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# **Social media-led co-creation of knowledge in developing societies: small and medium enterprise's roles in the adoption, use and appropriation of smartphones in South Asia**

## **Abstract**

Social media supports the creative economy through its involvement in the adoption and appropriation of new innovation and accelerates economic growth. The current paper expands on this notion by identifying and analysing the interaction between social media-based communities and small and medium enterprises (SMEs), as it examines how social media contributes to the knowledge co-creation and supports the adoption, use and appropriation of smartphones in South Asian countries, which are inhabited by approximately 1.6 billion people. The findings obtained through virtual ethnography (VE) provide insights into the dynamics and kinetics of knowledge co-creation and how that benefits large multinationals, small local businesses and consumers in developing societies. As such, we advance the knowledge management scholarship by presenting a holistic model of co-creation of knowledge involving multiple stakeholders.

**Keywords:** Co-creation, social media, knowledge management, appropriation.

## **Introduction**

The adoption and use of information technology in developing societies have received significant research attention over the years (Dhir et al., 2012; Rashid and Rahman, 2009; Bayes, 2001). It has also been suggested as a building block for economic and social development (Heeks and Jagun, 2007; Dey et al., 2013), which is argued to have been reinforced by communal support and interactions (Dey et al. 2011; Meso et al. 2005). However, there is limited evidence of scholarly works on the role of SMEs in facilitating technology adoption in developing societies. Although large multinational companies' products, such as computers and smartphones, are in high demand in developing societies, the multinationals often do not have strong and pervasive interaction with those markets (Sturgeon and Biesebroeck, 2011) and can offer very limited after sales support services and troubleshooting facilities, which are of immense importance for the continued and smooth use of the products (Murali et al., 2016). The consumers' lack of knowledge regarding the product use and the large multinational companies' limited interaction with the market might impede the growth and expansion of information and communication technologies in developing markets. However, SMEs can bridge this gap as they remain close to the customers and have regular business interaction, exchange of ideas and socio-economic bonds with them.

Although SMEs have their inherent problems and limitations in accessing information, achieving managerial expertise and optimising resource utilisation (Ates et al., 2013; Cerchione et al., 2016; Gunasekaran et al., 2000), they can play a pivotal role in supporting the large multinational companies' market expansion. Hence, there could be a broader and more holistic process for creating, processing and sharing knowledge amongst various stakeholders that could add or diminish value for the parties involved in the supply chain.

Knowledge creation is an outcome of the supportive and collaborative measures of multiple entities within an organisation (Landryová and Irgens, 2006) and/or an outcome of interactions between various stakeholders (Thakkar et al., 2012; Wang et al., 2014). It is argued that organisations can co-create and disseminate knowledge, which can eventually

offer value for their customers (Saarijärvi et al. 2013; Vargo and Lusch, 2008; Prahalad and Ramaswamy, 2004). The concept of co-creation is increasingly receiving attention in management, marketing and information systems literature. However, although the co-creation of value, ideas and design (Prahalad and Ramaswamy, 2004; Grönroos and Voima, 2013; Dey et al., 2016) has received significant research attention in current literature, the co-creation of knowledge remains an understudied area. Some understanding of this concept can be obtained from the existing literature (Mauser et al., 2013); however, there is a significant dearth in conceptualising the process and outcome of co-creation of knowledge.

Studies into knowledge co-creation in non-standard environments, such as in emerging economies, can also benefit this scholarship's advancement as the nature and outcome of stakeholder engagement in developing societies are not same as those in the developed world (Dey et al., 2016; Bharti et al., 2015). Furthermore, there is a paucity of empirical works on how social media-led interaction between various stakeholders creates and co-creates knowledge for various parties in emerging societies that have infrastructural and institutional limitations, lack of customer expertise and volatile market demands.

This paper seeks to address the above research gap by analysing how social media-based interactions facilitate smartphone adoption and use in South Asian countries and create and co-create knowledge by and for the customers, large multinationals and small and medium sized businesses.

As a region, South Asia comprises of seven countries: India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan and the Maldives. The total population of these countries is almost equal to the total population of China, South Korea and Japan. The region has huge diversity in terms of ethnicity, religion and language. However, the countries have a strong historical bond and are part of the South Asian Association of Regional Co-operation (SAARC). Most of the countries were part of the former British Indian Empire, "The British Raj" and the British colonial patrimony included the English language, Standard English spelling, Westminster-style Parliamentary democracy, the common law legal system, driving on the left etc.

Sectors such as digital marketing, ecommerce and social media in South Asia are evolving in a manner that demands a combination of social and technical capabilities and a likelihood of collaboration in both physical and virtual social networks that pose questions for further empirical investigation (Mangematin et al., 2014). If a technology is to deliver desired outcomes, it needs to be integrated into its users' daily lives (Carroll et al., 2003; Dey et al., 2011; Salovaara and Tamminen, 2009). We have particularly chosen the adoption and use of smartphone devices and applications for this paper due to their huge uptake in South Asian countries and the resulting implications in the socio-economic spheres of the local communities and businesses. For instance, it is predicted that 650 million new smartphones will be sold in India in the next four years <sup>1</sup>.

Using in-depth interviews and VE (Hein, 2000), this paper investigates virtual interactions within South Asian communities in various social media and obtains evidence of how such interactions influence and benefit the digital creative industries. Ten (10) Facebook groups, some of which are closed and some of which are open, Twitter hashtags, five (5) blog sites

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<sup>1</sup> [http://articles.economicstimes.indiatimes.com/2015-02-03/news/58751662\\_1\\_networking-index-mobile-users-population](http://articles.economicstimes.indiatimes.com/2015-02-03/news/58751662_1_networking-index-mobile-users-population)

and five (5) Internet Relay Chat (IRC) rooms have been accessed and monitored through VE investigation over six months to obtain data for this paper.

