform management decisions to adopt crowdsourcing techniques as a means of value-creation. The findings suggest that to be successful, three antecedent criteria must be met – the task being crowdsourced must be modular in nature, a community of interest must be engaged, and there needs to be a structural capability within the organisation to be able to facilitate the engagement of the crowd and utilise the output from the crowd to create value.
5.2 Introduction

The aim of this research is to explore what antecedent conditions need to be satisfied for crowdsourcing to create value. This conceptual study builds on the understanding of the domain of crowdsourcing explored in Study One and moves beyond crowdsourcing models to explore the conditions that need to be present for value to be created from crowdsourcing. The research question for this study is:

2: What antecedent conditions need to be satisfied for crowdsourcing to create value for an organisation?

Crowdsourcing has been defined as a ‘type of participative online activity in which an individual, an institution, a non-profit organisation … proposes to a group of individuals … via a flexible open call, the voluntary undertaking of a task’ (Estelles-Arolas and Gonzalez-Ladron-de-Guevara, 2012). Flexible open calls are typically understood to occur through the use of social media technologies - ‘a group of Internet-based applications that…allow the creation and exchange of user-generated content’ (Kaplan and Haenlein, 2010b).

In some regards the practice of crowdsourcing as a means of value-creation is transitioning from the core element of purpose-built entities (TripAdvisor - providing crowdsourced guidance to travellers, iStockphoto - providing a platform for the sale of photos sourced from the crowd) to a practice that can be selectively employed within parts of an enterprise to deliver outcomes that are either lower risk or provided at a lower cost than alternative courses of action. A review of the literature on this topic demonstrates that challenges facing organisations seeking to utilise crowdsourcing include developing an operational perspective of how sustainable competitive advantage can be appropriated through meaningful e-engagement with stakeholders.
5.3 Literature and Methodology

At the outset it must be recognised that crowdsourcing is not one single thing, rather it covers a variety of activities, behaviours and outcomes. Typologies have been proposed by a range of theoreticians including Schenk and Guittard (2011) who define the nature of the process of crowdsourcing as either integrative (through using pooled and unedited data), or selective (by identifying and integrating only part of the full set of responses). They further categorise the type of task being offered to the crowd as routine, complex or creative (Schenk and Guittard, 2011) and in doing so provide an intuitive framework for identifying and classifying crowdsourcing activity.

It has been demonstrated that crowd-based inputs can enable better decisions (Ogawa and Piller, 2006), are typically less expensive (von Hippel, 2005), and more suitable to adaption than in-house equivalents (Barbier et al. 2012). While the general awareness of crowdsourcing in the business community has increased as online modalities of value-creation become more widespread, the utilisation of the practice as a means of value-creation remains contingent on a belief in the minds of management that outcomes so obtained will be in some measure better, cheaper or favourably distinguished from outcomes realised through conventional outsourcing practice. The boundaries delineating the opportunity to crowdsource are currently ill-defined and management perspectives of the actual practice of crowdsourcing, and the operational constraints that may impact on the practice’s ability to contribute to value-creation, are not well understood.

While a body of literature exploring the role of crowdsourcing across a range of applications is emerging, it is mostly focused on crowdsourcing itself – processes, taxonomies, performance and constraints – rather than seeking to understand the circumstances that may lead a decision-maker to the consideration of crowdsourcing as an appropriate technique for value-creation. In a comprehensive survey of publications related to crowdsourcing, Zhao
and Zhu (2014) note that while 64% of articles used empirical methods, almost all of these articles related to events and/or processes. In other words, the literature is oriented towards classifying existing models rather than understanding the preconditions that enable those models to function in the first place.

Where recent research seeks to explore the decision to crowdsource, it draws from literature rather than interaction with those active in the field. For instance, Thuan, Antunes and Johnstone (2013) utilised a structured literature review to derive a model that positioned the decision to crowdsource as mediated by four factors; environment, management, people and the particulars of the task. This model does not anticipate a broader set of drivers of behaviour, nor necessarily preconditions whereby a crowdsourced solution may provide greater opportunities for value-creation than conventional methods.

Semi-structured interviews were conducted with a range of individuals with a direct connection with crowdsourcing practice. Respondents were sought from a range of organisations active in crowdsourcing practice, organisations that actively consult to businesses with the potential to adopt crowdsourcing processes, and branches of government with an interest in adopting crowdsourcing to facilitate enhanced outcomes. Interview candidates were identified using three methods: purposeful sampling, which uses an iterative process with the aim of maximising the richness and depth of the data (DiCicco-Bloom and Crabtree, 2006), recommendations from expert informants (Tongco, 2007), and snowball sampling (Creswell, 2013).

An open-ended conversation format was adopted which aimed at: (i) building rapport with participants; (ii) obtaining detailed and nuanced perceptions, and (iii) developing an accurate narrative that includes the meaning of the experiences from those involved in the situation (in the social constructionism tradition of Berger and Luckmann (1991) and, more recently, Eriksson and Kovalainen (2008)). In this perspective, we have elicited a narrative as a ‘way
of knowing that is different but complementary to logical-scientific knowledge’ (Bruner, 2009). Two initial outcomes arose from this approach: the first relates to the meaning to the respondent; the second informs the literature by identifying aspects not previously considered.

5.4 Task Nature

The organisations identified for involvement in this research typically address issues that are either inherently complex to the point of being ‘wicked’ problems, or ones requiring novel or creative approaches with the potential to lead to truly innovative outcomes.

Crowdsourcing of purely process-based tasks - those that require little if any domain specific knowledge - can be undertaken through engagement of undifferentiated individuals without specialist insight or alignment with a community of interest. For example the citizen science site Galaxy Zoo (Raddick et al. 2010) requires simply that the user identify features on satellite photographs of indistinct objects in space. The degree of expertise required is minimal, and lack of prior association with the subject matter will not yield less valuable results for the organisation.

When the nature of the task begins to require a greater depth of understanding, the harnessing of the thoughts of random individuals may provide results with a poor signal to noise ratio (Starbird, Muzny and Palen, 2012). For this reason, where opinions or specialist insight is required to fulfil a task, the organisation may seek out communities of interest, or introduce moderating mechanism to filter usable information from that of less practical contributions (Bojin, Shaw and Toner, 2011).

As part of its 10 year plan, the City of Melbourne, Australia has developed a virtual budget simulator tool that enables ratepayers to provide their preferred apportionment of the City’s overall budget across the five main categories: Deliver Community Services, Activate City,
Advance Melbourne, Design, Build and Manage Assets, and Regulate, and numerous sub-categories (City of Melbourne, 2014). The simulator shows current levels of expenditure in each category and provides controls for the user to propose variations to future spending according to their own individual preference. As the pre-dispositions of individuals participating may make their inputs inconsistent with the broad responsibilities of the City, the data is collated and referred to a panel of 43 residents for moderation. Membership of this panel reflects the demographic composition of the city. The panel then considers the respondent data and provides recommendations to the Council’s budgeting process. This is an example of a *community* being engaged, with a moderation process refining crowd inputs. Membership of this community is implied by being a ratepayer of the municipality, and having the interest to participate (City of Melbourne, n.d., c. 2015).

Communities are not necessarily passive in nature. A prominent example of this is the Danish toy manufacturer, LEGO which practices a form of open innovation that formally places the user community at the centre of the product innovation effort (Antorini and Muñiz, 2013). ‘Adult Fans of LEGO’ (AFOLs) form LEGO User Groups (LUGs) based around either geographic location or common interests. LEGO supports such groups through relationship agreements to officially recognise them and this provides the basis of a formal and legally constituted means of interacting and soliciting ideas for new products and new strategic directions for the company. These user groups form what’s known as LUGNET – or the LEGO User Group Network. The LEGO communities developed spontaneously, on forums that are operated independently from the company. Activity on these sites is driven by the needs of the members to associate and share their passion for the product (Antorini and Muñiz, 2013). As such these communities can be described as authentic and autonomous.
Contrast this with innovative camera developer Lytro and Australian software developer MYOB. Both of these companies operate moderated forums on their own company websites through which they engage customers and stakeholders in the product development process. These communities may be considered ‘captive’ as all activity happens on a forum site owned and operated by the respective companies. It may be argued that authenticity is critical when engaging communities of interest but if the organisation is embedded or closely moderating the group a form of adverse selection may take place where the community feeds back to the company what they think the company wants to hear (Chen, Xu and Whinston, 2011).

5.5 Stakeholder engagement or community conversations

Brabham (2012) noted that motivation to participate in crowdsourcing tasks could assume rational, norm-based and affective dimensions (Knoke and Wright-Isak, 1982). In this context rational motivations referred to De Vreede et al (2013) proposed the factors that precede user engagement in crowdsourcing. They were the extent to which the participant was personally interested in the topic, the motivation (both intrinsic and extrinsic) to participate. These two factors were moderated by a third factor, goal clarity, or the degree to which objectives of a task are stated clearly (Sawyer, 1992).

One alternative approach organisations can adopt is to side-step the stakeholder engagement process altogether and turn instead to the data contained in the community conversations (Nandi and Das, 2013). This marks a transition from asking the community, to watching the community, then analysing and interpreting directly from the conversations taking place within that community. New cloud-based artificial intelligence algorithms coupled with semantic connectivity and topic modelling tools enable deep and coherent insights to be developed from text-based datasets. While still in its infancy, his model represents a
compelling and possibly controversial option for enterprises seeking to better understand the needs and priorities of their involved stakeholder groups (Feldstein, 2009).

To summarise these perspectives, Figure 6 depicts a categorisation of crowdsourcing that illustrates an empirical relationship between community type and crowdsourced task type. It demonstrates the potential for organisations to transition from engaging their communities interactively, to surveillance, data mining and subsequent semantic analysis of authentic and spontaneous discussion threads.

![Diagram of crowdsourcing participation models by community](image)

**Figure 7: Categorisation of crowdsourcing participation models by community**

### 5.6 Issues

While the promise of crowdsourcing is attractive the reality may be more problematic. Tasks that can be crowdsourced are often (if not always) tasks that have previously been undertaken using ‘conventional’ means – there are few, if any, crowdsourced outcomes that cannot be obtained some other way. This is not a reflection of the quality of outcome, rather the nature of the outcome. If, for example a firm seeks to better understand the features its
customer wants included in its next model release, a market research program would normally be undertaken. Crowdsourcing simply enable the outcome to be achieved in alternate, and often better, manner (Jeppesen and Lakhani, 2010). This prompts the question of what antecedent conditions need to be satisfied for a manager to utilise the crowd in place of a specialised resource, and how might the crowd’s participation in the decision-making of the organisation provide management with greater value than alternative courses of action? Implicit in this is an understanding of the inflection point when the nature of the proposed task moves from the domain of mediated interaction with third party service provider to pure crowdsourcing. An antecedent set of criteria must be in place and satisfied for organisational decision-makers to select crowdsourcing as a viable alternative to more conventional forms of interaction, or indeed no interaction at all. This requires both an awareness and understanding of the role crowdsourcing might play on behalf of the manager, and a capability for the organisation to be able to undertake the crowdsourcing activity.

5.7 Decision-making approach

From an organisational perspective, crowdsourced tasks can be seen to satisfy two types of need: operational or strategic. Operational tasks are routine and integrative in nature, and are typical of the tasks that are performed through platforms such as Amazon Turk (Acosta et al. 2013). These are pure outsourced business processes and do not engage the collective intelligence of the crowd (Brabham, 2008). Contrast this to strategic tasks which move the locus of option generation effectively beyond the walls of the organisation and locates it amongst an undifferentiated but not disinterested crowd.

Dibbern (2004) provides a useful survey of decision theory literature and methodological frameworks including: agency theory, transaction cost theory, and a number of other methodological approaches focused on perspectives such as the impact of organisational politics, the nature of the organisation’s relationship with external parties, and the
organisation’s resource base. This assemblage of methodological foundations does not however reveal the steady emergence of a dominant model but rather summarises the theoretician’s struggle to account for the range of factors influencing management decision-making.

If theories cannot agree then modelling the practice may provide a methodology for the reflection of reality. An early process model proposed four stages of decision-making: intelligence, design, choice and implementation (Simon, 1962). ‘Intelligence’ denotes the identification of the issue to be addressed, ‘design’ is the formulation of the range of potential methods to address the issue, ‘choice’ is the selection of the desired solution, and ‘implementation’ is the execution of that solution. As a generic decision-making model this has value but it assumes a purely rational approach. Simon subsequently built on the work of Barnard (1938) to propose two additional elements that influence the management decision-making process: intuition and emotion.

‘The sources of these non-logical processes lie in physiological conditions or factors, or in the physical and social environment, mostly impressed upon us unconsciously or without conscious effort on our part. They also consist of the mass of facts, patterns, concepts, techniques, abstractions, and generally what we call formal knowledge or beliefs (Simon, 1962).

