Crowdsourcing Critical Success Factor Model

Strategies to harness the collective intelligence of the crowd

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Abstract

Crowdsourcing, simply referring to the act of outsourcing a task to the crowd, is one of the most important trends revolutionizing the internet and the mobile market at present. This paper is an attempt to understand the dynamic and innovative discipline of crowdsourcing by developing a critical success factor model for it. The critical success factor model is based on the case study analysis of the mobile phone based crowdsourcing initiatives in Africa and the available literature on outsourcing, crowdsourcing and technology adoption. The model is used to analyze and hint at some of the critical attributes of a successful crowdsourcing initiative focused on socio-economic development of societies. The broader aim of the paper is to provide academicians, social entrepreneurs, policy makers and other practitioners with a set of recommended actions and an overview of the important considerations to be kept in mind while implementing a crowdsourcing initiative.

Keywords: *Crowdsourcing, Outsourcing, Socio-economic Development, Software Export Success Model, Unified Theory of Acceptance and Use of Technology, Crowd Resistance*

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1. Introduction

Crowdsourcing is one of the important trends fundamentally revolutionizing the manner in which business firms, governments and humanitarian organizations view the internet and the mobile phone market. Although, crowdsourcing has been practiced since 1990's (Roth, 2009), as a concept it came into prominence after June, 2006 article in the Wired Magazine - The Rise of Crowdsourcing by Jeff Howe. In the book titled, Crowdsourcing: Why the power of the crowd is driving the future of business, Jeff Howe defines crowdsourcing 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.*" (p. 99)

Currently, a large number of applications of crowdsourcing in business and social context (Gowdy et al., 2009) enable us to coordinate human endeavor, help social interactions and empower creativity (Parameswaran & Whinston, 2007) to solve potential problems and issues. Crowdsourcing has significant transformational power in the domains of collective action and content creation (Parameswaran & Whinston, 2007). In a business context the applications range from solutions to cognition, coordination and cooperation problems (Surowiecki, 2004) to content distribution and advertising (Parameswaran & Whinston, 2007). For example, Wikipedia, threadless, iStockphoto, InnoCentive, crowdSPRING etc. are excellent illustrations of the use of crowdsourcing to achieve business goals.

Crowdsourcing has demonstrated itself to be a potential problem-solving tool for government and the non-profit sector (Brabham, 2008). Also, grantmaking institutions (Ashoka, Bill & Melinda Gates Foundation, globalgiving.org) are using decentralization and networked decision making to achieve their goals (Gowdy et al., 2009). For example, Samasource, txtEagle, Ushahidi, peer water exchange, mCollect, community knowledge worker etc. are notable instances where crowdsourcing has been aimed for among other things - poverty alleviation, livelihood support and improving crisis response in Africa, Latin America and parts of South Asia (Greenough et al., 2009).

It must be pointed out while crowdsourcing has proven its worth for commercial organizations from the context of profits (Kleemann, Vob, & Rieder, 2008) scholars have so far not considerably examined the critical success factors for crowdsourcing. This paper intends to fill this gap and add to the current body of literature on crowdsourcing. The paper provides an overview of crowdsourcing initiatives and identifies their common features to develop a critical success factor model for crowdsourcing. The critical success factor model is based on the case studies of the crowdsourcing initiatives and the available literature on outsourcing, crowdsourcing and technology adoption. The model is used to hint at some of the critical attributes of a successful crowdsourcing initiatives. The broader aim of the paper is to provide academicians, social entrepreneurs, policy makers and other practitioners with a brief overview of the important considerations to be kept in mind while developing a crowdsourcing initiative in order to harness the collective intelligent of the crowd.

2. Scope and Methodology

Taking account of the high penetration and ubiquity of mobile phones in the developing countries compared to broadband internet the paper exclusively examines and investigates the mobile based crowdsourcing initiatives in Africa. The initiatives focusing entirely on the internet have not been examined.

