Crowdsourcing Project Management to the ‘Open’ Community

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Abstract

The aim of this article is to contribute both theoretically and methodically to the project management discipline in the context of information systems. This article provides a “multi-disciplinary” summary of the current literature that focuses on the socio-technical issues and theories surrounding the crowdsourcing phenomenon. One of the objectives of this exploratory literature review is to present the reader with practical considerations about crowdsourcing as a project management technique and a conceptual model that can help ‘shortlist’ candidates that are ‘appropriate’ for a crowdsourced project task. There are proponents and opponents of the ‘crowdsourcing’ approach but real-life case studies of crowdsourcing companies such as freelancer.com have demonstrated that crowdsourcing can be a success and findings from some seminal articles indicate that crowdsourcing could result in expediting the completion of a project; reducing a project’s overall costs; and higher user satisfaction levels towards the project’s final deliverable.

Keywords: crowdsourcing; open innovation; sustainable project management; community systems;

1. Introduction

The term crowdsourcing is the brainchild of Howe (2006) who defined it as the practice of outsourcing problem-solving tasks to the crowd. The genre of tasks ranges from scientific complex problems to simple menial tasks and the rewards for accomplishing a task can range from monetary remuneration to some form of a social ‘recognition’ status. The Internet in particular has facilitated the virtual mobilisation of a task force of knowledge workers whose skillset and classification ranges from amateurs to intellectuals and technically adept professionals (Marjanovic et al. 2012, Brabham 2008), albeit some of the seminal studies for ‘crowdsourcing’ innovation have highlighted lead users as the primary source for leveraging on open innovation (von Hippel 1986, Johann Füller and Eric A. Von Hippel 2008, Lilien et al. 2002). Lead users are defined as the “users at the leading edges of the target market” (Lilien et al. 2002).

There are articles that question the practice of crowdsourcing and have pinpointed some of the ethical and legal challenges and implications that crowdsourcing can have on the incumbent workforce of an organisation (Marjanovic et al. 2012, Wolfson and Lease 2011, Whitla 2009). For example, some argue that since crowdsourcing involves soliciting solutions to a task from a cheaper external source, opponents of the crowdsourcing practice will regard it as some form of...
workers’ exploitation or slave labour and trade unionists would contend that the continuous utilisation of human resources outside the firm’s boundaries could eventually threaten the job security of the firm’s existing employees (Whitla 2009, Marjanovic et al. 2012). On the other hand, proponents of crowdsourcing argue that firms are beginning to accede to their consumers requests for new and innovative products and services by (1) sourcing creative ideas from the crowd of consumers (von Hippel 2005, von Hippel 2009, von Hippel 1986) and (2) engaging consumers directly in the design and development of a custom product or service. A research study that was conducted about the perception of retail brands by a community revealed that brands conceived by a community were considered to be worthy rivals to established brands (Johann Füller and Eric A. Von Hippel 2008), something that was reflected in the premium that the community members were willing to pay for the ‘community-created’ brand.

The extant literature on crowdsourcing and open innovation in the context of new product/service development have highlighted the rationale behind the producers’ emerging initiatives of involving users as co-producers in their quest for creative ideas but there is a need to extend this debate to the project management discipline. In general, the benefits of empowering the consumer with being able to build their own physical or digital product (e.g. software) or service include high levels of satisfaction towards the product, affective attachment to the product (brand loyalty) and a sense of ownership (Franke and Hippel 2003, Harhoff et al. 2003, von Hippel and von Krogh 2003, Johann Füller and Eric A. Von Hippel 2008, Alam 2002).