Combining the rapidly changing nature of methodological tools that connect communities to organisations and the expectation of users embracing this technology, purely rational decision-making models fall short of capturing the effects of uncertainty in the process. Methodological models based on the inclusion of emotional attributes may be too ill-defined to offer predictive or interpretive value.
5.8 Sensemaking attitudes

In the context of uncertain and rapidly changing environments issues of organisational sensemaking and knowledge creation become inextricably interwoven with the decision-making process (Choo, 2002). Sensemaking ‘constructs the shared meanings that define the organisation’s purpose and frames the perception of problems or opportunities that the organisation needs to work on’ (Choo, 2002). This definition casts sensemaking as an action concerned as much with looking forward as it is with constructing a narrative in retrospect. It is into this context that the participants in this study will fall.

Two attitudes were prevalent among the organisations observed. The first related to the potential for disadvantage through incomplete knowledge. When constructing a forward-facing view of the environment there was a clear sense that while the manager may not have understood the competitive advantages or limitations of the new technology, failure to include it in the planning process would represent a form of failure. In this case there was a perceived disconnect between those that had responsibility for making the decision to crowdsource, from those that had the technical ability to implement that decision.

The second attitude was the belief that this was a phenomenon driven by social forces and not business needs. There was a very clear indication of technology leading the development of strategy rather than serving it. In general, the push to sensemake was seen as a net reducer of opportunity and a distraction to ‘business as usual’. Accommodating it in a way that created value was perceived to be risky and, in many cases, to attract additional costs that could not easily be offset by strategic gains.

5.9 Three antecedents for crowdsourcing

A prime purpose of strategy formation is to align the activities of the organisation with the unmet needs of the stakeholder. This implies an antecedent condition requiring that the
subject of the task in strategic crowdsourcing will be designed so as to enable change - the
subject must have modular characteristics i.e. be able to change one aspect; to optimise that
characteristic without the necessity to change the entire subject. Modularity is a widely
understood yet ill-defined concept. The Oxford English Dictionary (OED) proposes a
definition; ‘Employing or involving a module or modules as the basis of design or
construction’. The definition turns on the definition of ‘module’ that OED defines as ‘each of
a set of standardised parts or independent units that can be used to construct a more complex
structure, such as an item of furniture or a building.’ Modularity in product design has been
held to improve the acceleration of innovation (Ulrich, 1994). This modularity may extend to
product features, policy settings or reconfiguration of core competencies. Products or
services that are tightly bound to one form (because of regulatory, intellectual property,
market share constraints or simply the inherent properties of the product or service) will
derive little value from adopting crowdsourcing techniques.

Simon (1962) identified the twin principles of near-decomposability and hierarchy as
underlying the use of modularity in the design of complex systems. This requires modular
designs to demonstrate bounded interdependencies within modules and independence
between modules (Levinthal and Roy, 2016). Confining interdependencies reduces the
reliance of one module on another to perform and enables the system to be effectively broken
down, modified and optimised. This introduces the important concept of boundary
conditions which define where one set of interdependencies end and another begins. Suh
(1984) originated two design axioms that form the basis of most contemporary definitions.
These are: Axiom 1: the independence axiom. Maintain the independence of functional
requirements. Axiom 2: the information axiom, which states that, of all the potential designs
that satisfy the first axiom, the one that contains the least information is the one that
represents the best design. Building on this conceptual approach Ulrich (1994) proposed that
modularity be viewed through the presence of two characteristics; similarity between physical and functional architecture of the design, and minimisation of incidental interactions among physical components. This is a distinction that has been commonly expressed through a range of settings over an extended period. Maximising independence (or minimising interactions) between modules means the system is hierarchical. Independence has been a key element in the literature. Bask et al (2010) propose that the most commonly referenced definition of module is that of Baldwin and Clark: “A module is a unit whose structural elements are powerfully connected among themselves and relatively weakly connected to elements in other units” (Baldwin and Clark, 2000). Note the definition relates specifically to the physical and tangible and does not consider the potential for application of modularity in service design or decision-making. Nor does it consider what might constitute the dividing lines constituting these weak connections.

Bask et al (2010) identified four key themes as a result of a comprehensive integrative literature review. These themes can be loosely organised according to orientation towards goods or service delivery. Goods related modularity comprised elements associated with the goods itself, the production process associated with the goods, and the organisation and supply chain required to support the production. The important distinction this review provides is the potential for modularity to exist upstream of the good or service itself. It implies that the topology associated with modularity is potentially far-reaching and requires the navigation of a number of boundary conditions.

The concept of modularity which has long been recognised in the realm of physical goods (Pekkarinen and Ulkuniemi, 2008) has increasingly been applied in a more diverse range of range of contexts including software design, design engineering, and construction (Gershenson, Prasad and Zhang, 2017). Service industries such as hospitals, logistics, IT, financial services and health care have also adopted concepts of modularity in recent years.
(Dorbecker and Bohmann, 2013). Services included the service itself (characteristics, type and function), along with service process, production, the service organisation and supply chain required to support the service.

A second antecedent condition that must be satisfied is the presence of an accessible and engaged community. This can be either fostered by the organisation (less authentic) or one that has spontaneously organised outside the organisation (more authentic) (Brogi et al. 2013). The degree of authenticity is perhaps correlated with the quality of commitment and thus the sincerity of response. The study of community arguably started with Aristotle’s *Politics* in which he observed that communities are established for the sake of some good; that is their participants have a common purpose. Toennies towards the end of the 18th century introduced the concepts of *gemeinschaft* and *gesellschaft* or community and society. *Gemeinschaft* is generally recognised to represent what we might now call a values-driven culture based on inclusiveness and cooperation as generalised in rural communities, while *gesellschaft* represents the more competitive society typified by urban environs where self-interest, competitive pressures and highly evolved markets lead to the expression of a different set of values. Both terms point to a commonality of interest between constituent members of communities and infer geographical proximity as an aid to cohesiveness and shared purpose.

Engagement is an all-encompassing term that reflects the quality of interaction within the context of S-D logic. It is distinguished in subtle but important ways from related concepts involvement and participation. While a range of diverse viewpoints exist about the definition of consumer engagement, it is generally considered to be customer’s behavioural response to a firm, going beyond what is necessary for the core economic transaction (Van Doorn et al. 2010). Engagement comprises four specific components which are: a) absorption: the extent to which the actor is focused on the engagement object, b) dedication: the strength of
connection felt by the customer – this is the emotional dimension, c) vigor: the degree of energy and resilience present in the customer’s interaction with the focal object, and d) interaction: the extent of the two way communication between focal object and customer. Of these the last two dimensions, vigor and interaction represent what might be considered the behavioural dimension of engagement (Patterson, Yu, and de Ruyter, 2006). Brodie, Hollebeek, Jurić, and Illič, (2011) provide a compelling distinction between ‘participation’ and ‘involvement’ noting the contribution of a customer’s particular psychological state derived from the history of experiences with the focal object, and the individual approaches to the co-creation of value as factors that differentiates engagement. While significant interest attaches to the study of engagement in disciplines such as marketing, the specific cased of community engagement has not been well-defined (Ludwig and Frazier, 2012). Indeed Saks (2008) identifies the need for a role-specific conceptualisation of engagement in contrast to the adoption of a ‘cocktail of related constructs’ (pp.42-43).

The nature of man is a central consideration in the understanding of a firm’s fitness to the market (Arndt, 1979). The model of ‘homo economicus’ (Yamagishi et al. 2014) presents man as an ideal of rationality - that a person’s behaviour is the product of his or her decision-making, always aimed at maximising the individual’s personal outcomes.

Further perspectives contrasting the view of individuals as driven by self-interest relate to the understanding of man as social animal – demonstrating a tendency to tribalism and an appreciation of the benefits of community (James, 2006). However, Ostrom (2011) asserts that a significant base of experimental research on social dilemmas, has largely overturned the concept of ‘homo economicus’ finding it to be a poor foundation for explaining human actions behaviour beyond openly competitive situations. Ostram asserts that it is inappropriate to presume that individuals seek only short-term, material benefits for themselves in many common settings. Presumptions of ultimate self-interest fail to account
for much observed behaviour and is of limited value when predicting conduct within large bounded community systems. Benkler (2011) notes that using carrots and sticks to motivate workforces is ineffective and concludes the value of a sense of common purpose and identity to drive productivity more effectively. That being said, there exist within populations extreme variations in attitude and belief and to presume gratuitous benevolence on behalf of all participants in a community would be equally fallacious.

Sociology literature continues to build upon these foundations, embracing many nuanced variants but failing to arrive at a standard definition instead providing “amalgam(s) of vague formulations and selective perceptions” (Bryson and Mowbray, 1981). The literature identifies at least three core elements of community. These are: consciousness of kind; shared rituals and traditions; and a sense of duty and obligation. Members of communities need not necessarily be bound by common geography and several (Muniz, and O’Guinn, 2001; Bagozzi and Dholakia, 2006; Füller, Matzler and Hoppe, 2008) propose that communities based on allegiance to organisations (and the products of these organisations) satisfy the definition of community and that these communities can contribute to the success of the object of their affiliation.

The label ‘community’ can therefore also apply to groups of individuals that organise and co-ordinate activities around abstract concepts (including spiritual wellbeing, aspiration, and deferred gratification). In this case, the interest of each individual within a community is often better served by those individuals acting in concert rather than in isolation. Translate the exchanges of such a community from the theoretical to the temporal, and the best interests of an organisation may be well served by appropriate harnessing of the community’s interactions.

So, does an online community fit the definitions? Almost certainly yes, however the acceptance of online communities within this domain is not without its critics. Sardar (1995)
noted that so-called cyberspace communities were self-selecting, and that this was at odds with real communities. He also noted that the members of online communities were largely transient with little beyond ephemeral interest to bind them to the group. Robins (1995) considered online communities to be ‘self-selecting pseudo communities’, differentiating them from traditional communities through questioning the poorer quality of relationships arising from online interaction, and the lack of actual consequence arising from the transgression of the online community’s norms and values.

Not all communities of interest are equal. Spontaneous communities that self-organise with neither the knowledge nor the guidance of the offeror were seen to provide better quality of input than that obtained by communities maintained on an organisation’s website and moderated by members of the organisation. This is consistent with prior research, particularly in respect of dedicated online brand communities (OBCs) (Lee, Kim and Kim, 2011) However, interacting with the communities that formed independently of the organisation was perceived to carry with it the potential for greater reputational damage as the entity was unable to moderate or influence discussions directly. Management’s awareness of the need for community is a given. Management’s understanding that better results come from uncontrolled and spontaneously formed communities is less clear.

A third antecedent is an organisational structure that respects and resources the process and provides forward budgeting that allows for the inherent uncertainty that goes with devolving the creation of new ideas and insights to external parties. In practice this was seen to be problematic. Crowdsourcing may consume more resources and be more difficult to manage than expected. This is broadly consistent with research on the diffusion of technological innovation throughout business (Zhu, Kraemer and Xu, 2006). An organisation’s operating structure is shaped by the existing demands of customers and stakeholders. Management efforts to make processes more efficient reinforce existing practice and reduce opportunity
for variation (Lam, 2004). When a new category of business activity is identified, the understanding of both the operational overhead required to implement the technology and the nature of returns to be expected from the activity is frequently unrealistic. This happened historically with the introduction of desktop computing, development and integration of Internet sales channels, and the adoption of social media into strategic marketing plans. Only when a dominant design emerges across a range of organisations and industry sectors, can a degree of predictability emerge in the planning and execution of initiatives (Lee et al. 1995).

There is a need to appreciate that this is a dynamically developing and specialist area. A piecemeal approach and lack of dedicated resources will not necessarily lead to desired outcomes.

5.10 Decisions to resource crowdsourcing

A participant in this research noted that management decisions to resource programmes of innovation and change are budgeted on the basis of cost, time to complete and anticipated contribution to the achievement of strategic aims of the organisation - the project is defined in advance of resources being committed. The observation was made that when crowdsourcing is employed to generate strategic direction the decision to resource must be made before the specific nature of the proposed activities is known. Most organisations manage resources well but inherently leave relatively little slack available for the flexible deployment of emergent ideas. Attempting to adopt crowdsourced outcomes within an organisational environment such as this will compromise outcomes and cause unnecessary stresses within the organisation.