Crowdsourcing is a novel concept attracting attention from academicians, social entrepreneurs, non-profit sector, government institutions and journalists. Hence, there is a sufficient amount of available literature in various formats viz. journal articles, books, industry reports and newspaper articles. In the research I have attempted to specifically focus on the articles in academic journals however if found relevant, literature other than journal articles have also been cited in the paper.

The paper is based on the theoretical frameworks available on outsourcing developed by Heeks and Nicholson (2004), Carmel (2003), Farrell (2006), and Balasubramanyam & Balasubramanyam (1997). The unified theory of acceptance and use of technology (Viswanath

et. al, 2003) has been used to explain the crowd acceptance of crowdsourcing. The document is divided into six sections. The paper provides a brief description of a few of the crowdsourcing initiatives in Section 3. Section 4 introduces the critical success factor model and section 5 discusses the results of the research. Section 6 and section 7 elaborates the limitations and the future research directions respectively.

3. Overview –Crowdsourcing Initiatives

Each crowdsourcing initiative functions in a specific macro-environment within a well defined set of goals to achieve a specific long term objective. This section provides a brief description of mobile based crowdsourcing initiatives focusing on providing livelihood support, crisis response, market information and project evaluation.

3.1 txtEagle

txtEagle is based on the concept of Amazon's Mechanical Turk (Kittur, Chi, & Soh, 2008) and was founded by a research scientist of Massachusetts Institute of Technology. txtEagle is a mobile based system enabling people to earn small amount of money by completing simple tasks (micro tasks) on their mobile phone for corporations. Subsequently, the corporations pay the people (crowd) who complete the task (crowd) in either airtime or mobile money (Eagle, 2009). The mobile users complete simple tasks ranging from transcription, translation, surveys and software localization on their mobile phones using txtEagle. Currently, txtEagle is implemented and it provides an additional source of supplementary income to rural and low income populations in Kenya and Rwanda (Eagle, 2009).

3.2 Ushahidi

Ushahidi is a mapping tool for crowdsourcing crisis information (Greenough et al., 2009). Ushahidi enables the public to communicate crisis information via SMS, e-mail, or web entry. Subsequently, the information received is time stamped and geo tagged to create a crisis map to report incidents to multiple organizations engaged in crisis response. The benefits of crisis response range from ensuring timely crisis response from health and policing agencies to efficient information flow.

Ushahidi has been implemented in numerous countries for managing crisis response. For example, Ushahidi has been used to map post election violence in Kenya (Greenough et al., 2009), anti-immigrant violence in South Africa (Fildes, 2010), and manage relief efforts in Haiti (Ramirez, 2010) and Chile (Ramirez, 2010). Al Jazeera News Network used Ushahidi to collect eye witness reports during the 2008-09 Gaza war (Ekine, 2009). It was also used, although in a small scale, to monitor the 2009 Afghan Presidential Elections (Fleischner, Hippel, & Barton, 2009).

3.3 Peer Water Exchange

Gowdy et. al (2009) describes the peer water exchange (PWX) as a

> *"unique participatory decision-making network of partners, [which] combines people, process, and technology to manage water and sanitation projects around the world – from application, selection, funding, implementation, and impact assessment."* (p. 13)

The PWX has been established to achieve the aim of providing and monitoring the access of safe drinking water and sanitation to villages using crowdsourcing. The unique participatory decision making approach enables PWX to manage multiple projects spread across geographies, and scale local solutions towards solving the global water problem (Parker, 2009). PWX aims to enhance the utility of this transparent model through a two-way SMS interface inviting beneficiaries, and other stakeholders to evaluate, monitor and share their experiences with others (Shah, 2009). In collaboration with similar organizations the PWX crowdsourcing framework has been implemented in parts of Tanzania, Uganda, Malawi, India, and Ecuador (Parker, 2009).

