

Crowdsourcing Motivations in a not-for-profit GLAM context: The Australian Newspapers Digitisation Program

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Abstract

Crowdsourcing in recent times has become popular among not-for-profits as a means of eliciting members of the public to contribute to activities that would normally have been carried out by staff or by contracting external expertise. The GLAM (galleries, libraries, archives, museums) sector does have a history of involving online volunteers (e.g. reviewing books). Extending that tradition, some GLAM institutions are engaging in crowdsourcing projects to enhance and enrich their collections. But what motivates the public to participate in these crowdsourcing activities? Understanding the unique motivations of participants is needed to establish a motivational framework for GLAM organisations in their not-for-profit context. We present findings from a study of the motivational factors affecting participation in the Australian Newspapers Digitisation Program (ANDP) by the National Library of Australia (NLA). Based on motivational theories and frameworks the study shows that the participants are motivated by a complex framework of personal, collective and external factors. Participants were highly intrinsically motivated, but valued altruistic and community motivations as well. Community and external factors played a vital role in their continued involvement. The paper concludes with a conceptual framework of the motivational factors for crowdsourcing participants in a GLAM context based on the motivational dynamics observed in the ANDP case.

Keywords Crowdsourcing, Motivation, Newspapers, Library, Not-for-profit

INTRODUCTION

The term “crowdsourcing” was initially introduced by Howe (2006) who defined it as: “the act of 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.” The impetus for crowdsourcing arises from the trend of leveraging mass collaboration enabled by Web 2.0 technology, in which individuals are no longer passive browsers but active contributors of valuable information (Zhao & Zhu 2012). Underpinning the sustainability of projects such as Wikipedia, YouTube, Flickr, and many others, is the willingness of individuals to voluntarily contribute information, time and skills.

Due to the advancement of web technologies and greater user acceptance, heritage institutions such as museums, libraries and archives have increased the number of collections that are offered online. At present, the heritage domain faces the challenge of reassessing its role in society to stay relevant and to continue to have a significant social impact (Holley 2009). Hence, these institutions started sharing important information and resources via the web. This has opened the door for the adoption of new online technologies and active engagement strategies to enhance the services offered. Crowdsourcing has recently emerged in the cultural heritage domain as a means to support a set of labour-intensive and error-free tasks, which include correction, transcription and co-curation of digital material. Because of the need to improve discovery of the massive amounts of digitized cultural heritage material, crowdsourcing has been seen as a way to create “a more open, connected, and smart cultural heritage” by involving both the users and consumers of cultural data (Oomen & Aroyo, 2011, p.147). Therefore, it is important to understand crowdsourcing phenomena for the galleries, libraries, archives and museums (GLAM) sector and in particular how to motivate users and consumers of digitized cultural data.

In this paper, we are concerned with the motivations of volunteers participating in projects in the not-for-profit GLAM domain, based on a case study of the Australian Newspapers Digitisation Program (ANDP). The question this research asks is: *what motivates the public to participate in GLAM crowdsourcing activities?*

CROWDSOURCING IN GLAM CONTEXT

User motivation for participating in online communities (e.g. open source software) has long been an important theoretical topic in information systems (Zheng, Li & Hou 2011, Zaho & Zhu 2012). From a design science perspective crowdsourcing can be thought of as standing on two pillars: computational and behavioural (Hevner et al 2004). From a behavioural perspective, scholars have looked at ways of enticing large numbers of people to

contribute their resources through systems that encourage continuous contribution (Nov, Arzy & Anderson 2010). Several studies have investigated crowdsourcing motivations for different contexts such as for innovation contests (Zheng, Li & Hou 2011), idea competitions (Leimeister et al 2009), citizen science (Rotman et al 2012), financial incentives (Kaufmann et al 2011) and for-profit organisations (Brabham 2012, 2010, 2008). Previous studies identified a wide range of motivations for user participation, ranging from fun to the enhancement of skills (Tausczik & Pennebaker 2012, Lakhani & Wolf 2005, Nov et al 2010). However there exist some gaps in crowdsourcing research in GLAM context on user motivations for participation. While some studies have attempted to address these issues, (see Oomen and Arroyo 2011, Yoshimura & Shein 2011, Holley 2010, 2009), they largely focused on literature or context reviews and do not address theoretical perspectives on motivation. Pan & Blevis (2011) describe crowdsourcing as a means of collaboration in three different contexts: academic, enterprise and social. However there are indications that motivations vary greatly based on community type (Tausczik & Pennebaker 2012). Despite these studies, our understanding of the nature, patterns and outcomes of motivations on crowdsourcing outcomes for GLAM context remains scant. It is important to understand the unique motivations of the participants to establish a motivational framework for the GLAM not-for-profit context. This paper aims to close this gap.