Decision-making without the power to apply those decisions is disabling not enabling. Adopting an organisational structure that does not merely include crowd responses as an input to the decision-making process, but that embraces them (with some qualification) as the answer to the task, achieve better results than other approaches (Ansari and Munir,
In all cases the crowd inputs from decision-making activities were filtered by the offeror prior to being accepted. This mediating role of the responsible manager provides the opportunity for qualitative assessments to be made to ensure congruence with the strategic aims of the organisation. Novel mindsets and ‘left-field’ thinking is valuable but only when it does not conflict with prescriptive organisational intangibles that are often built up over a considerable time period. Managers quoted the need for pragmatism, and the need to satisfy internal constraints and often complex policy prerogatives as reasons for this filtering process. The risk is that inputs that are judged to be inconsistent with existing management views are discarded, thereby limiting the potential effectiveness of the crowdsourcing activity. Part of management thinking before embarking on crowdsourcing is that a ‘safety valve’ is required and peace of mind is gained through management control over the degree of utilisation of final inputs.

The presence of these three conditions enables a mode of market interaction which, rather than reproduce organisations as systems of control, configures operations as a ‘discursive contested place of encounter and exchange’ (Anderson, 2009).

5.11 Conclusions

The practice of blurring the boundaries between organisations and their constituent stakeholders has considerable merit when considered under the right circumstances. The awareness of crowdsourcing as a management option has perhaps never been higher. Misapplied, or applied in situations not naturally conducive to the inclusion of outside parties may lead to problematic outcomes. For this reason, studies of crowdsourcing practice as it is happening, and observing the limitations and basic criteria for successful implementation are an important step forward. As the model transitions out of specialist pure-plays and becomes a feature of everyday life so can incremental advantages be expected to accrue. When organisations no longer have to take best guesses at stakeholder requirements but can
integrate the stakeholder’s viewpoint in an empowered, authentic and immediate manner, outcomes for all may reasonably be expected to improve.

The research has found that in order for crowdsourcing to be successfully undertaken three criteria must be met – the subject of the task being crowdsourced must be modular in nature i.e. elements of the subject must be able to be changed without compromising the integrity of the whole. Secondly a community of interest must be engaged. With the widespread adoption of social media technologies identifying or creating these communities is often straightforward. Finally, there needs to be a structural capability within the organisation to be able to both engage the crowd and utilise the output from the crowd in a manner that creates value. The potential for using semantic connectivity methodology and cloud-based artificial intelligence algorithms to interrogate data collected from user discussion forums is apparent, but no examples of this have come to the researchers’ attention.

Implications for management of crowdsourcing projects are that structural capabilities must be in place and resourced ahead of the commencement of a crowdsourcing program.
Chapter 6: Study Three - Curating the crowd – mapping value-creating online community interactions.

6.1 Abstract

This paper proposes a conceptual model of online community management and development in the context of organisational value-creation. It investigates the drivers and limiting factors that contribute to the development of online communities and the appropriation of value from them. A multiple-methods approach to the study of online communities has been used. Qualitative data from semi-structured interviews with subjects actively participating in crowdsourcing activities was obtained over a two-year period. Quantitative methodology included a review of online communities associated with the 2015 Fortune 500 companies, and measurements of online communities providing cross-sectional and time-series data. This paper contributes an empirical model which considers two categories of factors: organisational factors – which are controllable by decision makers within the organisation; and community factors – which shape and limit the nature of the resultant community, and reflect variables relating to the nature of participation.
6.2 Introduction

Social media has created a new paradigm where thoughts, attitudes and beliefs can be instantly captured and shared across networks of other participants around the world (Kietzmann et al. 2011b). Exchanges are enabled by a variety of online systems and the causes these interactions serve are virtually limitless. While the movement of content in the social media universe may be perceived simply as a form of diversion or entertainment, the underlying technology provides users with the opportunity of forming cohesive online communities— a fact increasingly being taken into account by business and government (Turban, Strauss and Lai, 2016)

Online communities have been defined as ‘social networks in which people with common interests, goals, or practices interact to share information and knowledge, and engage in social interactions’ (Chiu, Hsu and Wang, 2006). The development of online communities has created a new category of stakeholder interaction and presents the potential for organisations to foster the development of and engage in value-creation through online community interactions. The potential associated with the leverage of online communities can be seen not simply as a by-product of an organisation’s social interactions, but potentially a characteristic central to their use (Sridhar Balasubramanian, 2001).

Understanding the factors that drive the formation and development of online communities and which mediate the participation of their membership is an important precondition of recognising how these communities may create value. The research presented here proposes a model that explores the factors that contribute to the development of online communities, the relationships between ‘seekers’ and ‘solvers’, the appropriation of value from their interaction and presents a schema of online community types. This nominates a configuration of variables that may determine the characteristics of differing forms of online value-creation.
6.3 Research Questions

Specific questions addressed by this research are:

3a: What are the drivers and limiting factors that contribute to the development of online communities and the appropriation of value from them?

3b: How might the variables associated with online communities and the interactions between them be modeled?

This paper presents a theoretical contribution that combines organisational-centred factors and community-centred factors into an empirical end-to-end model. The model finds practical application by accounting for the range of modalities in which community interactions may be accessed by an organisation. This provides a basis for analysing the performance of an organisation’s existing approach to online communities, as well as perspective on variables that might be material in increasing performance and achieving enhanced or alternative outcomes.

6.4 Literature review

Gusfield (1975 cited in McMillan and Chavis, 1986, p. 8) proposed two distinct applications of community. The first is the idea of geographical proximity embracing the concepts of neighborhood, town, and city. An alternative approach concerns itself with the “relational,” and incorporates the “quality of character of human relationship, without reference to location” (p. xvi). While these two approaches are not mutually exclusive, modern society perhaps embraces the concept of community as being based around interests and skills more than around locality Durkheim (2014).

The study of community started with Aristotle’s Politics in which he observed that communities embrace shared forms of mutual accountability and mutual concern (Aristotle, 1999) that their participants shared a common purpose (Roochnik, 1995). Tönnies towards the
end of the 18th century introduced the concepts of *gemeinschaft* and *gesellschaft* or community and society (Tönnies, 1963). *Gemeinschaft* is generally recognised to represent what might now be called a values-driven culture, based on inclusiveness and cooperation as per the generalised (and perhaps idealised) example of rural communities. In contrast, *gesellschaft* represents the more competitive society typified by urban environs where self-interest, competitive pressures and highly evolved markets lead to the expression of a differing set of values. Both terms point to a commonality of interest between members of communities and infer geographical proximity as an aid to cohesiveness and shared purpose.

More recent studies find that the range of characteristics which need to be satisfied in order for community membership to occur include a sense of belonging, emotional safety and the integration of needs fulfillment (McMillan and Chavis, 1986). Community is seen as a resource utilised by people ‘…for meeting key physiological and psychological needs such as the need for affiliation, power and affection’ (Nowell and Boyd, 2010). Sociology literature builds upon these foundations, embracing many nuanced variants but failing to arrive at a standard definition of community, instead providing ‘amalgam(s) of vague formulations and selective perceptions’ (Bryson and Mowbray, 1981).

Translated into an online context, any definition of community must transcend physical place and instead describe a set of social relationships (Andrews, Preece and Turoff, 2001). This provides an intangible service for interactivity among its members (Shen et al. 2010). The depth of the feeling of community experienced by online participants may be moderated by factors such as the enthusiasm of community leaders, off-line activities available to members, and ‘enjoyability’ (Koh and Kim, 2003). Many properties of online communities are consistent with those of their more traditional counterparts (Silva, Mousavidin and Goel, 2006). However, the acceptance of online communities within this domain is not without its critics.
Sardar (1995) notes that so-called cyberspace communities are self-selecting, and that this is at odds with his observations of ‘real’ communities. He asserts that members of online communities are largely transient with little beyond ephemeral interest to bind them to the group. Online communities are further differentiated from the traditional form through the poorer quality of relationships arising from interaction at a distance, and the lack of actual consequence arising from the transgression of the online community’s norms and values (Robins, 1995).

The interest of each individual within a community is generally better served by individuals acting in concert rather than by each acting in isolation. In translating the exchanges of such a community from a sociological to an organisational context, the best interests of an enterprise may be served through the appropriate harnessing of the interactions of whatever community the organisation may be able to harness. From these roots the notion of community in relation to organisational performance arises.

6.5 Structure

The paper is structured as follows: a brief survey of theory about the nature and characteristics of different forms of community leads to a summary overview of recent findings in relation to communities of practice, brand communities and communities of interest, and their potential to contribute to the decision-making processes of the organisations to which they attach. The methodology adopted by the research is then described, taking into account the emergent nature of this field and the relative paucity of established empirical models and frameworks. An empirical end-to-end model of online community development and interactions is then proposed by examining organisational dimensions and community dimensions. The variables proposed by this model enable a systematic appraisal of how communities might be utilised by organisations to assist in the realisation of strategic goals. Included in this analysis is a discussion of observed features of online communities and the establishment of a typology of
community types. A more detailed analysis of a selection of the most common form of community - the online forum – follows. The final section of the paper deals with conclusions and future research directions arising from this research.

In this analysis it is also helpful to invoke the roles of ‘seeker’ and ‘solver’ roles (Howe, 2006b) to provide greater context for the interactions. The seeker is looking to receive benefit from the transaction, the solver able to provide benefit for the seeker.

### 6.6 Forms of Community

A relatively recent development in community theory that extends to the organisational realm is the study of Communities of Practice (CoP). First proposed by Lave and Wenger in relation to learning behaviours, CoPs are ‘groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly’ (Lave and Wenger, 1991). CoPs are found in a diverse range of settings including healthcare (Nicolini, Scarbrough and Gracheva, 2015), education (Mayer, Woulfin and Warhol, 2014), and industry (Heeg and Bitterer, 2015). They may involve participation in activities including problem solving, requests for information, reuse of assets, discussion of developments, and mapping knowledge and identifying gaps (Wenger, 1998). Narrowing the focus to a business setting, the role of the traditional CoP emphasises learning and skills development, not necessarily participation and involvement. Hildreth and Kimble (2000) recognise that professional contexts are often associated with CoPs and provide the definition ‘a group of professionals informally bound to one another through exposure to a common class of problems, common pursuit of solutions, and thereby themselves embodying a store of knowledge’ (Hildreth, Kimble and Wright, 2000) – perhaps a better reflection of the potential of online groups.
Gee (2005) has identified a number of incongruities in the idea of CoPs. These include that the label ‘community’ implies a sense of belonging and membership, neither of which need actually apply for a community to create value. He sees the term CoP as an attempt to label a group and this brings with it problems of the basis for inclusion or exclusion of members. Issues of participation, membership and boundaries become in his words, ‘problematic’. To address this, he nominates the term ‘spaces’ to replace communities, and extends the idea of CoPs into what he calls ‘semiotic social spaces’ a version of which he labels ‘affinity spaces’. In these spaces, participants affiliate around a common cause. Gee proposes a number of characteristics of affinity spaces and notes that many business organisations build such spaces for their customers.

If the ultimate objective of enterprise is to satisfy the needs of customers more effectively than alternatives (Webster, 2017) then competitive advantage is the reward that comes with the achievement of that aim (Treacy and Wiersema 1993). But online customer communities are rarely completely homogenous and each individual customer is likely to have perspectives and preferences that differ from others in his or her cohort. This has implications for organisations and the approach they take to customer communities - how well a company understands its prime stakeholders (customers among them) and how capable it is in not just addressing the variation in needs, but also operationally integrating the views of its customers into the attributes of the goods and services it produces (Treacy and Wiersema 1993).

Into this context the role of the brand community, external from the company and with little prospect of recognition and reward, can be considered. In his paper introducing the concept, Muniz defined brand community as ‘a specialised, non-geographically bound community based on a structured set of social relationships among admirers of a brand’ (Muniz, and O’Guinn, 2001). He noted that brands with a strong sense of community are of more value to a marketer than brands with a lesser focus or understanding of their community. The main
factors leading to the degree of community commitment may vary by community type, that is whether the community has been initiated by the organisation or the consumer (Kietzmann et al. 2011b).

Membership of a brand community may lead participants to be more positively disposed towards involvement in new product development (Füller et al. 2006). Indeed, the consumer’s inherent interest in innovation being pursued by the organisation, along with the innovative process itself, motivates involvement. The correlation between community members with more knowledge and skills being more willing to contribute ideas and experiences than community members who are less qualified was also noted (Füller et al. 2009).