3.4 mcollect (Trade at Hand)

mCollect is a Trade at Hand[1] initiative started in 2006 which aims to enhance export opportunities and trade throughout West Africa by working with various stakeholders to gather and share market price information (Slavova, 2009). mCollect, a market information collection

[1] Trade at Hand is an International Trade Centre (ITC) project aiming to use mobile phones innovatively for business exporters. It has been launched in Sub-Saharan Africa.

system, is part of a broader initiative which also includes Market Prices and Market Alerts. Using crowdsourcing, mCollect makes it easier for the information collectors to gather domestic prices straight from the local agricultural markets (Slavova, 2009). Afterwards, the information is distributed via SMS to interested businesses in the region. mCollect is compatible with other market information initiatives such as TradeNet and Resimao[2]. mCollect has been implemented in Burkina Faso, Mali, Senegal and currently supports a virtual marketplace pilot project in Liberia (Donner, 2009).

On similar lines, Grameen Foundation Technology Center implemented a similar concept in Uganda under the name, Community Knowledge Worker, aka CKW (Cranston, 2009). CKW's are equipped with mobile phones. They crowdsource agricultural information from farmers which is then relayed to provide a vital link between farmers, government and other entities engaged in agriculture (Cranston, 2009). The link provides companies, government, and NGO's critical information to better manage the rural market needs (Schneider, 2009).

4. Crowdsourcing - Critical Success Factors Model

In this section the relationship between outsourcing and crowdsourcing is explained and then the importance of user involvement in crowdsourcing is emphasized. Owing to the inherent similarities between crowdsourcing and outsourcing, the critical success factor models in outsourcing developed by Balasubramanyam & Balasubramanyam (1997), Carmel (2003), Farrell (2006), Heeks and Nicholson (2004) are examined to develop a success model for crowdsourcing. Subsequently, the user (crowd) acceptance of the crowdsourcing initiative is analyzed based on the unified theory of acceptance and use of technology (Viswanath et. al, 2003). Finally, the critical success factor model for crowdsourcing in introduced.

Schenk and Guittard (2009) emphasize in their research that crowdsourcing by nature is very likely to function as an outsourcing process. Moreover, crowdsourcing as a concept is based inherently on the principles of outsourcing (Storey, 2009). As a result, few organizations have

[2] mCollect, TradeNet and Resimao contain facilities and protocols to gather and share aggregated price information to buyers.

shifted from the usual model of outsourcing to crowdsourcing for meeting their business needs and market demands (Alonso, Rose, & Stewart, 2008). Hence there are inherent similarities between the basic operational model of crowdsourcing and outsourcing.

However, crowdsourcing is not directed towards other organizations but directed towards the crowd in the form of an open call (Howe, 2006). This presents a crucial characteristic of crowdsourcing which differentiates it from outsourcing and subsequently emphasizes the need of participation of the crowd in the crowdsourcing initiative for its success. In crowdsourcing, the participation is voluntary and the contribution of a wide network of people is required for the initiative to reach a substantial scale (Lohr, 2009). Therefore, sufficient crowd participation is imperative for the success of a crowdsourcing initiative.

In order to reach the critical mass in terms of crowd participation the incentive ought to be tailored to attract the most effective collaborators (Lohr, 2009) and the motive of the crowd needs to be aligned with the long term objective of the crowdsourcing initiative (Eagle, 2009). This ensures that the crowd is willing to participate in the initiative which involves either completing micro tasks (Kittur, Chi, & Soh, 2008) or contributing information for future use (Kleemann, Vob, & Rieder, 2008). It also brings to light the importance of acceptance of the concept of crowdsourcing by the crowd (sometimes referred to as users in the paper) for the initiative to become successful (Howe, 2008).

It will be useful to point out that in this paper a crowdsourcing initiative is termed as successful if there are sufficient members of the crowd participating in it. Hence, in this paper the success of the crowdsourcing initiative does not specifically focus on other aspects viz. sustainability, reliability or effectiveness of the service.

Several frameworks for evaluating the critical success factors of an outsourcing initiative have been presented in the available academic and professional literature. Our analysis of these factors has been based on earlier models (Balasubramanyam & Balasubramanyam, 1997;

Carmel, 2003; Farrell, 2006; Heeks & Nicholson, 2004) all of which primarily consider costs, business environment, linkages & trust, availability of infrastructure, labor resources and specific skills as the key factors affecting the success of outsourcing. With regards to crowdsourcing sufficient user involvement is imperative. It can be ensured by aligning the motives of the crowd towards the long term objectives of the initiative.