This article aims to highlight the potential of using crowdsourcing as a project management technique for ‘project managing’ and creating sustainable IS/IT community systems. The discussions will shed light on the potential advantages and challenges surrounding the project management and development of community systems by community users. From a crowdsourcer’s perspective, the impetus for participating in a crowdsourced project is some form of a reward, financial or otherwise and this article contends that the reward of self-efficacy (Venkatesh 2000, Wang et al. 2003, Lakhani and von Hippel 2003) and perceived ownership (Doan et al. 2011, Johann Fuller and Eric A. Von Hippel 2008) can act to an extent as a surrogate to financial incentives. In the next section of this paper, the multi-disciplinary literature related to various applications of crowdsourcing will be reviewed which is then followed by a discussion that will highlight the virtues, challenges and pitfalls that surround the crowdsourcing business model. Then the application of the crowdsourcing model in the context of IS/IT project management and its potential impact is discussed and the article will then finally conclude with the implications of adopting a crowdsourcing model in the project management milieu of community systems.

2. Literature Review

2.1 Tapping the wisdom of the crowd

Howe (2006) argues that the Internet has spawned a new breed of a collaborative environment and marketplace where companies could mobilise ‘the spare processing powers of millions of
human brains’ to tackle scientific problems or even mundane jobs that cannot be completed ‘in-house’. This phenomenon has been ‘baptised’ as crowdsourcing (Howe 2006) and since its inception, the idea of crowdsourcing has manifested into the inauguration of a plethora of crowdsourcing companies and intermediaries. Crowdsourcing is not limited to the diffusion of mundane tasks but it includes the soliciting of creative ideas and innovations from the global ‘wired’ community, something that is traditionally sourced within an organisation (Marjanovic et al. 2012). Open or user-driven innovation has been attributed to success stories where the voluntary participation incentive has transformed innovative contributors to a product’s development or evaluation process from end-users or consumers into brand-loyal producers that are highly committed to the continuous ‘cultivation’ of the product (Lilien et al. 2002, Constant et al. 1996, Hippel 2006, Hippel 1988, Henkel et al. 2003, Franke and von Hippel 2003, Harhoff et al. 2003, Baldwin et al. 2006, Johann Füller and Eric A. Von Hippel 2008). For example, Threadless.com enables customers to create custom logos and imprints on T-shirts and other identity products. The intention behind this type of crowdsourcing approach is not only to leverage on open innovation from the masses but to imbue the contributing customers with a sense of ownership for a private brand that they have created by themselves. In addition, Threadless.com uses an incentive scheme to encourage participation by awarding a cash prize to designers who attract the highest votes for their designs. A study conducted by Füller and Von Hippel (2008) has shown that brands conceived by a community are not only appreciated by their community members but it was also found that the community members were willing to pay a premium for remaining loyal to their own community brand. In addition, community members lauded the idea of creating a ‘hybrid’ complementary brand– a brand that blends the characteristics of the community brand with a favourite commercial brand (Johann Füller and Eric A. Von Hippel 2008). What follows are a few examples of some successful applications of the crowdsourcing business model.

2.1.1 Innocentive

InnoCentive was founded in 2001 by four former employees of Eli Lilly and Company to leverage on open innovations by acting as a crowdsourcing intermediary for companies who want to reduce their Research and Development budgets. The business model involves ‘seekers’ (the companies soliciting a scientific solution to a problem) and ‘solvers’ (the innovative ‘outsiders’ in the crowd) who will work on a solution for an agreed remuneration. The prize money for solving a challenge can be up to $100,000.

Innocentive generates its main revenue from the commissions it takes from ‘seekers’ for accomplished tasks, and a service fee that is deducted from the payment made to the ‘solvers’. In 2006, Innocentive signed an agreement with the Rockefeller Foundation to launch a third sector initiative that involves hosting a not-for-profit marketplace for seeking scientific and technological solutions to problems in the Third World. The strategic partners of Innocentive include leading organizations such as AARP Foundation, Air Force Research Labs, and NASA. In late 2012, Innocentive had more than 270,000 ‘geographically dispersed’ solvers and it has accommodated more than 1,500 challenges on its website.
The total amounts of cash awards that have been paid to solution providers have exceeded $37 million. Innocentive is not the only company that saw an opportunity to profit from crowdsourcing. Yourencore.com, Ninesigma.com and the British organisation Nesta.org.uk, are further examples of companies that have jumped on the bandwagon of leveraging open innovation through crowdsourcing.