An additional category of online community might be called ‘communities of interest’ (Armstrong and Hagel, 2009). Physical communities are bound by members sharing a common geography, CoPs, in common with affinity spaces, are bound by members sharing a common interest. While brand communities attach themselves to a single organisation or product with passion, online communities can and do operate more broadly than this (Danescu-Niculescu-Mizil et al. 2013). Internet technologies enable the members of a community to associate with relative ease. Geographic, language, cultural and status barriers are significantly reduced in an online context and this enables the formation of communities that are potentially both demographically truly diverse, and also quite narrow in their focus. If one individual in a million is interested in a particular topic then the opportunity for meaningful interaction in any given physical place will be low. However, in an online context there may be many hundreds of individuals with the same interest, and the potential for the development of an online community is proportionately greater. This becomes a community of interest and through its size and connectedness it enjoys the potential to interact with and influence on a scale unavailable to members as individuals. The value of the community is to some extent a function of the extent to which the community is cohesive and productive.
6.7 Factors of Commitment

Research on motivations for participation in this style of online community has been grounded in commitment theory (Bateman, Gray and Butler, 2011). Broadly speaking, this proposes three distinct kinds of commitment that members demonstrate towards the communities of which they are part. These are: continuance - relating to the costs of leaving the community; affective - the satisfaction derived from participating in the community; and normative - the sense of loyalty or obligation members feel to continue with the community (Meyer and Allen, 1991). All three of these commitment factors have been found to apply to online communities (Bateman, Gray and Butler, 2011). This is an important behavioural link that connects participation in online communities with the use of those communities in progressing the interests of individuals and organisations through crowdsourcing.

6.8 Crowdsourcing

One such endeavour is crowdsourcing - defined as a ‘type of participative online activity in which an individual, an institution, a non-profit organisation...proposes to a group of individuals...via a flexible open call, the voluntary undertaking of a task’ (Estelles-Arolas and Gonzalez-Ladron-de-Guevara, 2012). For value to be created through crowdsourcing three criteria must be met. Firstly, the subject of the task being crowdsourced must be modular in nature i.e. elements of the subject must be able to be changed without compromising the integrity of the whole. Secondly, there must be structural capability within the organisation to be able to both engage the crowd and utilise the output from the crowd in a manner that creates value. Finally, an authentic community must be engaged (Rowe, Poblet and Thomson, 2015). The manner in which these communities may be engaged, and the variables associated with mediating that involvement are critical determinants of successful leverage of online communities by organisations.
6.9 Communities or crowds?

The study of crowdsourcing must take into account the dynamics of the crowd. Here arises a definitional constraint as many of the crowds engaged in crowdsourcing do not satisfy the preconditions of community. In other words, while all communities are comprised of crowds, not all crowds are communities. Participation in crowdsourcing may be by individuals unmotivated by commonality of interest with like-minded others. Consider the individual that voluntarily submits information about the location of potholes to their local council using an app similar to “Street Bump”. This individual is enabling the local government to crowdsource data in relation to the condition of roads in surrounding neighborhoods, however the individual is not by any practical means a member of a community for the purposes of this activity.

This paper therefore does not use ‘community’ and ‘crowd’ interchangeably, rather it assumes for the purposes of this analysis that it is the characteristics of the online community that drives value-creation, not the mere access to a crowd. This is complemented in some cases by the fact that this collective may also constitute a ‘crowd’ according to the definition of crowdsourcing. Understanding the options and choices that shape community interactions is central to appreciating the value a community might offer an aligned organisation.

6.10 Methodology

This research applies a multiple-method approach to the study of online communities. Qualitative data was obtained through semi-structured interviews over a two-year period with subjects actively participating in crowdsourcing activities. In addition, a ‘digital ethnographic’ investigation including naturalistic involvement in, and observations of functioning online communities and associated artifacts was undertaken. Digital ethnography is a qualitative research methodology which adapts ethnographic research techniques to the study of online
communities (Underberg and Zorn, 2013). This is an application of what Kozinets (2010) has termed netnography. The steps associated with sound digital ethnography methodology include development of specific research questions, identification of appropriate online groups or activities, observation, data collection, analysis and reflection, and theory building through generalisation of data (Boellstorff et al. 2012). Applied theory building requires the researcher to ‘interact with and be influenced by both the phenomenon in practice and acquired knowledge within that realm’ (Swanson and Chermack, 2013).

Quantitative methodology included a review of online communities associated with the 2015 Fortune 500 companies, and an additional 167 measurements of a convenience sample of eight online communities providing cross-sectional and time-series data encompassing 1.1 billion individual posts and contributions. Many online community forums have been captured in Internet archives along with metrics that enable the development of these communities over time to be mapped. As an investigation into the nature of the kinds of communities these forums attract formed a significant part of this research, taking data from these archives provided a rich source of quantitative data. Forums were selected for study by entering the search term ‘online forum’ into Google. A selection of candidate sites was obtained and these were then entered into the Internet Archive site (www.archive.org) to establish the quality of historical data available. Quality of data in this sense refers to the start date of entries into the archive, and the frequency and distribution of updates. Figure 7 shows an example of the reporting available on the site and provides an overview of the data density. Where the data relating to a particular forum was insufficient to provide samples of sufficient frequency and regularity the site was discarded and the next on the list was submitted.
Further data collection took place to identify the nature of forum usage including number of participants and views of forum posts. This required a different set of forums for analysis as the research required a contrasting view of usage behaviours in both large and small forums.

Conceptual modeling has been described as ‘the activity of formally describing some aspects of the physical and social world around us for the purposes of understanding and communication’ (Mylopoulos, 1992). Identifying variables and interactions based around defined categories will enable the development of a model that identifies and explains the actors and structural characteristics associated with value-creation from online communities.

6.11 On value

The term ‘value-creation’ appears frequently in business literature but is rarely defined. Priem (2007) saw value-creation as involving innovation that establishes or increases the consumer's valuation of the benefits of consumption, a position that also aligned with Lepak, Smith and Taylor’s (2007) findings that, ‘at the organisation level, the value-creation process includes any activity that provides a greater level of novel and appropriate benefits than target users or customers currently possess’. This definition supersedes innovation-based approaches and moves beyond the consideration of financial returns as being important aspects of value, embracing instead the idea of ‘benefits’ accruing to the participants in the transaction. However, the question remains to what are these ‘benefits’ referenced? An advantage for one person may be considered an impediment to another. ‘Value’ thus perhaps constitutes features or outcomes that assist an individual or organisation to move closer towards their objectives. This view of value provides context for the benefit and the motivation for seeking the benefit and transcends the simply financial. For example, a firm may be keen to understand better the motivations of its most faithful customers and indeed this may translate into financial gain, but it may more importantly lead to enhanced understanding, closer relationships, lower churn and a range of other collateral benefits more strategically desirable than simply a short-term
uplift in revenue. Value may then reasonably be defined as: any incremental improvement in
the ability of an individual or organisation to achieve an objective through a sacrifice they
judge to be less significant than the benefits associated with that improvement.

6.12 Towards a comprehensive model

Online communities may exist in many forms. They may be directly associated with an
organisation, or they may be entirely independent of the organisation and exist only as a result
of the individual members’ shared approach to a contingency.

The proposed empirical model considers two dimensions:

- Organisational dimensions – which are controllable by decision makers within the
  organisation; and
- Community dimensions – which shape and limit the nature of the resultant
  community; and reflect variables relating to the nature of participation.

Taken together, the proposed model provides both an explanation for observed community
interactions, and a diagnostic tool showing alternative configurations that may potentially
drive better value-creation from an existing community engagement approach.

6.13 Organisational factors

Figure 8 depicts the organisational factors of online communities.
Organisational factors are those that are related specifically to, and under the control of, the seeker organisation. They are distinct from of any particular crowdsourcing process and can be considered independent variables. They include the following:

1. **Strategic Objective (refer figure 9):** The starting point for development of this model is the assumption that an organisation’s involvement with online communities is intended to contribute to the achievement of the seeker organisation’s strategic goals. ‘Value’ in this context may well be an end-product, but it may also represent the unlocking of insights or a capability (for example) hitherto unavailable to the organisation.

Curating or engaging solver online communities in the absence of a clear strategic vision is problematic and will undermine the ability for the benefits of that community to be leveraged.

2. **Business Model (refer figure 9):** The second organisational factor for consideration is the degree to which the community is integrated into the business model used by the seeker organisation. This factor can assume one of three states. The first is where the capability of engaging the community is a central and essential part of the operational model of the organisation. This is called the ‘dependent’ model and organisations pursuing this model are
incapable of surviving in the absence of community interactions. The second state is where
the organisation uses a more traditional business model but captures community inputs as an
added-on capability. This is the ‘augmented’ model. Examples of this model are governments
that use crowd-based techniques to assist in policy formation and problem solving. The
government of the United States of America maintains a website www.challenge.gov which
runs crowdsourcing competitions with rewards ranging from US$5,000 to US$2,000,000. It is
clear that crowd-based activities are not at the core of the government’s business, but that this
augmented capability enables the government to identify and pursue courses of action that
might not arise through conventional channels.

The third state is where the organisation disregards, either through design or neglect, the
presence of whatever online community of interest exists around it. This can occur for a
number of reasons and is relatively prevalent at the time of writing. This is referred to as the
‘legacy’ model.

Organisations that are ‘dependent’ such as Amazon, Facebook and eBay maintain customer
communities that are the value-creation engine and effectively inseparable from the
organisation itself. Other companies such as AT&T, Hewlett Packard and Nike maintain
active communities that have been developed alongside their primary operations enabling
input to be obtained whilst the organizstion remains operationally independent from its
associated communities. Many more organisations – usually ones of significant scale – are too
bound by fixed organisational structures, industry regulatory pressures, or stock market
expectations to engage online communities in any meaningful way. Banks and mining
companies are typical examples.

As the impact of social media and online communities becomes more apparent, some
business-to-consumer enterprises appear to be decreasing their reliance on legacy systems and
are starting to provide opportunities within their operating or business models for more significant stakeholder interactions.

3. *Online Presence Projected* (refer figure 9): at this point the model seeks to establish whether the organisation projects an online presence beyond a simple website. The null case here is the organisation whose presence provides no way for interested parties to respond. In these cases, the organisation eschews even the most basic social media presence. American Tower (http://www.americantower.com) is a large transnational enterprise based in the United States. Its website is purely descriptive with no social media presence or any other way for interested parties to interact with the firm beyond a ‘contact us’ page.

Social media is simple and inexpensive to access and many organisations use social media platforms such as Twitter, FaceBook, Pinterest and Instagram as a simple extension of their website. This may satisfy a technical definition of creating and engaging with an online community but in reality, simply posting content to Twitter and Instagram does not mean an impact is being felt either in respect of forming or contributing to a community discussion. It should be recognised that almost all organisations of scale now project some form of online presence through social media channels. This is a necessary but not sufficient precondition to the formation of a community. The test of whether a community has been formed relates to the extent of response that results from this activity.

This can be a difficult dimension to assess as content posted to these platforms might attract very little inherent interest. However, in the event that the organisation or people associated with the organisation achieve some form of notoriety, then the social media activity can become something of a lightning rod, an avenue for a previously disengaged public to make their views known, and this provides value to the organisation.

A case in point is the Campbell Soup company. In January of 2017 the CEO of Campbell’s Denise Morrison was appointed to the American Manufacturing Council, a body established
by President Donald Trump to advise him on US domestic manufacturing activities. Following some controversial actions and comments by the President, a number of executives, including Ms Morrison took the decision to leave the council prior to its eventual disbanding in August of the same year. A review of Campbell’s social media of that period demonstrates an unusually large number of responses were received to the company’s social media activity in the period leading up to Ms Morrison’s resignation from the council. A qualitative evaluation of this activity demonstrates that almost all comments represented negative community sentiment directed towards her membership of the council with an overwhelming number of posters urging her to resign. An otherwise docile and unengaged community of subscribers to Campbell’s Twitter stream had become vocal and insistent as a result of what they interpreted as an injustice or provocation.

This kind of irregular and ad-hoc activity is a separate category of interaction that, whilst capable of influencing decision-making within organisations, does not represent a coherent response to community building and is, one might surmise, often unwelcome in relation to the pressure it puts on management. It is however an important community interaction and one with the potential to create value for the organisation.

4. Platform Stewardship (refer figure 9): This factor reflects the relationship between the organisation and its community. This is an important decision for an organisation - it can foster the creation of its own online community (management of the community is a function internal to the organisation), or it can monitor but otherwise have a hands-off relationship with a community that has been created outside the auspices of the organisation (management is external to the organisation). Some organisations may be unaware of both the existence of an associated community, or of the potential to leverage this community for advantage (not considered by the organisation).
Web 2.0 technologies that enable interaction are ubiquitous and accessible to all. The degree of perceived authenticity of these interactions is likely to have the effect of mediating the quality of the contribution by the stakeholder. For example, independently moderated, spontaneously evolving communities are likely to elicit a more open, honest and unfiltered set of responses than those from sites established, curated and overseen by the organisation being commented upon. In this case the obvious presence of the observer is likely to influence the contribution of the community (Vaezi, Torkzadeh and Chang, 2011).