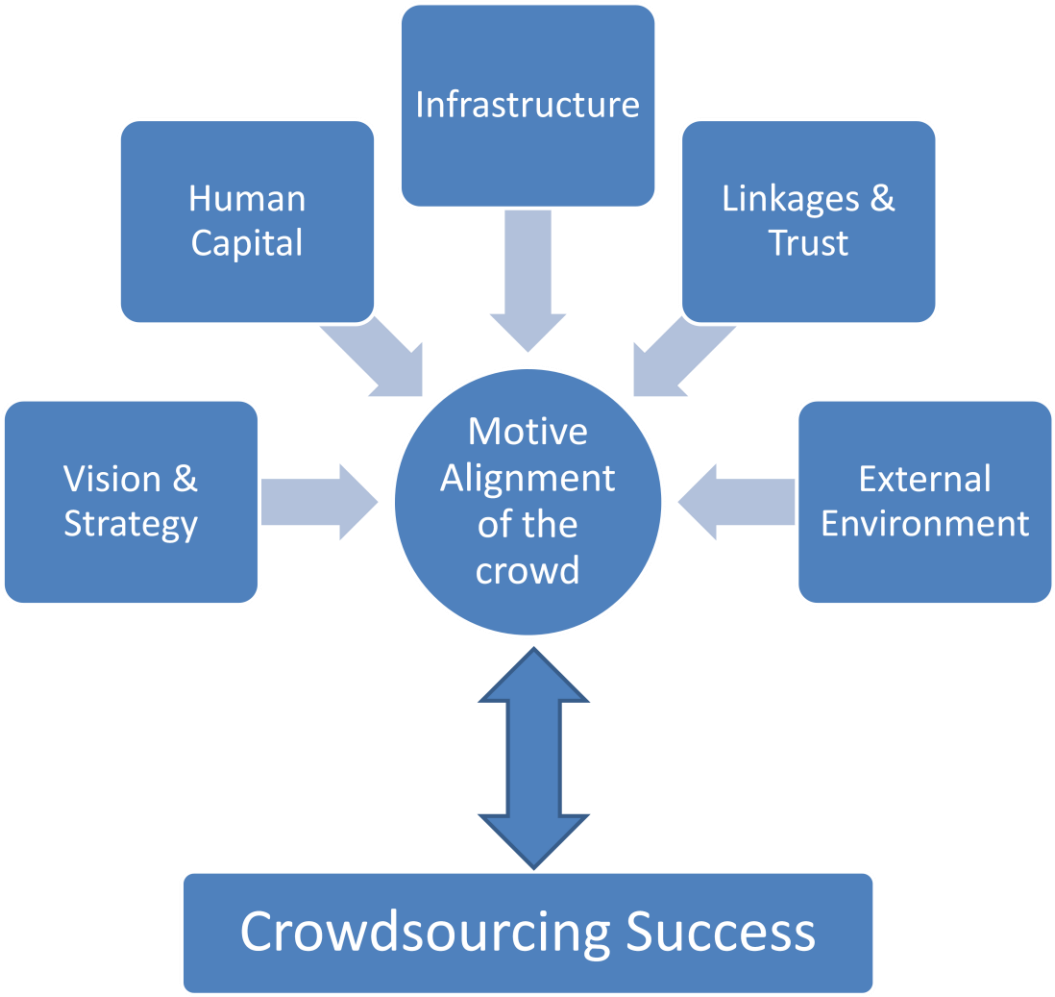
Additionally, to promote participation the users must use and accept the technology of crowdsourcing. In this paper, the extent of usage and acceptance has been assessed by using the UTAUT - unified theory of acceptance and use of technology (Viswanath et. al, 2003). The UTAUT model has been extended from the Technology Adoption Model (Adams, Nelson, & Todd, 1992). UTAUT explains the user behavior in terms of social influence and cognitive instrumental processes (Viswanath et. al, 2003).