Oomen and Arroyo (2011) identified the types of tasks carried out by crowdsourcing participants in the cultural and heritage domain as:

- Correction and transcription tasks - inviting users to correct and/or transcribe outputs of digitisation processes.
- Contextualisation - adding contextual knowledge to objects, e.g. by telling stories or writing articles/wiki pages with contextual data.
- Complementing collection - active pursuit of additional objects to be included in a (Web) exhibit or collection.
- Classification - gathering descriptive metadata related to objects in the collection (e.g. social tagging).
- Co-curation - using inspiration/expertise of non-professional curators to create (Web) exhibits.
- Crowdfunding - collective cooperation of people who pool their money and other resources together to support efforts initiated by others.

Table 1 provides a representative sample of crowdsourcing initiatives in the context of GLAM. All are contributory projects (Bonney, et al 2009 cited in Oomen and Arroyo 2011), where each project is designed by professionals, but the public contributes effort or content. The challenge column indicates the problem being addressed, the outcome column the result.

Table 1 Crowdsourcing in the GLAM context

Project	Crowdsourcing Type	Challenge	Outcome
Newspaper Digitisation - National Library of Australia(Holley 2009)	Correction and transcription tasks	Correction of poor quality OCR	Searchable database of newspapers
Transcribe Bentham - University College, London (Yoshimura & Shein 2011)	Correction and transcription tasks	Transcription of a large collection of manuscripts	Text available in a digital repository
Old Weather (Oomen and Arroyo 2011)	Correction and transcription tasks	Retrieval of data from historical ship logs	Data for building of climate models
1001 Stories - Denmark (Yoshimura & Shein 2011)	Contextualisation	Promote broad definition of cultural heritage through collection of user stories.	Comprehensive on-line guide to many sites in Denmark
UK Soundmap - British Library (BL 2012)	Complementing collection	Collection of sounds from a wide range of locations	Interactive sound map
Historical Maps Pilot - British Library (BL 2012)	Classification	Geo-referencing historical maps	Searchable maps
Mtagger - University of Michigan (UOM 2012)	Classification	Tagging items for shared use	Provision of alternative classifications and groupings for different uses
PennTags - University of California (PennTags 2008)	Classification	Tagging items for shared use	Provision of alternative classifications and groupings for different uses
Social OAC - Daniel Library (SOPAC 2010)	Classification	Provision of alternative metadata to Library of Congress Classification	Provision of a richer, more usable catalogue
Tagging - Steve Museum (Oomen and Arroyo 2010)	Classification	Tagging audiovisual content	Facilitates recovery of A-V content
Tagging - Wasida (Yoshimura & Shein 2011)	Classification	Tagging images as a game	Evaluation of the quality of tags
Community Created Content Project - National and State libraries, Australasia (NLSA 2009, 2011)	Complementing collection Classification Co-curation	Provision of user-developed content, tagging and presentation of existing digital content	Wide range of new content and innovative on-line presentations of existing content
Open Call - Brooklyn Museum (Yoshimura & Shein 2011)	Complementing collection Co-curation	Submission of photos which are selected organised into an exhibition	Ability to discuss exhibition and outcomes

MOTIVATIONAL THEORETICAL FRAMEWORK

Several studies have used general motivational theories to formulate motivational frameworks for explaining participation in open source software development, online communities, and crowdsourcing applications (See for example Rotman et al 2012, Kaufmann & Schulze 2011 Leimeister et al 2009, Lakhani & Wolf 2005, Batson et al 2002). A basic model of motivations for social participation towards achieving common goals was provided by Batson et al (2002). They identified four types of motivations: egoism, altruism, collectivism and principalism. Egoism occurs when the ultimate goal is to increase one's own welfare. Altruism has the goal of increasing the welfare of another individual or group of individuals. Collectivism has the goal of increasing the welfare of a specific group that one belongs to. Principalism has the goal of upholding one or more principles

dear to one's heart (e.g. justice or equality). Rotman et al (2012) used Batson et al (2002) as a general framework to explain motivations for citizen science projects.