2.1.2 Amazon’s Mechanical Turk

Amazon’s Mechanical Turk (MTurk) is a crowdsourcing marketplace that is hosted by Amazon.com to enable companies to source on-demand labour for tasks that require human intelligence and precision, something that Amazon has termed as Human Intelligence Tasks (HITs). The type of tasks that are posted on MTurk are usually menial such as identifying objects in photos, creating transcripts from podcasts or searching and removing duplicates from a data set. Traditionally, tasks of this nature would have been accomplished by hiring a large temporary workforce but MTurk offers companies a cheaper solution that can be sourced from the varied skill set of the ‘wired’ global community. This will result in not only reducing the financial strain on companies but it will also reduce the workload on the ‘in-house’ employees. The remuneration reward for completing a HIT is usually ‘symbolic’, which has resulted into sparking criticisms that have compared the MTurk operating environment to an electronic ‘sweatshop’. Amazon.com generates its revenue from charging the ‘requester’ companies a 10% commission on the amount they pay to a worker(s) when a HIT is accomplished.

2.1.3 Freelancer.com

Freelancer.com is a crowdsourcing marketplace where technology based entrepreneurs and small businesses can solicit solutions from an on-demand workforce of freelancers for various types of jobs including technological, technical, sales and marketing and legal advice. Examples of technological tasks include tweaking the code of a software application, creating add-ons for content management systems and designing templates for Website pages. The process and environment for managing the tasks that are posted on the freelancer.com platform can be likened to that of a digital project manager allocating and distributing the various tasks amongst those applicants who are judged to be the most competent, reliable and cost-effective. The digital project manager has a prominent advantage over the traditional project manager who is usually confined to allotting a project’s tasks to a tethered in-house workforce. The traditional project manager can recourse to resources from outside by outsourcing some of the tasks but the outsourcing process is not ‘instantaneous’ and it is normally accompanied with a list of contractual obligations and terms and conditions. The digital project manager on the other hand is completely in charge of the recruiting process with the additional advantage of being spoilt for choice. The recruitment process is very similar to a reverse auction where the freelancer offers his/her technical competencies as a service in a competitive bidding marketplace. The candidates would usually showcase their profiles, skillsets, and their service fees for completing the required task in an attempt to persuade the digital project manager to hire them. The digital project manager (client) will then pay the ‘crowdsourcer’ for their service if they are happy with
their work. Freelancer.com generates its revenue mainly from charging membership fees and commissions on the payments made for tasks that are accomplished.

Freelancer.com boasts that it has over 7 million professionals, and that it hosted projects that are worth on aggregate over $1 billion. Other sites that provide similar services are oDesk.com, Guru.com, and Elance.com.

### 2.1.4 Not-for-profit scientific crowdsourcing

Galaxy Zoo is a space exploration project that is managed by Zooniverse.org, a citizen science organisation that is owned and operated by the Citizen Science Alliance. Galaxy Zoo project involve tasks where volunteers are presented with images of a galaxy and as part of their contribution they are tasked with classifying them into a shape or morphology. One day after its launch, the Galaxy Zoo project has ended up attracting more than 70,000 classifications per hour. The number of citizen science projects managed by Zooniverse.org and the number of registered volunteers (collectively known as ‘Zooites’) has been burgeoning since the inception of the Galaxy Zoo project. Zooniverse projects are multi-disciplinary and include research studies in astronomy, ecology, microbiology, archaeology, and climate science.