After a study of the current crowdsourcing initiatives and an analysis of associated models in outsourcing and technology adoption from the literature the paper now introduces the critical success factor model for crowdsourcing, refer *Figure 1*. In particular, the model is based on Heeks and Nicholson (2004), Carmel (2003), Farrell (2006) while developing the peripheral factors which affect the motive alignment of the crowd towards the crowdsourcing initiative. In the model, motive alignment of the crowd is the central idea whereas the vision & strategy of the crowdsourcing initiative, linkages & trust, external environment, infrastructure and human capital are the peripheral factors. The peripheral factors are neither exclusive nor exhaustive. The aim of the model is present a new approach to explore the space of crowdsourcing and provide an overview of the important considerations to be kept in mind while implementing a crowdsourcing initiative.

In the model (refer *Figure 1*), all of the five peripheral factors affect the motive alignment of the crowd which is the prime determinant of success of the crowdsourcing initiative. It is assumed to directly affect user participation. The success of the initiative is expected to bring in more participation. Hence, the relationship between motive alignment and crowdsourcing success is

bidirectional in the model. The paper now provides a brief description of the factors comprising the crowdsourcing critical success factor model.

Figure 1: Crowdsourcing Critical Success Factor Model



4.1 Vision and Strategy

Kirkpatrick et. al (2002) describes corporate vision as, "an ideal that represents or reflects the shared values to which the corporation aspires" (p. 140). Vision is an effective component of business strategy (Ireland & Hitt, 1999) as it guides the decision making process of the firms.

All of the crowdsourcing initiatives enter the market with a well defined set of ideals, goals and objectives. The vision of the initiative is very important to the crowd. It is imperative that the

crowd perceives the initiative as valuable and well intentioned (Brabham, 2009). If possible, the firm must also be able to incentivize participation (Kittur, Chi, & Soh, 2008). The firm needs to be flexible with their vision owing to the dynamic nature of the environment in which these initiatives are functioning. Proper management of the vision and strategy on these aspects primarily ensures sufficient crowd participation.

Additionally, a properly presented vision statement might also lead to the support of governments, corporate and other stakeholders. Government support adds a sufficient trust factor to the initiative. Moreover, the support guarantees a much wider participation and increases the visibility of the initiative thereby ensuring crowd participation.

For example, mcollect aims to improve the domestic price capture mechanism and increase the level of price co-ordination and trade in West Africa (Slavova, 2009). Additionally, peer water exchange aims to provide clean water through crowdsourcing. The crowd can relate with the aims of these initiatives. The coherence of the initiative's vision and strategy with the aspirations of the crowd ensures that the crowd is willing to participate in it.

4.2 Human Capital

The other determinant of the success of crowdsourcing are the skills and abilities the crowd possesses (Kittur, Chi, & Soh, 2008). Carmel (2003) describes the collective characteristics, skills and abilities of the crowd as human capital. Human capital includes, but is not limited to, language skills, managerial skills, national orientation, traditions and level of education (Carmel, 2003).

Hence, in order to enable meaningful participation of the crowd in the crowdsourcing initiative there is a need to develop proper skills, abilities and expertise in them. In the paper, we focus on mobile phone enabled crowdsourcing initiatives hence the crowd must possess the skills of using a mobile phone. Also, the social entrepreneurs must have the necessary skills, expertise and the vision to bring the crowdsourcing initiative successfully into the market.

The success of crowdsourcing depends on attracting the critical mass of people to participate in the crowdsourcing initiative (Alonso, Rose, & Stewart, 2008). Therefore, the amount of human

capital (defined in terms of number of people) is important as well. If need be, the skills and the abilities of the crowd to participate in the crowdsourcing initiative can be generated by providing education and vocational training. However, in an ideal scenario, the crowd must be able to use the crowdsourcing initiative without prior training and minimum interventions.