A more detailed model was given by Kaufmann & Schulze (2011). Their motivational framework drew on classic motivational theories and established theoretical models such as Self Determination Theory (Deci & Ryan 1985, 2000), work motivation theory (Hackman & Oldham 1980), education theory (Weis 1995) and open source software development model (Lakhani & Wolf 2005). They synthesised these frameworks to create a worker motivational framework for paid crowdsourcing environments (e.g. Amazon Mechanical Turk) (see Kaufmann & Schulze (2011) for a detailed discussion of crowdsourcing motivations and relevant motivational theories). The developed model for worker's motivation in crowdsourcing environments focuses on intrinsic and extrinsic motivations and is broken down into five motivation categories (See Table 2 below). *Intrinsic* motivation emphasizes inherent satisfactions rather than the separable consequences of the act (e.g. acting just for fun); and *extrinsic* motivation where the activity is just an instrument for achieving a certain desired outcome for the sake of receiving compensation or other reward (e.g. acting for money or to avoid sanctions).

Table 2: A model for worker's motivation in crowdsourcing (Adapted from Kaufmann & Schulze 2011)

	Category	Constructs	Source
Intrinsic motivations	Enjoyment based motivation	<i>Skill Variety</i> : The diversity of skills that are needed for solving a task. <i>Task identity</i> : Refers to the extent a worker perceives the completeness of the task she has to complete. <i>Autonomy</i> : the degree of freedom that is allowed to the worker during task execution. <i>Direct feedback from the work</i> : the extent to which a sense of achievement can be perceived during or after task execution. <i>Pastime</i> : acting just to "kill time/avoid boredom".	(Hackman and Oldham 1980, Brabham 2008; Ipeirotis 2010)
	Community based motivation	<i>Community identification</i> : the act of workers guided by the subconscious adoption of norms and values from the crowdsourcing platform community which is caused by personal identification process. <i>Social contact</i> : motivation caused by the sheer existence of a community that offers the possibility to foster social contact.	(Lakhani & Wolf 2005, Lindenberg 2001, Brabham 2008, 2010)
Extrinsic Motivations	Immediate payoffs	Payment: motivation because of the monetary remuneration received for completing a task.	(Lakhani & Wolf 2005)
	Delayed payoffs	Delayed payoffs are benefits which can be applied strategically to generate future material advantages and include: <i>Signalling</i> : Refers to the usage of actions as strategic signals to others. <i>Human capital advancement</i> : The possibility to develop skills that could be useful to generate future material advantages.	(Lakhani & Wolf 2005; Weiss 1995)
	Social Motivation	<i>Action significance by external values</i> : captures the significance of an action concerning the compliance with values from outside the Crowdsourcing community that is perceived by the worker when contributing to the contributing to the community or working on a task. <i>Action significance by external obligations and norms</i> : motivation induced by a third party from outside the platform community that traces back to obligations a worker has or social norms he or she wants to comply with in order to avoid sanctions. <i>Indirect feedback from the task</i> : motivation caused by the prospect of feedback about the delivered working results by other individuals.	(Deci & Ryan 1985, Ryan & Deci 2000, Hackman and Oldham 1980)

AUSTRALIAN NEWSPAPERS DIGITISATION PROGRAM

This study examines the motivations of text correctors in the Australian Newspapers Digitisation Program (see www.nla.gov.au/ndp/). The ANDP is an innovative project developed by the National Library of Australia (NLA) that has facilitated access by the general public to digitised newspaper context. The aim of the ANDP was to provide an online full-text searchable digitised newspaper delivery system of out of copyright Australian newspapers from 1803 to 1954 (<http://trove.nla.gov.au/newspaper?q=>). However, numerous errors were recorded during the optical character recognition (OCR) process which greatly limited searchability. Unfortunately the NLA did not have the resources to rectify the errors thus crowdsourcing was seen as a potentially viable solution.