This review of companies comprising the 2015 Fortune 500 list in the United States found that of those that could be considered B2C e.g., operating in consumer markets, (n=226) only 44 or 19.5% hosted their own easily accessible online community. Of those with a primarily B2B focus (n=274) 31 or 11.3% maintained online stakeholder communities.

In contrast, every one of the Fortune 500 companies was the subject of discussion and comment amongst online forums external to the company. Many of these interactions centered on the investment potential of the companies under discussion. Others consisted of contributors seeking information about employment opportunities and experiences from other community members who had had dealings with the company. Independent and spontaneous communities discussing products, strategies and topical concerns related to the companies were also prevalent.

Regardless of the specifics being discussed all of these exchanges were taking place in independent forums. While it is difficult to know how many of the companies under discussion monitor these interactions, the content of these discussions might reasonably be assumed to have some strategic value. Companies not active in this regard may be seen to be foregoing an opportunity.
6.14 Community type

5. Community Type (refer figure 9): Categorisation of type of community utilises two dimensions: the scope of interests covered in the interactions of community members, and the extent of diversity of interaction enabled by the platform.

Some communities form around very specific topics – they are single interest driven and often quite specialist in nature. A community dedicated to the restoration of a particular model of automobile is unlikely to sustain discussions about politics. Other communities arise in response to a broader range of interests. These might be aligned to a particular brand or cause or be more general in nature. Members of these communities such as Quora and Straight Dope Message Board typically start and propagate discussions and encourage the contribution of different perspectives and viewpoints from their community across a range of topics.

‘Diversity of interaction’ in this model reflects the degrees of freedom of participation afforded to the community. Interactions can range from one-sided to many-sided. A one-sided community will have a flow of information that moves from a source to an audience. In a typical one-sided system, the audience is either unable to contribute back to the source or can do so only in a piecemeal fashion without the formation of conversational threads and free-ranging interactions with other audience members being feasible. Some organisations may seek to limit the diversity of interaction to minimise the potential risks associated with open and unconstrained communication. Moving beyond this token activity can be challenging for the organization, since such activity requires capabilities of managing a more plentiful and diverse range of interactions. This represents a significant loss of control for managers within seeker organisations and a reluctance to engage. However, there are numerous examples where organisations have encouraged a broad and diverse range of interaction. This can be achieved by allowing stakeholders to independently and autonomously create new topics and opportunities for interaction between each other and the organisation itself. Enhanced
interactivity enables a more free-flowing exchange and richer source of data for the organisation. It also implies that the organisation has an appetite to listen, and act, on the information being received with a view to improving its value-creation.

6.15 Schema of community type

Juxtaposing the dimensions of scope of interest and diversity of interaction enable an empirical schema of community type. Figure 9 proposes four basic types of online community presented in the context of these two variables. In this case an indicative indication of the size of each community type is represented by the size of the circle denoting that community.

Figure 9: Empirical schema of community type

This typology is reflected in the core types of platform on which communities can be established and provides foundations for, and limitations to, the scope and diversity of interactions possible. Mapping the interaction and developing models of the topological features of these platforms is helpful in clarifying the understanding of the differences between them. In each case the linkages and mechanisms enabling the interaction support the different requirements of the platform.
6.15.1 Community typologies

Figure 10 depicts the variable ‘scope of interest’ as being positioned on a continuum from low (single purpose platforms) to high (platforms hosting participants embracing a range of activities). The model integrates this with a measure of ‘diversity of interaction’ ranging from unilateral to multilateral. Where the scope of interest is low and the diversity of interaction is also low, the community form is a blog (originally called a ‘weblog’). The blog’s author (blogger) is typically an individual or representative with some professed interest or expertise in a particular area, communicating to a community that shares that interest. Figure 10 depicts the generic topology of a blog.

Examples abound and include representational forms such as Joe Saward’s Grand Prix Blog (Saward, 2018), Bad Astronomy (Plait, no date), and Letters of Note (Usher, 2013). The cohort of followers is usually (but not always) able to interact with the blogger. To a significantly more limited extent, contributors may also be able to interact with other followers through contribution of comments. The focus is generally singular – the blogger being associated with a single topic or orientation, and the communication is typically one sided. The number and extent of responses is insignificant compared to the number of viewers.
of the content. This is an example of a platform with limited scope and limited diversity. The interactions arising from typical Wordpress type online publications conform to the basic blog topography. In this case the audience, looking for information and opinion, are the seekers and the blogger serves the role of solver through providing information and viewpoints to the community.

Contrast this to a situation with low diversity of interaction but high scope of interest. This form may be found in online markets (Figure 11) such as eBay, or Alibaba where the range of topics (i.e., categories of items for sale) is potentially unlimited, but participants generally relate only within the context of the individual vendors in the market.

The platform in this case mediates the creation of value and provides unfiltered and primarily un-moderated interaction. Seekers sit on the platform with the intention of creating value through selling goods and services, while solvers are those participants interacting with (perhaps) the intention to purchase. While this marketplace-style platform is commonly associated with auction and commerce sites, the generalised form is appropriate across a range of applications including many typical crowdfunding (a subset of crowdsourcing) sites.

![Figure 11: Market typology](image-url)
The third form is found where the scope of interest tends to be focused while the diversity of interaction is much greater. Online forums (Figure 12) - sites enabling users to participate in topic-driven discussions - are perhaps the most visible and therefore accessible example of this and lie at the basis of the formation and development of many online communities. For the purposes of clarity throughout the report the term ‘platform’ refers to the ultimate URL hosting the community; ‘forum’ refers to the individual themed high-level topic areas hosted on the platform; ‘thread’ refers to individual discussions taking place in each of the forums, and ‘post’ refers to the individual contributions to each thread.

![Forum typology](image)

Figure 12: Forum typology

While there are exceptions, generally a forum will be dedicated to a single theme and embrace a diverse and complex set of interactions. Seekers start discussion threads and solvers contribute by providing information and participation. These interactions take place largely between members of the community rather than sequentially with the seeker, and the creation of content and discussion topics is largely unfettered. Forums represent a particularly common and efficient means of engaging large communities and enabling participation and contribution. Examples used in this research include: L-Camera Forum: a discussion board about Leica cameras and lenses, images and photographers; Straight Dope Message Boards (SDMB): a general question and answer site arising from a popular newspaper column in
Chicago; *Coffee Snobs*: an Australian forum focusing on topics relating to in home coffee preparation; *Rolex Forums*: dedicated to discussion of Rolex and associated timepieces; *R1 Forum*: a community dedicated to Yamaha YZF 1000 R1 sport motorcycles; *Atheist Foundation Forums*: providing a range of discussion and interaction in relation to the practice of atheism; *Arcade Controls*: A message board assisting those who choose to build their own video game controls, cabinets, and adaptors; and *Smith & Wesson*: discussions around collecting and using Smith and Wesson firearms and associated topics. Many online community forums have been captured in Internet archives along with metrics that enable the development of these communities over time to be mapped. All forums exhibited remarkably similar behaviour over time.

A significant cohort of forum visitors had completed the registration process required for full access but exhibited minimal ongoing commitment or participation. Casual participation at any given time was around four times that of member participation. The implication for organisations that use community registrations as a proxy for community size is that they are likely significantly understating the amount of interest they attract. Interestingly, all eight sites analysed for this research demonstrated a growth in membership over the first year or two often followed by a period of rationalisation or restructuring of the individual forums.

The final categorisation occurs when the scope of interest is large and the diversity of interaction is similarly large. Under these circumstances a number of separate communities (based on a common theme) form an ecosystem around a particular organisation or cause. The subsequent interaction is complex (Figure 13).
An example of an ecosystem topology is LEGO which engages with a diverse range of communities around the world. These are called ‘LUGs’ (LEGO User Groups) and are operated by ‘AFOLs’ (Adult Friends of LEGO). As of 2016 there were 71 independent LUGs in operation globally (LEGO Ambassadors Network, 2014). Each serves a specific geography. Together they form an ecosystem access to which is facilitated by a network of ‘LEGO Ambassadors’ described as a ‘designated individual who officially and exclusively represent a Recognised LEGO User Group’ (LEGO Ambassadors Network, 2014). The role of the ambassador is to provide a central communications network, points of contact, activities and discussions, and business intelligence back to LEGO. The Ambassador Network is coordinated through a LEGO Ambassador Network Forum that provides a single point of contact between Ambassadors and the company.

In embracing an ecosystem topology, an organisation removes its dependence on a single point of entry for participants and allows for a greater scope and diversity of interaction. While there are co-ordination costs associated with managing this diversity, the level of
commitment demonstrated by these communities reflects in the quality of the outcomes made possible.

‘Community type’ overlaps between Organisational factors and Community factors. A community can be contrived by an organisation – making it an organisation factor, or it may be spontaneously occurring, making it a community factor.

6.16 Community Factors

Community factors might be considered dimensions of participant interaction that are unrelated to organisational control. They represent values and dynamics of the participants in online communities and may be considered exogenous variables in relation to the organisation’s value creating activities.

Figure 14 depicts the community factors associated with the model. These are a direct consequence of the type of community that mediates the interaction between seeker and solver.

![Figure 14: Community factors of online communities](image-url)
As noted previously in this paper the mere fact of an organisation participating on a platform does not mean that the activity generates responses, and so the engagement or otherwise of potential communities needs to be established in advance of categorising the participation mode. In those cases where an organisation for example hosts a forum, but there are few if any responses to posts, no engagement has taken place and there is effectively no community.

6. Participation Mode – Style of Interaction. While the configuration of the platform is an important enabler of various scopes and diversities of interactions the actual performance of the community will be significantly impacted by the style of interaction demonstrated by the users. When assessed on an empirical basis the following five states are observed:

**Latent:** where the individual in a crowd has not yet become part of a community. The condition precedent necessary for the individual to be motivated to connect has not yet occurred. An example of this is residents in earthquake zones. Their participation in social media may be entirely recreational until a quake hits. The exogenous shock caused by the quake coalesces the latent actors into a cohesive community – the resources of which can then be used by authorities in rescue and remediation efforts.

**Captive:** where interactions between platform and community are a result of there being no practical option. Participation isn’t through choice rather it is through necessity (for example, Telstra, Commonwealth Bank of Australia);

**Passionate:** where participation is the result of a free choice to engage on behalf of the members of the community, and contributions come from the participants desire to be heard and to make a positive contribution to the community (Straight Dope Message Boards, Rolex Forums);

**Balanced:** where participation becomes a way of life, not driven by compelling external stimuli but by the incorporation of the platform into the participant’s daily routine. Need to
participate is often justified as functional rather than driven from a particular need to address issues. An example of this is recreational participation on platforms such as Facebook and Twitter; and

Uncommitted: where the bond between platform and community member is weak and irregular – if it exists at all. The platform owner is offering access to the platform through a sense of obligation or to be seen to be contemporary. The potential user may perceive the pages to be a contrivance with little substance and limited ability to actually provide influence (for example The Clorox Company, and its ‘Heritage Community’).

The style of interaction is an important consideration because it contributes to the degree of authenticity and engagement present in the interaction. The standard of contribution arising from authentic and engaged participants is more useful than that of individuals participating on a platform through obligation or lack of choice. An organisation seeking to leverage the insights of its community may be disappointed by responses when that community is delivered to the organisation through overly moderated or controlled platforms.

7. Anticipated Outcome - A final element of the comprehensive model relates to the nature of outcome sought. The classical dichotomy of goods and service (tangible/intangible) can be extended here to include two additional classifications of outcome; information and capability. Turning to a community for information is self-explanatory – the information may be in relation to guidance on potential new products and services, understanding better the priorities of consumers, or establishing a clearer picture of the organisation’s reputation and brand in the eyes of the market. When an organisation turns to a community to either get it to perform tasks on its behalf or solve problems, the community is effectively providing that firm with a capability it did not have previously. Community-based capability building extends the resource-based view of the firm (Barney, 1991) to include the valuable, rare and
imperfectly imitable contributions of a community of individuals, each with a perspective and some degree of willingness to contribute.

6.17 The empirical end-to-end model

By combining these organisational factors and community factors an empirical end-to-end model can be constructed that accounts for the range of modalities in which community interaction may be accessed by an organisation (Figure 15).

Figure 15: End-to-end model of online communities

This model serves two purposes. It accounts for the range of management decisions contributing to the formation of an interactive online presence, and it provides a framework for troubleshooting when performance of online presence has not matched management
expectations. By identifying how each of the model’s categories are configured by an organisation, opportunities for modifying or enhancing the constituent elements to achieve outcomes more consistent with the strategic objectives of the organisation can be undertaken. Attempting to obtain crowdsourced ideas through an augmented model using internal ownership in blog form is unlikely to be successful. Migrating communities from captive to passionate through relinquishing ownership of a platform may seem like a lessening of commitment but will likely lead to more authentically engaged communities and better outcomes. Understanding that the elements in this framework have a variety of settings, and that each of those settings is a management controllable has the potential to provide greater access to enriched outcomes as a result of community interactions.