For example, txtEagle aims to use the human capital in Kenya possessing mobile phones (Eagle, 2009) by providing them facilities to perform basic translation, transcription and speech recognition tasks. The people possess the basic skills to perform these tasks. Hence, the effort required by the crowd to make a meaningful contribution to the initiative is minimal.

4.3 Infrastructure

Most of the crowdsourcing initiatives are either mobile or web based. Crowdsourcing requires abundant, reliable and cheap telephone or mobile access for its communication needs in order to ensure participation of the crowd (Donner, 2009). Hence, the ease of accessibility, reliability and quality of communication technologies (or technology infrastructure) viz. telecom, internet is imperative for crowd participation (Heeks & Nicholson, 2004).

Other critical aspect is the availability of the much needed capital sources for development of the initiative (Kleemann, Vob, & Rieder, 2008). The capital sources can be a combination of domestic and foreign investments (Carmel, 2003). However, the inherent nature of crowdsourcing initiatives does not make them capital intensive. Additionally, sufficient investments directed towards the betterment of enabling infrastructure can enhance the crowd participation substantially thereby ensuring the success of the crowdsourcing initiative (Schneider, 2009). Heeks and Nicholson (2004) regard research and development as an integral part of the infrastructure as it leads to the betterment of the human capital.

For example, Ushahidi and txtEagle chose the common denominator i.e. mobile phones while selecting the medium for user content generation and completion of micro tasks respectively. With the ubiquity of mobile phones in Africa the enabling infrastructure was already present. Hence, the effort required for participation in the initiative was minimal.

4.4 Linkages and Trust

The proper development of linkages is often perceived by managers as a mode to minimize their perceived costs of doing business (Ireland & Hitt, 1999). Carmel (2003) defines the concept of linkages as,

> "*something which emerges between individuals, between work groups, between firms or between nations due to geographic, cultural, linguistic, or ethnic connections*" (p. 8).

Linkages are essential to a people centric operational model as crowdsourcing. With proper linkages, among other things, knowledge transfer becomes easier. It makes the practice of sharing of best practices and innovative business models manageable and efficient. Knowledge transfer also enables ease of implementation of feasible crowdsourcing initiatives which the crowd can comfortably relate with. It also helps in pooling the much needed resources to develop the initiative.

All of the crowdsourcing initiatives involve a sufficient time or information cost to the crowd which necessitates the criticality of developing the trust factor. Proper linkages might add a substantial trust aspect to the crowdsourcing initiative (Brabham, 2009). Additionally, diaspora linkages or links with formerly successful ventures add a substantial trust aspect.

For example, Ushahidi has garnered support of Harvard Humanitarian Initiative (HHI)[3] and Organization for Economic Co-operation and Development (OECD). Additionally, mcollect is a program of the United Nations and the World Trade Organization. External support of these international organizations has added a sufficient trust factor to these initiatives in addition to providing them much needed global visibility.

[3] It is a Harvard University Center that aims to provide expertise in multiple disciplines to promote evidence-based approaches to humanitarian assistance in times of crisis.

4.5 External Environment

The macroeconomic environment comprising of the governance support, business environment, economic environment, living environment and risk profiles (Farrell, 2006; Oshri, Kotlarsky & Willcocks, 2009) are important determinants of the success of the crowdsourcing initiative.

Proper government support, in terms of favorable regulatory environment and minimum bureaucratic hassles encourages the social entrepreneurs to startup initiatives focused on socio-economic development of societies. The tasks associated with crowdsourcing must be compatible with the prevailing business practices and cultural norms. The crowd must also be able to relate the goal of the crowdsourcing initiative to their living environment.

An economic environment promoting a culture of entrepreneurship helps in the success of the initiative. While functioning in a favorable economic environment, the entrepreneurs conceptualize more ideas ensuring sufficient crowd participation. Also, proper attention needs to be given to the prospective risks viz. security risks, regulatory risks (Oshri, Kotlarsky, & Willcocks, 2009) in the macroeconomic environment. These factors play an important role in affecting the motive alignment of the crowd towards the long term objective of the crowdsourcing initiative.