Foldit is an online puzzle video game that has been invented by the University of Washington to discover biological cures to complex types of diseases. The core concept of the game is based on a protein-folding exercise. The repository of solutions to the various puzzles is transformed into innovative ‘real-life’ biological remedies for different types of diseases. In 2011, the Fold.it project in collaboration with a group of enthusiastic community volunteers that had no prior training in molecular biology has managed to decode the crystal structure of an AIDS-causing virus. This amazing scientific discovery that had previously stumped scientists for over a decade was realised in just ten days through an unlikely source- a large crowd of ‘puzzle-solvers’ (Savage 2012).

### 2.1.5 Virtual volunteering

Virtual volunteering allows global communities to contribute with their time and expertise to help not-for-profit organizations and agencies accomplish tasks in a digital environment without the need for an on-site visit. Serviceleader.org and Onlinevolunteering.org advertise for unpaid virtual volunteering tasks. The online volunteering organisations act as portals for voluntary job opportunities and they have consequently become a research repository for published case studies that entail best practices and lessons learned from the virtual voluntary projects that have been completed by volunteers. Onlinevolunteering.org also screens the ‘seeker’ organizations, and monitors the feedback that organizations and volunteers provide on a collaborated project. The virtual volunteering tasks are usually of the secretarial type such as online career advice, desktop publishing, booking appointments, and translating or proof-reading a document but they can also include advanced and pedagogical tasks such as database design, web site developments, and complimentary technology training. Some organisations that advertise
volunteering tasks with onlinevolunteering.org issue a certificate of appreciation once a task is accomplished successfully.

Fig. 1 A comparison chart showing different categories of crowdsourcing organisations
2.2 Crowdsourcing challenges and pitfalls

2.2.1 Incentive Schemes

The rewards for an accomplished task do not necessarily have to be financial because sometimes the appeal of taking part in an intellectual challenge, enhancing one’s reputation, supporting one’s own community or even the altruistic feel-good factor of conducting some voluntary work may suffice for prompting volunteers to participate in a problem-solving exercise (Savage 2012, Hars and Ou 2002, Hertel et al. 2003, Lakhani and von Hippel 2003, Constant et al. 1996). Self-efficacy has been cited as another incentive for voluntary contributions (Bandura 1995).

Doan et al. (2002) have identified several retention schemes for effectively engaging crowdsourcing including ego gratification and fame management (peer recognition), hedonic experience through gamification, and induced ownership through contribution(s). Doan et al. (2002) cautions against poor or malicious contributions sometimes referred to as ‘crowdslapping’ (Brabham 2008) and suggests the implementation of punitive measures such as ‘contributor ratings’ and social sanctions that could encompass processes such as ‘banning’, and ‘naming and shaming’ the culprits amongst their peers in the community.

In addition, the researchers suggest clustering contributors into different user groups such as guests, editors, and administrators and then to subsequently use a ‘workload’ allocation strategy to allocate tasks that are “cognitively appropriate” to each user group. For example, “guests” or “regulars” tend to participate in menial tasks with a low cognitive load whereas “editors” and “administrators” might rise to the challenge of a contribution that comes with high cognitive load such as solving a scientific puzzle.

2.2.2 Ethical and Legal “Personnel” Issues

There are articles that have pinpointed some of the ethical and legal challenges and implications that crowdsourcing can have on the incumbent workforce of an organisation (Marjanovic et al. 2012, Wolfson and Lease 2011, Whitla 2009). For example, some argue that since crowdsourcing involves soliciting solutions to a task from cheaper manpower, opponents of the crowdsourcing practice will regard it as some form of workers’ exploitation scheme or slave labour and trade unionists would contend that the utilisation of human resources outside the firm’s boundaries could on the long term threaten the job security of the firm’s existing employees (Marjanovic et al. 2012, Whitla 2009, Brabham 2008).