Since its launch in 2008, the Australian Newspapers site (now included in the library's 'Trove' service) had seen over 9000 members of the public carrying out 7,06,34,454 million lines of text corrections, 16,05,170 tags and 42,688 comments (<http://trove.nla.gov.au/system/stats?env=prod>). The primary task of text correctors within ANDP is to correct the errors captured during optical character recognition (OCR). To accommodate this, the ANDP application provides a split screen view of the scanned image of the newspaper and the OCR transcription. Through this application users may comment on, tag and correct the OCR text. The design of the page is suited for corrections, as the original document is immediately juxtaposed with the transcription so errors

are more apparent. Corrections can also be made in the form of comments linked to an article, giving users an opportunity to record their own narrative or interpretation of historical events. Users can view the history of corrections, including both the corrected and the original OCR text. Text corrections are saved to a database and are subsequently added to the search results. However, corrected text does not overwrite the original text contained in the article. Both the corrected text and the original text are indexed and searchable.

Users are free to select which articles to correct. Many of the users ‘do their own thing’ in Trove, but while they are on the site they often choose to correct text. Some may not do it regularly or participate as a one-off thing, for example when they have the expertise to identify and correct an OCR error (an example was the misreading of technical terms) as a secondary task. The design facilitated this mode of working by not requiring user registration for text correction. In this way, participants may choose to correct text anonymously.

RESEARCH METHOD

This study adopted a qualitative approach. Qualitative methods and interpretive research are useful in explorations of understandings, for uncovering novel insights and for accessing intricate details, thought processes and emotions (Orlikowski & Baroudi 1991) and has potential to produce deep insights (Klein & Myers 1999). The emphasis in qualitative research is on understanding the context, meanings, and processes rather than quantity, measurement, frequency, and causal relationships between variables as in quantitative research (Klein & Myers 1999). The rationale for a qualitative interpretive study is to develop in-depth understanding using a single information-rich case would provide deeper understanding of the crowdsourcing phenomena within government context.

The data for this study was collected from a variety of sources to achieve data triangulation (Eisenhardt 1989) and to establish rigour and address bias, although primary data was obtained from interviews conducted with a cross section of project stakeholders. Data and background material were collected from other extant sources: ANDP forum posts and a user survey undertaken by NLA in 2008, and extant literature on the case study. The first author also registered as a text corrector on the Australian newspapers site to gain hands-on experience of text correction and to gain access to the user forum. Interviews were between 1 to 2 hours long and were carried out during December 2011 to February 2012. In total 8 in-depth interviews of ANDP contributors were carried out and majority were selected using purposeful sampling and snowball approach. A majority (6) of the interviewees were listed in the top 10 text correctors for the ANDP site. Most of the interviews were undertaken by telephone or skype as participants were physically located in different states around Australia (e.g. Victoria, NSW and Queensland). The interviews consisted of both semi-structured and open ended components to gather data on a variety of issues and perspectives from the interviewees. The structure within the interview guide was broken into three domains: process, environment and support for the crowdsourcing initiative. The interviews were relatively informal in the way they were conducted. The interviews often began with a discussion on the interviewee’s past and current work experiences, allowing the researcher to understand the interviewee’s current status and to establish rapport with the interviewee. The discussion then usually centred on involvement with the Australian Newspapers site – their motivations for participating, text correction practices, perspectives and sentiments towards crowdsourcing, risks and concerns, the support received and environment. Anecdotes and specific narratives were often shared by the interviewees to illustrate their points of view and experiences.

All interviews were recorded and transcribed through a professional service located in Brisbane. NVivo was used for textual content analysis using coding methods proposed by Saldana (2009). This was followed by a *thematic data analysis technique* on the basis of data gathered iteratively and explored for themes, similar to the processes used in grounded theory (Strauss & Corbin 1997). The themes were emergent, testable in the field, ongoing and grounded. The thematic data analysis followed the sequence as follows (Saldana 2009): Attribute coding – participant personal information, Familiarization – initial reading and categorizing in paper (in grounded theory approach known as “Initial coding”), First level coding – descriptive coding and categorizing, Second level coding – pattern coding and matching/mapping onto the motivational theoretical framework, often referred to as theory triangulation. Memoing was used to record researcher reflections and connections between different forms of data. The findings were validated by sending them back to the interviewees for review (also known as member checking). Majority of the interviewees concurred with our findings and only minor adjustments were needed.