For example, mcollect fits in well with the current business environment and it facilitates economic development. Also, the traders do not need to change their behavior in order to make the maximum use of the system. Hence, it ensures the participation of the traders in the initiative.

4.6 Motive Alignment of the Crowd

Motive alignment of the crowd is the most critical factor of the model. It is extremely vital that the motives of the crowd are aligned to long term objectives of the crowdsourcing initiative as it ensures their participation. In the model the unified theory of acceptance and use of technology (Viswanath et. al, 2003) has been used to evaluate the acceptance of the crowdsourcing initiative by the crowd.

Motive alignment of the crowd maybe defined as the extent to which crowd is able to associate with long term objective of crowdsourcing initiative thereby encouraging its wider participation. In the model (*refer figure 1*) - performance expectancy[4], effort expectancy[5], social influence[6] and facilitating conditions[7] are the direct determinants of the crowd acceptance and behavior towards a technology based intervention i.e. crowdsourcing (Viswanath et. al, 2003).

Table 1 below explains the effect on the determinants of the motive alignment of the crowd (based on the unified theory of acceptance and use of technology) by the peripheral factors (based on the crowdsourcing critical success factor model). It will be useful to mention that in Table 1 the (✓) represents the fact that the peripheral factors affect the specific determinant of the motive alignment of the crowd.

Table 1: Effect Determination Matrix

	Performance Expectancy	Effort Expectancy	Social Influence	Facilitating Conditions
Vision & Strategy	✓		✓	
Human Capital	✓	✓		
Linkages & Trust	✓		✓	
Infrastructure		✓		✓
External Environment		✓	✓	✓

Using the insights from the case studies and the literature it can be pointed out that all of the five peripheral factors affect one or more of these determinants. For example, the human capital is prominently expected to affect the performance expectancy and the effort expectancy. Similarly, remaining peripheral factors affect other determinants. As a result, the

[4]The extent to which an individual believes that using the system will help him to attain gains in job performance.
[5]The degree of ease associated with the use of the system.
[6]The degree to which an individual perceives that others believe he or she should use the new system.
[7]The extent to which an individual believes that organizational and technical infrastructure exists to support use of the system

peripheral factors affect the overall motive alignment of the crowd towards the crowdsourcing initiative in different manners.

5. Discussion

The paper is an attempt to conceptualize the recent phenomena of crowdsourcing. The aim is to add to the present literature in the domain by developing a set of critical success factors for it. The critical success factor model offers a template against which the strengths and weaknesses of a crowdsourcing initiative can be analyzed. It offers a set of important considerations for the entrepreneurs, practitioners and academics to conceptualize the domain of crowdsourcing. Also, the findings presented in Table 1 maybe used by policy makers to aid in policy formulation aimed at improving the enabling environment for crowdsourcing.

The summary of the case by case analysis of the crowdsourcing initiatives based on the critical success factor model is presented in Table 2 below. In a general sense, the critical success factor model is an easier and a useful way of understanding the different factors leading to the success (measured by the extent of crowd participation) of the crowdsourcing initiative.

The most interesting aspect of crowdsourcing is its ability to transcend geographic, political, economic barriers by means of virtual integration thereby achieving extraordinary goals. The key factor to kept in mind while conceptualizing a crowdsourcing initiative is the need to develop a strong connection between the people who use the initiative (crowd) and the people who conceptualize it (entrepreneurs or practitioners). In crowdsourcing it is critical that the crowd is visualized as a partner in the initiative. The needs, aspirations, motivations and incentives of the crowd to participate in the initiative must remain the most important consideration while developing the crowdsourcing initiative. The practitioners must understand the crowd motivation and align their goals according to it. It is due to the fact that the motive alignment of the crowd is the central idea of the model.