Besides the employment law and employee welfare issue, there is the concern of intellectual property (IP). Unlike open-source innovations and contributions where open-source products are not marred by exclusive ownership rights, in crowdsourced innovations the task of defining the copyright ownership of a crowdsourced artefact in an open pluralistic environment can become an intricate challenge (Lakhani and Panetta 2007). Another risk that relates to copyright and ownership is attributed to the absence of a regulatory IP policy in crowdsourced projects, where
the disclosure of competitive intelligence to a rival company by a ‘crowdsourcee’ is an undesirable but yet a possible outcome.

2.3 Crowdsourcing in product development

One of the major challenges of producing a product that responds to heterogeneous user needs is to understand the ‘tacit’ information that is sometimes provided in the description of a user requirement. Translating that tacit information into a usable form that a manufacturer can utilise for developing a product is an arduous and costly task (Franke and Hippel 2003) and it could be mitigated by the adoption of an innovation toolkit. Von Hippel, Ogawa, and De Jong (2011) contend that customers who are provided with appropriate innovation toolkits can become proactive innovators in the design and development of a customised product. This approach was found to reduce the costs and development time that are associated with the trial-and-error cycle that is part of the traditional product development approach (Thomke and von Hippel 2002) and it was also found to be conducive towards a user’s satisfaction with the customised product (Franke and Hippel 2003). Using an innovation toolkit, the users can express their requirements in a prototype (of a product or service) that more accurately reflects their needs. In a nutshell, the innovation toolkits should delegate more innovation activities to the customers so that unlike in the traditional consumer-producer interaction where the customers are engaged in the final testing and evaluation stages, customers are involved early on in the design, build, and test stages of the product’s life cycle.

2.4 Crowdsourcing in the context of information systems

Information systems are the backbone of today's businesses and are responsible for automating and streamlining the daily tasks and transactions that are performed by an organisation. The development phase of IS/IT projects seems to suffer from multi-faceted flaws. A report published by the Standish Group in 1994 shows that nearly a third of IS/IT projects (31%) were terminated prematurely (The Standish Group 1994), which was mainly attributed to the trajectory in costs associated with extending the project’s deadline. The report also contends that most of the completed projects retain only "42% of the originally-proposed features and functions". A decade later, although the percentage of failed projects has fallen to 18%, “much work remains before software project success becomes the norm rather than the exception” (Woolridge et al. 2009). The communication gap between users and developers has been identified as a major contributor to IS/IT project failures (The Standish Group 1994, 1998, 2001; Xia and Lee 2004; Yeo 2002). In user participation research, the extent of proactively engaging users in the development of an IS/IT system was found to contribute positively to the subsequent adoption of the IS/IT system (Nichols and Twidale 2006, Zhao and Deek 2006, Iivari 2009, Hughes 1993a, Schummer et al. 2005, Ferguson and Brohaugh 2008, Droge and Mackoy 1995).

Some research studies in the marketing and consumer behaviour literature found that the process of consulting customers about the features they would like to see in a product can induce an affective attachment and a sense of ownership towards the ‘moulded’ product, a phenomenon known as brand loyalty (Baldinger and Rubinson 1996, Bandyopadhyay and Martella 2007, 2008).
2.5 Crowdsourcing in the context of project management

There is evidence in the literature that highlights the virtues of adopting the crowdsourcing approach in managing projects that involve the design and development of custom-made products or services, regardless of whether it is in a physical or digital incarnation (Franke and von Hippel 2003, von Hippel et al. 1999). That list of virtues that has been identified for project managing bespoke products or services includes: reduced investment costs; shorter product life cycles; and the fostering of a better learning experience (von Hippel 1990).

According to von Hippel, Thomke, and Sonnack (1999), the crowdsourcing approach ‘provides the additional benefit of developing the skills of the learning professionals as they collaborate on a real world product. They practice how to pitch ideas to senior leaders, address critique and challenges from colleagues, acquire new ideas for their repertoire, and develop additional design skills through social learning’. In addition, Franke and Hippel (2003) assert that it is “more cost effective to better serve heterogeneous customer need by transferring the development of custom products to customers than it will be to follow a more conventional approach and attempt to (greatly) increase the number of market segments addressed by manufacturer-based innovators”.