FINDINGS: TEXT CORRECTOR MOTIVATIONS

Intrinsic motivations

The text correctors reported high but sustainable levels of self-motivation. Text correctors’ initial interest in text correction stemmed from a variety of egoism-based reasons including personal, community and enjoyment-based motivations.

Egoism-based motivations

- Personal Interest: Participation in text correction by the text correctors interviewed originated mostly from their personal interest or own research goals. A majority of the participants in the Australian Newspapers site were people interested in family history research or genealogy, but there were other significant areas of interest (“*Consequently my reason for using the site is foremost for family history/genealogy reasons, but I also find the site invaluable as an aid in my research undertakings*”). For example, some were interested in researching past crimes, or others interested in public transport history would undertake very heavy text correcting in stories that involved these topics. Text correctors often have both short and long term goals. One contributor is an author and used the facility to research on topics relevant to her writing to achieve short term goals, while another contributor would only correct articles containing references to his family name.
- Trust: NLA’s experience showed that the greater the level of freedom and trust they gave to volunteers the more was contributed, the greater the feelings of loyalty, and the higher the accuracy of corrections. Rather than assuming everything would go wrong and spending valuable time putting systems in place to control potential vandalism, NLA assumed that users would do their best and monitor and help each other (Holley 2009). This led to very positive outcomes for ANDP.

Text correction is also driven by other personal disparate motivations:

- Addiction: Some contributors reported that they were ‘hooked in’ and ‘addicted’ to text correction. The top 10 text correctors corrected text as if they were doing full-time job (40-60 hours per week) and the top 200 correctors spent as much as a part-time job (Holley 2009, 2010).
- Obligation: Users felt a sense of gratitude to the library for providing the resource and in return feel obligated to assist the library in improving the searchability of the resource (“*I felt an obligation to repay the assistance that I have received from the existence of the site. To sing for my supper, so to speak*”).
- Challenge: For some, the more content they were given the more they felt motivated to do. Large amounts of new content for newspapers were added as the program progressed. The new content motivated some participants to do more correction.
- Topic is of interest: People were generally interested in topics such as history, science, animals or particular hobbies. Newspapers are specially regarded as historical artefacts that people can relate to and connect with on a personal level. As one text corrector explained: “*I think people just like history, especially the sort of history that’s presented in newspapers. It’s something that they’re very familiar with, it’s not dry and dusty like - it’s not threatening like getting a history book off the shelf*”.
- Competition: There were two forms of competitive activity observed during the case study. One common competitive activity involved text correctors setting their own productivity targets (e.g. how much text correction to be done per month) as a form of challenge against themselves. They were hence interested to find out what they had corrected and how much in a period (monthly, weekly, etc), like a progress chart. However there was also evidence of rivalry among the top text correctors as they battled to hold on or improve their position on the ranking table for most corrections. In response to user demand, the project team included a ‘Hall of Fame’ that listed the top correctors, a monthly ranking table of correctors where individuals had to reach 20,000 lines to be included, and individual text corrector user profiles that showed the entire league table and their position in comparison to other text correctors. It was interesting to observe that text correctors set their own targets, but in interviews denied strongly that they were competing with each other. Based on the interview data, it can be said that the ranking table was not considered very important from the point of view of ambition - none of the respondents seemed to have corrected text considerably more just to get (peer) recognition from being listed in the top of the list.
- Learning new knowledge: Volunteers appreciated that they could learn new things and gain insights from the collection as they worked (“*You learn stuff all the time*”). Some text correctors went as far as correcting information within newspapers that may have been reported incorrectly based either on their personal knowledge or through further research on the topic. They used the comments feature to highlight the incorrect or missing information.
- Supportive environment: Text correctors found the site to be collegial and supportive which contributed to their continued participation. The forum was highly active with most posts promptly replied to from other forum members. There was no evidence of bullying or flaming activity in the forum.