6.18 Dynamics of Forums

Forums represent a particularly common and efficient means of engaging large communities and enabling participation and contribution. Online archive resources have been created which enable researchers to visit websites exactly as they were at specific points in time. Many online community forums have been captured in Internet archives along with metrics that enable the development of these communities over time to be mapped. Of these, eight have been selected using convenience sampling. A summary of key characteristics of these forums is depicted in Table 12.
Table 12: Archive measurement details for targeted online forum communities

The selection of forums for inclusion in this research was dictated by the availability of historical records to enable sufficient resolution of time series measurements, sufficient time in existence for the life-cycle to be adequately represented, sufficient number of threads to ensure granularity in the data, and sufficient number of posts for the sample to be considered representative of the overall population. Further, the communities were appropriately heterogenous with a good spread of size and focus. It is noted that the forums were all English language, and represented western cultures and this might represent a source of systematic bias.

Analysis of the data obtained from these archives revealed a number of interesting characteristics of online communities. Firstly, there was a significant instance of casual users across all of the platforms sampled. Casual usage is participation in forum discussions by individuals that have chosen not to register on the forum. Registration is almost always free and brings with it a range of benefits including ability to do searches on the board, receive email notifications of updates, and direct message other participants. Casual users are often precluded from these benefits. It is not unreasonable to suspect that casual users are interested in the forum topic, but not (yet) committed to regular contribution. As such they may share an
affiliation with the group without being considered a community member. On average across the platforms studied, casual participation at any given time was around four times that of member participation. The implication for organisations that use community registrations as a proxy for community size is that they are likely significantly understating the amount of interest they attract. Separating out quality contributions from mischievous or destructive activity (increasing the signal-to-noise ratio) is a concern when seeking to obtain quality data from un-moderated online sources. There is a significant cohort of casual visitors to forum that are not sufficiently committed to register but still have quality input to contribute. Barriers aimed at excluding ‘trolls’ will also likely preclude participation from these uncommitted users.

![Figure 16: Distribution of replies per thread, per forum](image)

An additional insight was revealed through taking measurements of the number of forums hosted on a platform over time. Desktop data mining was undertaken using a web-based application called ImportIO. Changes in number of threads, replies and views were taken at intervals over the duration of the existence of the forums being analyzed. From these
Summary measures were calculated and plotted to provide a visual reference for the movement in these values over time.

All platforms demonstrated a growth in membership over the first year or two often followed by a period of rationalisation or restructuring of the individual forums on those platforms. Wenger (Wenger, McDermott and Snyder, 2002) identified 5 stages of development of Virtual Communities of Practice (VCoP), which are summarised in Table 13. These correspond to the stages of evolution seen in development of online communities over time.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Potential</td>
<td>The formative stage where the potential for a CoP has been identified and membership and administrative issues are addressed</td>
</tr>
<tr>
<td>2</td>
<td>Coalescing</td>
<td>The CoP is launched, activities commence and the emphasis lies in establishing value.</td>
</tr>
<tr>
<td>3</td>
<td>Maturing</td>
<td>The CoP becomes established, core practice is well defined, members know each other, the organisation develops a sense</td>
</tr>
<tr>
<td>4</td>
<td>Stewardship</td>
<td>Managing the ongoing growth, development, structure and appeal of the community</td>
</tr>
<tr>
<td>5</td>
<td>Transformation</td>
<td>A precipitating event necessitating the need for dramatic change and/or renewal</td>
</tr>
</tbody>
</table>

Table 13: Wenger’s Five Stages of Community Development (Wenger, 2002)

A final observation is that overall membership of online communities peaks and then inevitably declines. Whether the decline is a result of progressive restructuring of the site, or the factor that precipitates this restructure is a noteworthy consideration. One might conjecture that participants in the community simply evolve through the subject matter and beyond, that the marginal benefit from participation slowly diminishes until the effort required of membership exceeds the return (however defined) to the participant. The question remains why growth does not sustain as new members discover the community. Perhaps there are temporal relevance issues in online communities that fail to be addressed and as new platforms arise allegiances are switched.
6.19 Conclusion

The purpose of this research is to propose a conceptual model of online community development and management in the context of organisational value-creation.

Online communities demonstrate distinct characteristics, and a deterministic and predictive model can be developed through integrating these typologies with other critical decision points in relation to choice of business model, platform stewardship, community type, participation mode and desired outcome.

6.20 Future research

The model developed by this research is conceptual in nature. Future research directions may include a more formal investigation of the nature and characteristics of the linkages between agents, and their impact on performance of the organisation seeking to utilise communities in value-creation. There is now an abundance of data in accessible with relative ease through new data mining techniques. Artificial Intelligence (AI) algorithms are already enabling meaning to be extracted from large and diverse datasets with relative ease (Kozinets, 2010).

As new forms of community evolve investigations may reveal a meta-categorisation of sociological importance across a range of disciplines.

As new technologies evolve, with them come opportunities for a step-change in how existing practices can add value, and a research agenda to suit. Large social media networks have come under increasing scrutiny for the way in which they use, and potentially misuse, data generated by their users. Awareness of the value of this data, the way in which it might be analysed and exploited has enabled new business cases and brought to the fore attendant issues of human rights and privacy. It is generally accepted that the Internet of Things will increase the number of connected devices by orders of magnitude and the potential data streams that will result from human interaction with these devices will become perhaps
another rich field of opportunity. Semantic analysis of the content of forum discussions can potentially provide rich customer insights and remove much of the risk associated with customer-related decisions in organisations.

As technology-enabled changes take place the orientation from creating value through asking solvers, to creating value through watching and analysing resulting data is therefore a potentially significant field of endeavor. One outcome of this is that it may well necessitate the further revision of the definition of crowdsourcing, as automated analysis of thousands of discussion posts using Artificial Intelligence reflects a significantly different domain than using crowdsourcing platforms to develop a new logo or solve a simple problem. There may indeed be a need for more clearly delineating branches of crowdsourcing and this might perhaps be helped along through the development and adoption of new descriptive nomenclature.

In the light of these new, efficient and cheap ways of exploiting communities’ regulatory regimes will be required to be responsive to the needs of stakeholders. The potential for government intervention to disrupt, or at the very least moderate, the unfettered development of new techniques and applications requires research in broad ranging second and third order effects that move beyond a view of the ‘public interest’.

At the heart of these investigations lies the basic human drive for connectedness. And perhaps the most important dimension of this is the authenticity with which relationships form and are carried forward. Just as the notion of community is losing its geographic dependence and becoming more abstracted over time so the challenge of keeping the trust and the humanity in the relationships becomes a more important factor. Future research directions accounting for aspects of authenticity in distributed relationships may provide a stepping off point for a means of further leveraging the potential that exists wherever communities operate.
Chapter 7: Conclusion and Future Research

7.1 Introduction

This thesis extends the current understanding of value-creation in crowdsourcing through three distinct studies. It has provided an assessment of crowdsourcing models proposed in literature with respect to value-creation, and an exploration of the antecedent conditions required for crowdsourcing to create value. It has also proposed a model that describes the drivers that contribute to the development of, and appropriation of value from, online community interactions.

Crowdsourcing in this thesis is defined as: a ‘type of participative online activity in which an individual, an institution, a non-profit organisation…proposes to a group of individuals…via a flexible open call, the voluntary undertaking of a task’ (Estelles-Arolas and Gonzales-Ladron-de-Guervara, 2012). Many established industries are undergoing significant and disruptive change, and adaptations of crowdsourcing can often be found at the heart of this change. Crowdsourcing can thus be a value-creating activity. “Value” is defined, in this thesis, as any incremental improvement in the ability to achieve objectives obtained through a sacrifice considered to be less significant than the benefits associated with that improvement. The perceived value-in-use obtained in an exchange may be functional, social or hedonic in nature (Abdul-Ghani et al. 2011). Understanding the variables associated with value-creation through crowdsourcing is important to the ongoing survival and success of organisations both in Australia and globally.

A difficulty associated with the study of crowdsourcing is the recency of its identification as a distinct practice, and the large number of variations it can assume. It has been a little over a decade since the term was first applied to a then nascent practice by Jeff Howe in 2006. As consensus on precisely what crowdsourcing is and how it may be explained has arguably not
yet been achieved researchers are left with a wide range of approaches to consider and the lack of an established body of foundational research upon which to build.

7.2 Theoretical Implications

The research presented in this thesis did not anticipate a single objective reality or truth. Crowdsourcing takes place through a complex network of interrelationships and actors. There is little that can be measured directly or assessed with any degree of objectivity. The constructed meaning of crowdsourcing resides in the minds of the participants and observers of the activity, and each may have a different perception or understanding. This suggests a qualitative research approach adopting a relativistic ontology and constructivist epistemology. The largely unstructured nature of crowdsourcing activities also significantly impacts on the sources and availability of what might be considered ‘hard data’. As a consequence, the research that has been presented in this thesis often ventures into territory for which the theoretical underpinning is largely unresolved. As the practice of crowdsourcing evolves and dominant paradigms emerge a better understanding of the place and function of crowdsourcing will establish itself in the literature. In the absence of this and recognising the ambiguous context in which this research is taking place, the occasional leap of faith may be required to bridge chasms of understanding which are currently unsupported by a cohesive and integrative base of literature.

Data collection took place primarily from an experiential perspective. Semi-structured interviews were conducted with participants active in the crowdsourcing domain. This provided insights into the pragmatic issues that drive outcomes using this practice. Participation by the researcher in online crowdsourcing activities both as a seeker and a solver provided a first-person perspective, and subscription to industry newsletters and forums enabled the research to take into consideration the orthodox view of the business commentariat including those with and without specialisation in the field. Significant
Quantitative data was able to be collected through analysis of archives of online forums, and an analysis of the companies comprising the Fortune 500 list.

Crowdsourcing is an innovative activity and a starting point for the examination of its antecedents is the domain of open innovation, in the context of changes in innovation practice that have taken place over recent decades as new technologies have enabled novel practices to be adopted and new markets to evolve. Here, a ‘march towards greater openness’ is apparent as, starting with the nomination of the underlying principles of relationship marketing, innovation practice has embraced in turn mass customisation, open innovation, service dominant logic, and value co-creation as precursors to crowdsourcing. Each of these steps can be seen as necessary but not sufficient preconditions for crowdsourcing techniques to become value-creating practice. The recognition of the value of stakeholder participation can be seen as a foundation principle of open innovation and has led to the paradigm of customer co-creation and mass customisation. This was augmented by the recognition that all products embodying a service component confer ‘value in use’. In a service dominant logic perspective, the customer (or stakeholder) becomes the co-creator of value. So, it stands to reason that leveraging direct inputs from groups of stakeholders provides organisations with the potential to match their outputs better to the needs of their stakeholders.

The other key concurrent ingredient in the adoption of crowdsourcing has been exogenous in nature; the development and widespread adoption of social media technologies. This has been a notable change in the context in which organisations operate with social media enabling a relatively unconstrained flow of opinion and information within and between individuals and communities. Aligned with a movement towards organisations becoming more open to stakeholders, these interactions can become a foundation of value-creation through a variety of means. With greater ‘collective wisdom’ outside the organisation than within, questions, problems or tasks may be addressed with greater speed and accuracy using community
interactions than was previously possible. Consequently, this has altered the bases upon which organisations may deliver value. If the attitudes, beliefs and skills embedded in stakeholder communities can be accessed by the organisations that serve them, then participation strategies can draw on the crowd to offer the organisation products, services, information and capabilities with lower cost and greater immediacy than might be available via alternate means. Organisations’ recognition of “the crowd” and the role it might play has thus provided a stepping-off point for a range of value-creation activities. When placed in its historical context, crowdsourcing may represent a post-industrial turning point that fundamentally changes the basis upon which value is created.

The underlying fabric of observations, interactions and measurements provide the basis for the development of novel models and perspectives that may be employed to explain current performance of a range of crowdsourcing activities, and provide a conceptual framework enabling options for the users of crowdsourcing to change their approach in ways that enhance the efficacy of their process.

The specific research themes addressed in the three studies presented here are:

Study One: How has value-creation been identified in literature proposing crowdsourcing models;

Study Two: What conditions enable the creation of value by organisations utilising crowdsourcing; and

Study Three: How might the crowd (or community) be engaged to provide management with greater value than may be available through alternative courses of action?

The first study represents a systematic review of literature presenting models and/or identifying variables associated with crowdsourcing. The research questions addressed by this study are how might crowdsourcing models proposed in the literature be critically assessed in
respect of value-creation focus; how has the crowdsourcing literature evolved over time; and what are the gaps in the literature and what can this thesis do to address them?