Doan et al. (2002) proposed a strategy for crowdsourced project management that involves (1) clustering contributors into different user groups such as ‘guests’, ‘editors’, and ‘administrators’, (2) partitioning the project tasks according to the contributor’s cognitive demand levels and finally (3) allocating project tasks that are “cognitively fit” to each user group. For example, ‘guests’ tend to commit to contributions with a low cognitive load such as menial tasks whereas ‘editors’ and ‘administrators’ might rise to the challenge of a contribution that comes with a high cognitive load such as solving a complex scientific problem.

One possible indicator for identifying highly-motivated contributors is represented in the concept of “lead users”, which has been incessantly discussed in von Hippel’s seminal articles about open innovations. von Hippel (1990, 799) describes lead users as ‘users who are actively innovating to solve problems present at the leading edge of a trend’. This characteristic of the lead user could potentially materialise in the IS/IT milieu in a form that is analogous to a blogger, forum moderator, or a dedicated contributor to a forum that focuses on the innovation aspect and problem-solving tasks that relate to a particular product or service. Ballejos and Montagna (2011) describes this customer-driven project management approach as the shift from “design FOR users to design WITH users”.
3. Discussion and summary

The aim of this article is to contribute both theoretically and methodically to the project management discipline in the context of information systems. Specifically, this article provides a “multi-disciplinary” overview of the current literature that focuses on the socio-technical issues and theories surrounding the crowdsourcing approach to the project management of physical and digital products and services. One of the objectives of this exploratory literature review is to present the reader with practical considerations and guidelines for project management scenarios that involve crowdsourcing IS/IT project tasks to the global online community. In summary, there is no general consensus in the literature that promotes or advocates the concept of crowdsourcing as an alternative project management technique or platform- there are assenting and dissenting arguments about the crowdsourcing phenomenon.

In section 1 of the literature review, we have presented some real-life multi-industrial case studies that used the crowdsourcing approach to solicit solutions to various problems from online communities. The genre of crowdsourced tasks ranges from the complex scientific type to the simple menial type. We have then discussed in section 2 how on one hand different rewarding mechanisms (social and financial) can be used to reward good crowdsourcing contributions and on the other hand, punitive measures can be used to moderate and ‘repel’ deliberate malicious contributions. We have also discussed the ethical and legal implications and challenges surrounding both the crowdsourcing process (task delegation e.g. cheap employment) and its deliverable (copyright issues surrounding the product or service that is produced by the task). In sections 3 and 4, we have reported with corroboration from the multi-disciplinary literature how crowdsourcing and engaging users early on in the design and development of a custom product or service not only enhances the innovation process but it can also lead to shorter product life cycles, lower investment costs (due to shorter feedback cycles between the producer and consumer of the product or service), and a substantial boost in user satisfaction and brand loyalty (due to a perceived sense of ownership).

Finally, in section 5 we have extrapolated the crowdsourcing concept to the project management discipline and discussed how “user-grouping” strategies can be used to classify the highly-motivated and the least-motivated contributors and how the outcome from this ‘clustering’ exercise can help allocate tasks that are “cognitively appropriate” for each user group. We have then proposed some suggestions that can help identify serious and ‘conscientious’ candidates for a crowdsourced task. The suggestions include the use of personality trait indicators of ‘diligent’ and proactive contributors which can be gauged and represented by (1) the number of ‘meaningful’ contributions posted (not necessarily on a prolific scale- quantity vs. quality) in relevant forums (information providers vs. information seekers e.g. (Lakhani and von Hippel 2003)); (2) the time spent answering questions or posting solutions to a forum (Lakhani and von Hippel 2003) and (3) the extent of being cognitively committed to accomplish a crowdourced task (the proactive ‘administrator’ and ‘editor’ versus the passive ‘guest’) (Doan et al. 2011).