Community based motivations

Many text correctors saw text correction as an altruistic patriotic task that would help Australian history and the National Library, a not-for-profit organisation. These text correctors believed that they were *helping* to provide an accurate record of Australian history and improving the search facility by correcting text that will in turn have a wider impact on the Australian community (“*it’s being part of something bigger than them, being able to contribute something that has lasting value; being able to make a difference, being able to improve things for other people*”).

Text correctors also reported that they corrected text to increase the welfare of specific groups to which they belong (collectivism). For example, some text correctors were also members of genealogy sites (e.g. RootsWeb) and others volunteered in local libraries and genealogy societies (e.g. Bendigo Historical Society).

Text correctors formed many interest groups within and outside the Trove forum, such as members of the Rockhampton group who corrected their local newspaper or the Light Railway Research Society (LRRS) group members who tagged relevant newspaper articles to assist in light railway research endeavours.

Another form of community was formed within the Trove platform users. The group had no firm group structure, but consisted of a loose network of relationships. This loose affiliation led to collaboration to create a text correction guideline independent of the NLA. The need for a guideline stemmed from their practices and text correction issues that arose due to not having any strict rules. The top correctors within the group collaborated through emails and the ANDP forum to prepare their own guidelines with little assistance from NLA.

Enjoyment based motivations/Task based motivations

- **Fun:** Text correctors participated in text correction because it was fun and enjoyable (“*Just the enjoyment is my motivation and gain*”). They reported that they enjoyed the task and the interactions. A number of factors relating to enjoyment were identified by participants:
- **Simplicity:** Text correction was an easy and simple task, no training was required and it was not complex IT work. The requirements of the task were simple and explained in plain English. Many text correctors had previous experience with dealing with large volumes of data either at work or through their involvement with other genealogy databases.
- **Task autonomy:** Another important motivator was the high-level of *autonomy* in task selection. There were no restrictions on the time taken to complete a task. The systems was accessible 24 hours a day from anywhere through the Internet. There were no strict guidelines on how to do text correction. Multiple options were available for carrying out text correction. As one text corrector commented: “*I do whatever tickles my fancy on the day*”.
- **Pastime:** Many of the text correctors were in their 50s and some of them were transitioning to retirement or already retired. They used the site to pass time and to keep active.

Extrinsic Motivations

There were no monetary incentives provided by the Australian Newspapers site for carrying out text correction. However there were essentially *four* forms of non-monetary extrinsic motivations found through data analysis: (1) attribution, (2) recognition and rewards, (3) indirect feedback and (4) advocacy.

Attribution, recognition and reward

Text correctors contributed much to improving the accuracy of the ANDP without reward. The NLA was unable or had not thought to offer any acknowledgement or reward to volunteers initially, but later instigated a number of simple and cost-free rewards and acknowledgements as suggested by the correctors themselves. Recognition of their achievements one-on-one and also publically within the group were important to text correctors. Strategies such as public recognition, ranking tables, user profiles, and the ability to communicate with other text correctors improved motivation (Holley 2009). The acknowledgements, attributions and rewards recognised their contribution and became a secondary motivator for continued contribution.

Acknowledgements took many forms: attribution was done by naming text correctors (or their account handles) on the articles they amended. People could see immediately what they have corrected and it was possible for others to retrieve a newspaper article and see the list of people who contributed to the corrections in that article. It was also possible to search by a ‘user profile’ (or handle) and see what corrections that person had done, their rankings, comments and tags etc. These were a form of public recognition. The combination of simple search capability and user profiles was an effective motivator.

Recognition via leader board (e.g. ranking table and Hall of Fame) were important mechanisms of public recognition and were extrinsically rewarding to text correctors. It was the main means of recognition; it was one of the few ways to obtain positive feedback for their efforts; it added some competitiveness to the process and enabled others to see one's progress, plus it was interesting to see the other text-correctors involved in the project. Originally the ranking table only showed the top 10 correctors but due to requests from other correctors, a 'Text correctors hall of fame' was added to list anyone who had corrected more than 1500 lines in a month, as well as including a user's overall ranking on their user profile. The ranking tables were more about the big picture of contribution rather than specifically about competition. Hence text correctors who were mostly highly intrinsically motivated did not see the reward criteria as a restriction on their autonomy. The highest achievers were acknowledged through the top text corrector's 'Hall of Fame' which is linked to from the ANDP home page. Other forms of recognition were also mentioned by several staff and text correctors during interviews. For example, the library invited the top 5 text correctors to Canberra on Australia Day in 2010 to meet ANDP staff in recognition of their contributions to the project.