Table 2: Summary - Crowdsourcing Initiatives

	txtEagle	Ushahidi	Peer Water Exchange	mcollect
Vision & Strategy	Crowdsourcing simple microtasks; provide supplementary source of income	Crowdsourcing crisis information; ensuring timely crisis response	Clean water access using crowdsourcing; ensuring safe drinking water and sanitation	Enhance export opportunities and trade through crowdsourcing; gather and share price information
Human Capital	Mobile phone skills; Language skills	Mobile phone skills	Mobile phone and internet skills	Mobile phone skills
Linkages & Trust	Started by a MIT doctoral student, supported by Zain, Safaricom mobile service providers	Linkages with Harvard Humanitarian Initiative, OECD and numerous universities in US and Europe	Linkages with Blue Planet Run Foundation, WaterAid, Watershead Organization Trust and Gram Vikas	Linkages with United Nations, World Trade Organization and International Trade Center
Infrastructure	Availability of mobile phones and mobile network	Availability of mobile phones and mobile network	Availability of internet, mobile phones and network	Availability of mobile phones and mobile network
External Environment	Support from the local governments; lack of employment opportunities lead to participation	Proper government support; deteriorating security scenario & occurrence of natural disasters lead to participation	Proper government support; fits in well with the crowd's basic aspirations	Fits in well with the business environment; leads to a better market scenario

The individuals developing the crowdsourcing initiative must aim to provide training or assistance to the persons who wish to use the technology but lack the skills to do so. However, in an ideal scenario the technology must be optimally usable (Brabham, 2009). In some case a significant portion of the community may lack proper skills to interact with the service. Hence, the interface design must be usable, accessible and easy to understand in order to deal with the phenomena of crowd resistance.

An aggressive marketing and public relations plan must be carried out with the launch of a crowdsourcing project. It ensures that the vision and the external linkages are properly communicated to the crowd thus enabling the initiative to harness the collective intelligence for the benefit of all. If possible, contributions from the crowd must be incentivized (financial or

moral incentive) to stimulate their participation in the initiatives. The presence of compatible and appropriate infrastructure is essential for ensuring crowd participation. Favorable external environment makes it easier for the service to reach the critical mass which ensures more participation considering the bidirectional relationship between motive alignment of the crowd and crowdsourcing success (refer figure 1).

6. Limitations

This research does not base the crowdsourcing critical success factor model on quantitative analysis. The model parameters were drawn from the recent research articles and case studies. It must be pointed out that considering the highly dynamic and competitive nature of mobile market in Africa, Latin America and part of South Asia the research, although extensive, might not have been able to consider all types of crowdsourcing initiatives. However, the paper has attempted to present information about the important services in the market. There is lack of literature and reports on failed crowdsourcing projects. Hence, a thorough investigation of failed cases could not take place. .

The crowdsourcing critical success factor model will prove to be a workable model for assessing the extent of crowd participation, however, if necessary the model maybe be extended by incorporating additional factors. The model focuses on mobile based crowdsourcing initiatives in Africa. However, owing to similar nature of the initiatives the model maybe generalized to internet based crowdsourcing initiatives in Africa and elsewhere.

7. Conclusion and Future Research

The power of the wisdom of the crowds coupled with the greatest mechanism for distributing knowledge and information – the internet, is the fuel sparking the growth of crowdsourcing. This paper is an attempt to conceptualize and explain the critical success factors which ensure sufficient crowd participation in the initiative. In order to understand and accommodate this area into defined research boundaries it is critical that future research explores, among other things, the incentives and motivation for the user participation in crowdsourcing, the reliability

and veracity of the user content generated, the impact of crowdsourcing on socio-economic development etc. Moreover, the impact studies of these initiatives, looking beyond just crowd participation will prove to be a topic worth exploring in the future.

Crowdsourcing is a radical new approach to problem solving. The phenomenon is still in stages of early development. The new age of mass collaboration facilitated by crowdsourcing is complex and uncertain. If the entrepreneurs, practitioners, and policy makers are able to learn from the research and past experiences in the domain of crowdsourcing in a way that focuses on the factors that lead to successful outcomes then the potential of crowdsourcing will surely be accomplished.

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