Other measurement constructs could be derived from the extant literature (e.g. (Constant et al. 1996, Lakhani and von Hippel 2003, Johann Füller and Eric A. Von Hippel 2008) ) or contrived
using an exploratory study (for example using survey questionnaires and exploratory factor analysis). The questionnaire could then be used to screen initially potential contributors prior to assigning them a project task (see Figure 2). This screening instrument should look beyond the printed skills on a curriculum vitae (CV) by predicting the extent of cognitive commitment of a potential contributor.

4. Managerial Implications and conclusions

The crowdsourcing approach can prove to be a more viable and sustainable alternative to traditional project management techniques. A number of case studies need to conducted to test the premise of whether crowdsourcing can be used as an effective task partitioning strategy but there are auspicious financial indications from some crowdsourcing companies such as freelancer.com that seem to augur well for companies interested in adopting such an alternative project management approach. Instead of being confined to choosing from a static skillset of in-house employees to appropriately allocate a project task, the digital crowdsourcing project manager can choose from a global and dynamic skillset of on-demand workers to solicit...
solutions for various types of tasks including technological, technical, sales and marketing and legal advice. Although there is the option for the traditional project manager to outsource some of the project tasks to an offshore or onshore organisation, the outsourcing process is not ‘instantaneous’ as it is normally accompanied by a list of contractual obligations and potentially a set of restrictive terms and conditions. In addition, the crowdsourcing approach seems to be a more sustainable project management technique from an economical perspective since the digital crowdsourcing project manager can control the costs more effectively by allocating the various project tasks to those candidates who are judged to be the most competent, reliable and cost-effective.

Crowdsourcing when used in the context of project managing community-based IS/IT systems can also help develop community systems that are perceived by its users to be usable. As has been discussed in the literature review, the benefits from engaging the consumers as producers early on in the design, development and test stages of an IS/IT project include lower costs and shorter product life cycles (trial and error prototyping cycles between the users and developers of the system), higher satisfaction rates and an affective attachment (brand loyalty) to the final deliverable of the project (Thomke and von Hippel 2002, Franke and Hippel 2003, Nichols and Twidale 2006, Iivari 2009, Hughes 1993b, von Hippel et al. 1999). The brand loyalty towards a customised community system would be induced by a sense of ownership that gradually develops with each iteration when a user gets involved in the consultation process.

One can conclude that the vices of crowdsourcing community IS/IT systems such as lower investment costs, higher quality learning, shorter product life cycles, higher levels of user satisfaction and a sense of ownership tip the scale in favour of a successful accomplishment of the project’s goals and the subsequent adoption of the community system by its intended target audience. This is mirrored in various research studies that have focused on user participation where the findings reported consistently the existence of a strong correlation between the extent of user involvement in the design and development stages of an IS/IT application and the acceptance and subsequent adoption of the IS/IT application in question (Nichols and Twidale 2006; Zhao and Deek 2006; Iivari 2009; Hughes 1993; Schummer, Lukosch, and Slagter 2005).

Future studies need to consider and address various issues in their research agenda including (i) the international taxation policies surrounding the recruitment process of foreign digital employees; (ii) ethical issues surrounding the recruitment of a potentially cheaper digital workforce and (iii) the quantification and extensive testing for validity and reliability of the measurement constructs that represent the personality trait indicators of proactive and conscientious contributors (2011, Lakhani and von Hippel 2003). In addition, future research studies should explore avenues that investigate (iv) whether crowdsourcing initiates the transition from commodity communities to knowledge and innovation communities; (v) cross-cultural issues surrounding the crowdsourcing process for example by comparing the performance of crowdsourcers that come from individualistic cultures versus those that come from collectivist cultures. Finally, future research studies can conduct various case studies that involve the application of different incentive schemes to ascertain which of the schemes is more effective in the context of crowdsourced projects.
References


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