Indirect feedback

Feedback differed from recognition in that it was not associated with an individual contributor or the specific contribution of a text corrector, but rather addressed the overall outcome of the ANDP program and progress on correction. Feedback mechanisms were expected to create an open communication channel between NLA and text correctors, but these mechanisms became prominent motivational factors. Indirect feedback took many forms within Australian newspapers site: impromptu updates about the newspaper correction and its progress on the actual website, regular email acknowledgement of the text corrector's outstanding work, and public postings on the forum and in NLA newsletters by the project team recognising the efforts of the text correctors. The project manager and senior NLA staff also recognised the work of the volunteers in conferences and other publications and this generated a lot of interest nationally and internationally. Text corrector profiles were highlighted in invited seminars and workshops around the country. The publicity peaked when the news of text correction became live in the media and many personal stories of text correction were applauded in local newspapers (e.g. The Canberra Times 30/1/2010, also www.nla.gov.au/ndp/news_and_events/media_releases/).

Advocacy

Advocacy can be seen as a collectivist motivation (unlike education, which emphasises the personal gains text correctors receive from their participation in crowdsourcing projects). There was evidence of this form of motivation at work within the ADNP to a lesser extent than can be found in other crowdsourcing projects (e.g., see Rotman et al 2012 on citizen science crowdsourcing projects). Some text correctors saw this new found understanding as an educational benefit from which they not only personally gained, but also an asset that they can later bring to their local and distributed communities and social networks.

TOWARDS A MOTIVATIONAL FRAMEWORK FOR TEXT CORRECTION

Text correctors were highly intrinsically motivated but less extrinsically motivated. The majority of the text correctors presented a range of personal motivations and community based motivations as the initial and most substantial motivation for their engagement. External motivations such as recognition and rewards played a secondary role to their initial participation decision, but these affected their long-term engagement in the project.

In this study building skills for job advancement was not a factor as the simple text correction work did not provide opportunity to build new skills. However learning new knowledge was a motivator. Recognition was important through attributions and ranking tables, but peer recognition through status gain in correction/editing work was not a factor. There was no evidence of emergent community or relationship building in this study – text correctors were happy to carry on with occasional communications through the forum or personal emails (e.g. greeting emails/forum posts when the top corrector reached one million lines of text corrections). It can be assumed that text correctors viewed the site as place to carry out their personal goals such as family history research rather than a place for relationship or skill building. Signalling and human capital advancement is not relevant in this context as there were no potential employers on this site and not much opportunity to enhance workplace skills (Kaufmann & Schulze 2011).

The work of Batson et al (2000) on motivating social participation for community involvement is more suitable for explaining some of the phenomena found within this study and missing from Kaufmann & Schulze (2011)'s model. However, these two frameworks can be combined to explain better the text correctors' motivations found within this study.

The proposed model is given in Table 3. The *Egoism-based motivation* category is a new category that surfaced as the most important motivator in this study and it is a category that covers personal interest based motivations of text correctors. The relevant constructs are personal interest, learning new knowledge, addiction, obligation, competition, challenge, topic of interest, supportive environment and trust. The category *community based motivation* differs from Kaufmann & Schulze as text correctors are not motivated by guidance of the platform community, but rather their motivations appear to be more relevant to welfare and principles of the group or collective and the wider community at large. Relevant constructs are thus altruism, collectivism and principalism. The category *enjoyment/task based motivations* are very similar to Kaufmann & Schulze’s model and relevant constructs are Fun, Task Autonomy and Pastime. The only extrinsic motivational category that is relevant for text corrector is social motivation which is best described as a non-monetary motivation. It covers socially motivated factors including crowdsourcing platform based and external recognitions and awards that are non-monetary in nature. Relevant constructs are acknowledgement, recognition and reward, indirect feedback and advocacy. This category is the extrinsic counterpart of intrinsic motivation by community identification (Kaufmann & Schulze 2011).