From an initial pool of 270 papers a total of 40 papers were identified as sufficiently consistent with the selection criteria to enable a critical assessment of the nature and inter-relationships of the variables proposed in their crowdsourcing models. The research was undertaken to gain a critical perspective on the approach taken by authors proposing crowdsourcing models, the quality of the models presented, and to establish the extent to which these models included a value-creation orientation.

It is noteworthy that none of the papers surveyed investigated the nature of the value that organisations sought to create by employing crowdsourcing techniques in preference to existing alternatives. Central to this is an assessment of the antecedent conditions necessary for the creation of value through crowdsourcing. The analysis in every case started with the presupposition that crowdsourcing was an appropriate vehicle for the undertaking of a task. There was no consideration of the circumstances under which crowdsourcing might not be suitable as an alternative approach, nor was there consideration of the circumstances under which crowdsourcing might be inefficient or indeed destroy value. Similarly, there was an absence of exploration of the nature of the ‘solvers’ engaging in crowdsourcing, and little recognition that these individuals may form communities based on their interest in the topic or task at hand. Explicit recognition that these communities exist purely online, and investigation of the challenges and opportunities that this presents for organisations, was similarly neglected by the literature.

In addition, the essence of the value-creating task or activity undertaken by the crowd was not considered. This raises the issue of how questions, problems or tasks may be framed for processing by a crowd, and the ways in which boundaries that determine levels of detail associated with the task may be conceptualised. Why one set of problems is appropriate for
the crowd but another may not be, is a point of departure that suggests a role for analyzing modularity in the context of task setting – how a problem can be conceptualised in a way that presents an opening for input from the crowd without unduly changing the nature of the desired overall outcome. This is an important consideration, as without a framework to guide the modularisation of a task an organisation may not recognise the dimensions along which value may be created. Solvers looking to assist might find the task too great, too insignificant or too outside a single domain skill-set to be of interest.

The final area that received little consideration in the literature relates to the ability of the organisation to incorporate the actions of the solver community into the fabric of the organisation itself. The demarcation between what an organisation’s management and staff do and what is opened up for participation from outside the organisation in is typically characterised as a divide. Organisational design has generally isolated decision-makers from their stakeholder communities. In many cases no organisational structure exists to integrate input from outside the organisation. Without this a successfully executed crowdsourcing activity will not necessarily move an organisation closer to its goals and thus create value.

This review clearly reflected the immature state of crowdsourcing research. As a collection of first attempts at imposing order over the chaotic and evolving domain of crowdsourcing it is perhaps more illuminating in what it omits than the theoretical advances it presents.

The second study explored the conditions that enable the creation of value by organisations utilising crowdsourcing. This conceptual study built on the understanding of the domain of crowdsourcing explored in Study One and moved beyond crowdsourcing models to directly explore value created from crowdsourcing. The study considered one of the questions left unaddressed in the literature: what antecedent conditions need to be satisfied for crowdsourcing to create value for an organisation?
This study yielded a conceptual paper that brought together strands of practice in domains as varied as local government, toy manufacturing, business software development and marketing and technology businesses. It found that in order for crowdsourcing to be successfully undertaken three criteria must be met. The first of these is that the subject of the task being crowdsourced must be modular in nature i.e. elements of the subject must be able to be changed without compromising the integrity of the whole. An exploration on the theme of modularity reveals it to be a widely understood yet largely ill-defined concept. A number of conceptual approaches to modularity have been developed that provide an appropriate starting point for further exploration. Applications that apply to both goods and services are noted in the literature.

The second antecedent condition that needs to be satisfied before crowdsourcing can create value is the presence of an accessible and engaged community of interest. Crowdsourcing of purely process-based tasks - those that require little if any domain specific knowledge - can be undertaken through engagement of undifferentiated individuals without specialist insight or alignment with a community of interest. When the nature of the task begins to require a greater depth of understanding, the harnessing of the thoughts of random individuals may provide results of less clarity or quality. For this reason, where opinions or specialist insight is required to fulfil a task, the organisation may seek out communities of interest. With the widespread adoption of social media technologies identifying or creating these communities is often straightforward.

An alternative approach that organisations can adopt is to side-step the stakeholder engagement process altogether and instead turn from asking the community, to watching the community, then analysing and interpreting directly from the conversations taking place within that community. New Cloud-based artificial intelligence algorithms coupled with
semantic connectivity and topic modelling tools enable deep and coherent insights to be developed from text-based datasets.

Finally, there needs to be a structural capability within the organisation to be able to both engage the crowd and utilise the output from the crowd in a manner that creates value. Implications for management of crowdsourcing projects are that structural capabilities must be in place and resourced ahead of the commencement of a crowdsourcing program. The potential for using semantic connectivity methodology and cloud-based artificial intelligence algorithms to interrogate data collected from user discussion forums is apparent.

The organisational dimensions were identified as the organisation’s strategic objective, the business model employed by the organisation the stewardship of the platform engaged by the organisation and the resultant community type. The relationship between these variables is depicted in Figure 17.

![Figure 17: Organisational factors as they apply to the engagement of crowdsourcing communities](image)

These themes were considered in three papers, with the first being a critical analysis of crowdsourcing literature, and the second and third being conceptual studies. While these studies are interrelated, each was presented with its own discrete aim, theoretical basis, methodological approach and conclusion. The paper arising from the second study was
presented in Warsaw, Poland at the Group Decision and Negotiation Conference in late 2015 and was subsequently published as a book chapter in *Lecture Notes in Business Information Processing* (2015).

The third study explored how the crowd (or community) might be engaged to provide management with greater value than may be available through alternative courses of action. While studies 1 & 2 critically assessed the models associated with crowdsourcing practice, and nominated the conditions needed for crowdsourcing to create value, study three focused on the nature of online communities that undertake crowdsourcing activities. The research specifically addressed the questions: what are the drivers and limiting factors that contribute to the development of online communities and the appropriation of value from them; and how might the variables associated with online communities and the interactions between them be modeled? The model presented in this paper is comprised of two distinct dimensions: organisational dimensions which are controllable by decision makers within the seeker organisation; and community dimensions which shape and limit the nature of the resultant community and reflect variables relating to the nature of participation.

### 7.3 Managerial Implications

Crowdsourcing, when misapplied, or applied in situations not conducive to the inclusion of outside parties, may lead to problematic outcomes. For this reason, studies of crowdsourcing practice as it evolves as a value-creation activity, and observations of the limitations and basic criteria for successful implementation, represent important contributions to the field. As the practice of crowdsourcing consolidates its presence in the mainstream it is becoming a more commonplace business practice. Organisations no longer have to take ‘best guesses’ at stakeholder requirements and can integrate the stakeholder’s viewpoint in an empowered, authentic and immediate manner. Outcomes for stakeholders may reasonably be expected to improve as a result, as may the competitive position of the organisation.
This thesis is aimed at exploring factors that determine the effectiveness of crowdsourcing as a means of creating value. The overarching concern of the research is that of value-creation. The research program was oriented towards the establishment and critique of models already proposed in the literature, identification of antecedent conditions required for the creation of value, and an analysis of drivers of performance of the online communities that enable crowdsourcing seekers to realise their objectives.

The research categorised online community activity as being determined by diversity of interaction enabled by the platform (from unilateral through to multilateral), and the scope of interest reflected on the platform (from low to high). The juxtaposition of these factors results in the identification of four distinct community types: blog, market, forum and ecosystem. These are depicted in Figure 18 below.
The community factors described in the second dimension of the model which lead directly from the community type are: the participation mode demonstrated by the community; and the nature of the outcome sought. The community dimensions are depicted in Figure 19.

By combining these organisational factors and community factors an empirical end-to-end model can be constructed that accounts for the range of modalities in which community interaction may be accessed by an organisation (Fig 20).
This model serves two purposes. It accounts for the range of management decisions contributing to the formation of an interactive online presence, and it provides a framework for troubleshooting when performance of online presence has not matched management expectations. By identifying how each of the model’s categories are configured by an organisation, opportunities for modifying or enhancing the constituent elements to achieve outcomes more consistent with the strategic objectives of the organisation can be undertaken.

Attempting to obtain crowdsourced ideas through an augmented model using internal ownership in blog form is unlikely to be successful. Migrating communities from captive to passionate through relinquishing ownership of a platform may seem like a lessening of commitment but will likely lead to more authentically engaged communities and better outcomes. Understanding that the elements in this framework have a variety of settings, and
that each of those settings is a management controllable has the potential to provide greater access to enriched outcomes as a result of community interactions.

A paper arising from this phase of the research program was presented to the 2nd Academic International Conference on Interdisciplinary Business Studies in Oxford, October 16th - 18th, 2017. It is currently being revised prior to submission for further publication.

7.4 Future research

Future research directions in relation to online communities may include a more formal investigation of the nature and characteristics of the linkages between parts of the model, and a quantitative assessment of the impact on performance of the organisation seeking to utilise communities in value-creation. There is now an abundance of data accessible with relative ease especially given the application of Artificial Intelligence research. (Kozinets, 2010). As new forms of community evolve investigations may reveal a meta-categorisation of sociological importance across a range of disciplines.

The practice of crowdsourcing is continually evolving and extending into new usage cases. This proliferation has the effect of normalising the practice and giving adoption by organisations less of an experimental and more of a progressive, mainstream flavour. However, rather than clarifying the domains in which crowdsourcing adds value, this proliferation perhaps adds to the confusion. The emergence of each new usage or application prompts the observer to assess whether it represents a significant advance, whether it is replicable across other usage cases, whether it is indeed a new approach or simply a variation to an existing approach. Without the benefit of hindsight establishing the importance and impact of these developments is problematic.

One clear difficulty, in common with all emerging disciplines, is that the academic literature lags behind industry practice. While this is to be expected, in situations where best practice
might change from year to year the lag encountered between observation and publication puts the academic research at a disadvantage in comparison to direct involvement with those actually participating in crowdsourcing. Normally with distance comes perspective, but the tension between undertaking a truly authoritative study and the reality of the shifting sands of practice makes obtaining this perspective problematic. It may be inferred from the literature review detailed in Study 1 that researchers are still struggling with conceptually modeling crowdsourcing and that the practice is generally poorly understood. New usage cases are developing, and a general understanding of what works and what doesn’t is consolidating as is to be expected when a technology or practice moves from the nascent through a period of ferment to consolidation.

Contrast this with a concurrent development the ‘sharing economy’. Here dominant organisations such as Uber and AirBnB have emerged and a restructuring of industry dynamics around the advantages provided by the sharing models is well underway. As yet, with the exception of a small number of specialist platforms, this has not occurred in domains where crowdsourcing has become established, and there is a risk that it never will. While the progress of the practice appears inevitable the forces that lead to a practice embedding itself are difficult to predict and long-term acceptance of crowdsourcing as a means of value-creation is not a certainty.

Crowdsourcing is a behavioural activity and the path it takes as it continues to develop cannot be understood purely from a base of theory. Technological innovation impacts the lives of users through its sociological by-products and it can often be difficult to determine how exactly benefits (and threats) from novel technologies and usages, will be manifested. In the early days of social media Facebook and MySpace offered similar value and did so in a very similar way. Between 2005 and 2008 MySpace was the most visited social network. That less than a decade later one of those two companies would be a behemoth and the other practically
extinct may well have been predictable. What was not predictable was which one would win. Facebook now has revenues of over US$27B, while MySpace was sold in 2016 for US$35M. Understanding the drivers of Facebook’s success is problematic. These issues of the factors that contribute to success in emerging technologies and practices is similarly difficult to define.

Two overriding questions emerge as a result of the conceptual modelling undertaken in this thesis. The first relates to the potential for a dominant model of crowdsourcing to emerge. The current range of usage cases can be characterised as both large and irregular. The literature review clearly illustrated the difficulties researchers have in establishing clear and unambiguous principles by which value can be created through crowdsourcing. This suggests crowdsourcing as a practice is in the ferment stage of development.

While there is a plethora of literature relating to crowdsourcing, as a domain, it is a little more than a decade old and means different things to different people. The development of crowdfunding, which is a subset of crowdsourcing under Estelles-Arolas and Gonzales-Ladron-de-Guervara’s definition (2012), has followed its own trajectory, and many governments around the world are still evolving their approach to integrating factors such as equity crowdfunding into their regulatory regimes (Hornuf and Schwienbacher, 2017), or establishing how to effectively engage citizenry in the development of public policy (Lehdonvirta and Bright, 2015). Some organisations embrace the crowd but many, perhaps most, do not.