Table 3 A model of text correctors’ motivation in crowdsourcing

	Category	Constructs	Source
Intrinsic motivation	Egoism-based motivation	Personal interest (e.g. research goals), Trust , Challenge, Learning new knowledge, Competition, Topic of Interest (Australian history), Addiction, Obligation, Supportive Environment	(Batson et al 2002, Holley 2010)
	Community based motivation (Altruism, Collectivism and Principalism)	Altruism, Collectivism (e.g. genealogy), Principalism (or action significance by external values)	Batson et al 2002, Deci & Ryan 1985 cited in Kaufmann & Schulze 2011)
	Enjoyment based motivation (Task based motivation)	Enjoyable/Fun/pleasure/recreation, Simplicity, Task Autonomy, Pastime	(Hackman & Oldham 1980,Deci & Ryan 1985 cited in Kaufmann & Schulze 2011)
Extrinsic motivation	Social motivation (Non-monetary rewards)	Acknowledgement, attribution & ownership, Desire for recognition (Ranking table & Hall of fame), Rewards (Australian Day awards), Indirect Feedback, Advocacy	(Hackman & Oldham 1980 cited in Kaufmann & Schulze 2011, Rotman et al 2012

Dynamic changes in motivational factors

Dynamism in motivation is not as evident as in the case of collaborative citizen science crowdsourcing projects (e.g., see Rotman et al, 2012), but it was present to some extent. Three stages were identified as important points of decision making: beginning text correction (Initial involvement stage), leaping into text correction (Active involvement Stage) and continuing with text correction (Sustained involvement stage). For example, in the initial stages, intrinsic motivation factors such as egoism-based personal interests and altruism and collectivism based motivations strongly influenced text correctors to participate in the ANDP. After this point in time, text correctors requested active recognition of their contributions through extrinsic motivators such as a hall of fame, ranking tables and user profiles. These motivated contributors to actively participate in correcting text. When text correctors reassessed their ongoing participation in text correction, both intrinsic and extrinsic motivations combined to play a vital role in their decision to continue to support the ANDP. Establishing the “right balance” between intrinsic and extrinsic motivations of text correctors facilitated their sustained participation over time. Thus the dynamic changes in motivational factors over time were critical in this crowdsourcing project. These factors and their interaction should be explicitly acknowledged and built into the tools that facilitate participation thereby providing “the right impetus at the right time” (Rotman et al 2012).

RESEARCH LIMITATIONS & FUTURE RESEARCH

Our findings show that crowdsourcing motivations in a not-for-profit GLAM context have both similarities and dissimilarities with motivations in a for-profit context (e.g. Amazon Mechanical Turk). The emphasising of intrinsic motivations over extrinsic motivations found in the GLAM context was more pronounced than for paid crowdsourcing environments. It is also interesting to see how the dynamism in motivations can be exploited for ongoing participation. Future research is required to explore the design implications for the impact of dynamic changes in motivations in the not-for-profit sector for sustained participation and success. The nature of task within the ANDP was simple and granular at single lines of digitised newspaper text. Future research should

expand beyond digitised content and explore other types of tasks (e.g. rich media and geo-reference digital maps) within the GLAM context and study the motivational factors for specific environments. Another significant stream of potential research is the conduct of longitudinal studies to investigate dynamic changes in motivation in collaborative GLAM crowdsourcing initiatives to understand better the antecedents of participation and subsequent behavioural influences on sustained involvement.

The study has limitations that warrant comment. First, the research was conducted as a qualitative interpretive single case study. "Case studies are generalisable to theoretical propositions" (Yin 2003) and "can take the form of concepts, theories, specific implications or rich insights" (Walsham 1995). However the findings are not readily generalisable across different types of crowdsourcing for not-for-profits. Further studies are required to explore the various aspects of the motivational framework and influences enacted in different contexts. Future studies should be conducted in more complex settings and tasks in order to further enrich understanding about participants' motivation in GLAM crowdsourcing projects. Empirical studies from greater variety of cultural settings may serve to further explore, validate, highlight or identify new issues. Second, the majority of the interviewees were high-performing text correctors. Studies of contributors to Wikipedia and similar online platforms (e.g. Amazon Mechanical Turk) show that top performers think and behave markedly different to others. Future studies should consider the motivations of less-productive contributors in the GLAM context.

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