A number of governments have engaged crowdsourcing at different levels. Data driven usage cases are emerging and with them comes further issues about ownership and responsible use of data. While kickstarter is a mature platform with a well-defined business model, it could be argued that crowdsourcing is still many different things to its variety of practitioners and that
for the most part the ultimate form it will adopt – if such a thing is even possible - has yet to reveal itself.

What will emerge from this stage will become a model that builds on the errors and omissions of prior attempts, to deliver value in a way that is practical, accessible, and low risk. Just as organisations struggled to understand how the Internet might be monetised in the early stages of its development, so a predictable and established method by which value can be created through inclusion of external parties’ inputs is likely to emerge. Understanding the dynamic forces that shape the final form of this practice will be a significant challenge for researchers owing to the complex interactions and sociocultural influences, enshrined in over 200 years of organisational culture.

A second question arises here – how the ‘wisdom of the crowd’ might establish precedence over conventional market research approaches. This can be characterised as the benefit of collective intelligence over selective intelligence. An important issue here is the extent to which an organisation may be able to empower its constituent communities. A progression can be considered whereby an organisation increases the depth of its interaction with stakeholder communities in stages from first recognising the importance, engaging those communities as discussed in study three of this thesis, then inclusion of those communities in the organisation’s decision-making processes, and ultimately empowerment of those communities in the context of the organisation’s ongoing activity. The organisation’s appetite to undertake this journey rests on the degree to which an advantage may be conferred on the organisation by doing so. For a practice to achieve widespread adoption the benefits arising from its use must be clear and unambiguous. The practice of crowdsourcing today does not necessarily demonstrate clearly unambiguous benefit. Indeed, benefits arising may be contingent on exogenous factors such as the industry in which the organisation participates, the nature of the product or service offered by the organisation, the nature of the stakeholder
community the rises around the organisation, or any number of other potentially difficult to identify factors. Future research focusing on the negative benefits that might accrue when crowdsourcing is applied in inappropriate ways, or in inappropriate circumstances, could usefully provide greater context for a more widespread understanding of the complexities associate with the practice.

As part of this research Fortune 500 companies were examined in some detail. It became clear that almost all of these organisations had clearly identifiable corporate social responsibility programs, and the overwhelming majority further demonstrated commitment to environmental sustainability. It may be conjectured that such interests would not have played such a dominant role in the organisations’ corporate communications even perhaps a decade ago. This suggests the alternative for organisations to adopt orientations and practices that lie outside their core business activities when benefit from doing so can be foreseen. In the light of this observation, perhaps it is not too fanciful a notion to consider community engagement as having the potential to attract the interests of corporations in this manner. Perhaps in a decade’s time, alongside recognition of CSR and green initiatives, large organisations will provide clear channels by which stakeholders and interested parties are able to contribute to the internal operations of those organisations. Research investigating whether parallels exist between the development paths of the shift towards openness in organisations, and the more proactive stance taken by many organisations in respect of their orientation towards CSR might reveal useful insights about rates and directions of development.

At the heart of these investigations lies the basic human drive for connectedness. And perhaps the most important dimension of this is the authenticity with which relationships form and are carried forward. Just as the notion of community is losing its geographic dependence and becoming more abstracted over time so the challenge of keeping the trust and authenticity in the relationships becomes a more important factor. Future research directions accounting for
aspects of authenticity in distributed relationships may provide a stepping off point for a means of further leveraging the potential that exists wherever communities operate.

It further stands to reason that seekers can only ever offer parts of the value-creation process for solvers to address. If the entire process is opened to external parties then there is potential for IP to be compromised or lost. This presents the question of how might larger tasks be broken down into smaller separate tasks to enable them to be addressed by the crowd without the prospect of IP leakage? Without a clear basis for understanding what parts of the goods or service can be changed to create value for both customer and organisation, the integration of stakeholder viewpoints in the creation of value may be haphazard. A generalizable model of modularity may reduce the risk of adverse outcomes from organisations moving towards models where customers and other stakeholders have increasing say in the exact nature of the goods offered. Such a model would provide a conceptual framework to guide practitioners in ‘modularising’ their overall objective into tasks regardless of whether the objective related to goods, services or capabilities.

As new technologies evolve, with them come opportunities for a step-change in how existing practices can add value, and a research agenda to suit. Large social media networks have come under increasing scrutiny for the way in which they use, and potentially misuse, data generated by their users. Awareness of the value of this data, the way in which it might be analysed and exploited has enabled new business cases and brought to the fore attendant issues of human rights and privacy. It is generally accepted that the Internet of Things will increase the number of connected devices by orders of magnitude and the potential data streams that will result from human interaction with these devices will become perhaps another rich field of opportunity. Such is the volume of output from these devices that Artificial Intelligence algorithms will be needed to turn the data into actionable insights. Again, while sourced from the crowd, and representing a form of collective intelligence, these
insights may perhaps require a realignment of our understanding of what constitutes crowdsourcing. With it comes the potential for the perception of the practice to shift from benign accomplisher of tasks, to something potentially more sinister and problematic, especially in respect of the potential for abuses of human rights to take place in the absence of an appropriate regulatory regime. The benefits are considerable with even techniques such as semantic analysis of the content of forum discussions potentially providing rich customer insights and removing much of the risk associated with customer-related decisions in organisations. Research into related domain and the nature of efficient regulation that provides for the rapid advances promised by Artificial Intelligence whilst protecting the interests of participants in the crowd-based activities would be of significant value.

As technology-enabled changes take place the orientation from creating value through asking solvers, to creating value through watching and analysing resulting data is therefore a potentially fertile field of endeavor. One outcome of this is that it may well necessitate the further revision of the definition of crowdsourcing, as automated analysis of thousands of discussion posts using Artificial Intelligence reflects a significantly different domain than using crowdsourcing platforms to develop a new logo or solve a simple problem. There may indeed be a need for more clearly delineating branches of crowdsourcing and this might perhaps be helped along through the development and adoption of new descriptive nomenclature.
References


Schumpeter, J. (1942) *Capitalism, Socialism and Democracy*, Harper & Brothers, USA.


Underberg, N. M. and Zorn, E. (2013) Digital ethnography: Anthropology, Narrative, and New Media, University of Texas Press, Austin, TX.


Appendix 1: Ethics notice of approval

Notice of Approval

Date: 14 May 2015
Project number: 18986
Project title: Crowdsourcing practice: A cross-sectional study of the criteria by which organisations can assess the suitability of crowdsourcing as a means of creating value.
Risk classification: Low Risk
Chief Investigator: Dr Doug Thomson
Other Investigator: Dr Marta Poblet-Balcell
Student Investigator: Mr Michael Rowe
Project Approved: From: 14 May 2015 To: 30 June 2016

Terms of approval:

Responsibilities of the principal investigator:

It is the responsibility of the principal investigator to ensure that all other investigators and staff on a project are aware of the terms of approval and to ensure that the project is conducted as approved by BCHEAN. Approval is only valid while the investigator holds a position at RMIT University.

1. Amendments
   Approval must be sought from BCHEAN to amend any aspect of a project including approved documents. To apply for an amendment submit a request for amendment form to the BCHEAN secretary. This form is available on the Human Research Ethics Committee (HREC) website. Amendments must not be implemented without first gaining approval from BCHEAN.

2. Adverse events
   You should notify BCHEAN immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.

3. Participant Information and Consent Form (PICF)
   The PICF must be distributed to all research participants, where relevant, and the consent form is to be retained and stored by the investigator. The PICF must contain the RMIT University logo and a complaints clause including the above project number.

4. Annual reports
   Continued approval of this project is dependent on the submission of an annual report.

5. Final report
   A final report must be provided at the conclusion of the project. BCHEAN must be notified if the project is discontinued before the expected date of completion.

6. Monitoring
   Projects may be subject to an audit or any other form of monitoring by BCHEAN at any time.

7. Retention and storage of data
   The investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

Regards,

Dr Christopher Cheong
Chairperson
RMIT BCHEAN
Appendix 2: Participant Information and Consent Form

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

PARTICIPANT INFORMATION

Project Title: Crowdsourcing practice: a cross-sectional study of the criteria by which organisations can assess the suitability of crowdsourcing as a means of creating value.

Investigators:
Michael Rowe B.Com, MBA, M.Mktg
John Douglas Thomson PhD
Senior Lecturer

Associate Professor Marta Poblet Balcell
VC Senior Researcher

Dear [Insert proposed participant’s name here]

You are invited to participate in a research project being conducted by RMIT University. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate. If you have any questions about the project, please ask one of the investigators.

Who is involved in this research project? Why is it being conducted?

This research is being conducted by Michael Rowe under the supervision of Dr John Douglas Thompson and Assoc Prof. Marta Poblet Balcell. This research is part of a Masters by Research program. It is intended that this will be converted to a PhD program before the conclusion of the research. The project has been approved by the RMIT Human Research Ethics Committee and by [organisation’s authorisor name and title name here]

Why have you been approached?

You have been approached with this invitation because you have been actively involved in your organisation’s decision to crowdsource. When initially obtaining the involvement of your organisation enquiries were made as to appropriate employees and associates to interview. Your name was one of the names put forward in response to this request.
What is the project about? What are the questions being addressed?

The aim of this research is to establish a set of criteria by which organisations are able to assess the suitability of crowdsourcing as a technique to create value for the organisation. Crowdsourcing is defined as a “type of participative online activity in which an individual, an institution, a non-profit organization…proposes to a group of individuals…via a flexible open call, the voluntary undertaking of a task”. This is usually undertaken through the use of Social Media technologies - defined as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content”.

Three specific questions are being addressed:

- What drivers contribute to an organisation’s decision to adopt crowdsourced ideas and inputs?
- What nature of outcomes are sought by these organisations? and
- What does this imply for innovative business models in the future?

To establish answers to these questions the research team is seeking to interview people that have been or are currently actively engaged in crowdsourcing across a range of industry sectors including commercial, not-for-profit and government.

If I agree to participate, what will I be required to do?

You will be asked to attend a one-on-one interview with the researcher. While the discussion will be guided by a set of questions, the interview will take the form of a conversation and may spend more time and emphasis to gain a greater depth of understanding in relation to some topical areas that may not have been anticipated when the original questions were put together. It is anticipated that the interview will take no more than two hours. The research program is planned to include a total of nine interviews from three separate organisations – this will enable a greater depth of analysis and potentially a more cohesive set of outcomes.

What are the possible risks or disadvantages?

There are no perceived risks associated with this research beyond the implications of the respondent being away from their workspace for a short period during the interview. All data will be de-identified prior to analysis and the final report will carry generic identifiers (“Government organisation”, “executive manager”, etc) only.

If you are unduly concerned about your responses to any of the questions or if you find participation in the project distressing, you should contact Dr John Douglas Thompson as soon as convenient on (03) 9925 0108. Dr Thompson will discuss your concerns with you confidentially and suggest appropriate follow-up, if necessary.

What are the benefits associated with participation?

While there are no direct benefits to you arising from participating in this research the research findings will provide insight and understanding in relation to the dynamic and important area of crowdsourcing. This is very much an emerging domain and contributions to knowledge such as the ones proposed by this research have the potential to enable better and more efficient decision-making and enable increased performance of those entities utilising crowdsourcing.

What will happen to the information I provide?

The conversation will be recorded on a digital recording device. Once the interview is complete the data file will be uploaded to a password protected folder on one of RMIT’s secure servers.
The file on the recorder will then be erased. The recording will then be transcribed (omitting identifying data) and the transcription, along with those from the other interviews, will be subject to analysis to identify themes, interrelationships, and other characteristics relevant to addressing the research questions.

Any information that you provide can be disclosed only if (1) it is to protect you or others from harm, (2) if specifically required or allowed by law, or (3) you provide the researchers with written permission.

In due course it is anticipated that the results of the analysis will be published in journal articles, conference papers and the researcher’s PhD thesis. As a consequence it will be broadly and publicly accessible including through RMIT’s Research Repository - a publicly accessible online library of research papers.

All identifiers will be removed from the data at the earliest opportunity and generic labels used in their place. This means that anyone reading the reports will be unable to identify that you personally participated in the research. They will also be unable to ascertain the organisation for which you work.

The research data (i.e. the interview audio files and transcripts) will be kept securely at RMIT for 5 years after publication, before being destroyed. The final research paper will remain online.

**What are my rights as a participant?**

- The right to withdraw from participation at any time
- The right to request that any recording cease
- The right to have any unprocessed data withdrawn and destroyed, provided it can be reliably identified
- The right to have any questions answered at any time.

**Whom should I contact if I have any questions?**

Should you have any questions please contact John Douglas Thompson

**Yours sincerely**

Michael Rowe B.Com, MBA, M.Mktg

-------------------------------

John Douglas Thomson PhD
Senior Lecturer

-------------------------------

Associate Professor Marta Poblet Balcell
VC Senior Researcher

-------------------------------