## **Literature Review**

This paper's scope and objectives warrant the discussion and investigation of two major theoretical areas: technology appropriation and co-creation of knowledge. Accordingly, the review starts with a brief look at technology appropriation.

### **Technology appropriation:**

The adoption of a technology does not guarantee continued and optimum use (Dey et al., 2013), as users are not always directed by technological applications and they often redesign, redefine, change or decline the use (Mackay and Gillespie, 1992). For example, the use of mobile telephones in many developing societies is a creative use of mobile telephones by price sensitive and resource constrained users (Dey et al., 2013; Donner, 2007). Hence, the actual use of technology might not be in the same form as envisaged by its designers and also might be of heterogeneous nature, as all users would not necessarily have the same degree and type of use (Salovaara and Tamminen, 2009). User-driven or user-defined technology use, also known as technology appropriation, involves the development of an individual's capacities during the use of the tool, artefact or application to support his or her activities and subsequent development (Dey et al., 2013) and could be a real challenge for technology designers (Dix, 2007), who seek to minimise the gap between their original intention and a technology's actual use. However, current literature does not fully explain how and why technology is appropriated by multiple parties involved in complex customer-service provider dynamics.

It has been argued that technology appropriation entails iterative and multidimensional processes involving human beings, society and technological artefacts (Orlikowski, 1992; DeSanctis and Poole, 1994). While a technology modifies or shapes human activities by offering new opportunities and constraints, it might also be modified during the appropriation process and used in completely new ways and for different purposes. The Short Message Service (SMS) is widely used as a cheap and convenient means of communication by mobile phone users. Interestingly, SMS was originally designed to communicate billing information to mobile telephone customers. Hence, a technological application that was designed to perform business-to-customer communication transpired to be a popular means for consumer-to-consumer interaction. Likewise, mobile telephones are used like fixed phone devices in rural South Asia (Dey et al., 2011).

It is useful to understand the appropriation process to identify and analyse the contextual aspects of technology use in a particular setting (Jones and Issroff, 2007). The current literature offers theoretical models for technology appropriation (Carroll et al., 2003; Dey et al., 2011; Isaac et al., 2006) by identifying the factors that lead to this process. Technology appropriation is influenced by both macro-environmental factors and individuals' skills and abilities. Social/organisational systems and practices (DeSanctis and Poole, 1994; Horst and Miller, 2006; Orlikowski, 1992), user-end improvisation (Chakraborty, 2004; Cheneau-Loquay, 2008; Donner, 2007) and experience and knowledge (Isaac et al., 2006; Jamison and Hård, 2003) all contribute to the appropriation process. While it is understood that dual and reciprocal relationships between technology appropriation, macro-environmental factors and individuals' experiences, expertise, backgrounds, knowledge and creativity influence

appropriation, it is also important to identify and assess how user communities collectively embrace appropriation. In an organisational context, the appropriation process is facilitated by individuals' activities, formal structure and collegial support and cooperation (Draxler et al., 2012; Fuller and Dennis, 2009). Communal interactions play a major role in technology's social appropriation in developing societies, who normally have a strong collectivist culture (Dey et al., 2013; Kapuire et al., 2010).

The concept of disappropriation discussed by Dey et al. (2013) and Carroll et al. (2003) also needs to be revisited. Technology use is neither a monolithic nor a mono-dimensional phenomenon; it involves both appropriation and disappropriation. As technology spans different communities, cultures and societies, they might not have a stable and fixed form of use, interpretation and value system, indicating that socio-cultural appropriation is central to the adoption of the diffusion process. However, the current literature lacks theoretical scaffolding in conceptualising technology appropriation at a macro level – particularly in a more collaborative manner that transcends organisational boundaries.

### **Co-creation: intra and inter-organisational dynamics**

The co-creation of value is also closely related to the concept of the co-creation of knowledge, ideas and design. The co-creation of knowledge is defined as an integrated process of the creation of knowledge (Mauser et al., 2013). However, the current scholarship lacks the empirical evidence and theoretical scaffolding that can explicate the process and outcome of knowledge co-creation. Therefore, we seek to explore the literature on co-creation in general (Grönroos and Voima, 2013; Dey et al., 2016). The concept of co-creation and its value-laden outcome is considered as a result of interaction between a subject and an object; the subject-object relationship is relativistic and depends on contextual variables (Holbrook, 2006). The use of digital technologies is re-defining business models. Internet users are changing the concept of traditional marketing, through involvement in the process of the creation and the co-creation of ideas, knowledge and value in virtual and physical spaces (Eikhof, 2014). Developing economies are using new methods of communication and technologies to incubate learning and knowledge within networks and to create value through innovation and are aggressively attracting the new 'creative class' to drive creativity. The concept of co-creation has drawn significant attention in management and marketing literature in recent times.

Prahalad and Ramaswamy (2004) challenge the traditional value chain concept and argue that all parties involved in the production and consumption processes exchange resources and ideas to create value and, hence, value creation is not the result of producers' endeavours alone. This is also argued by Vargo and Lusch (2008), who suggest that customers are involved in the value creation process. Although one of the fundamental assumptions of service dominant (SD) logic (Vargo and Lusch, 2008) is based on the co-creation of value, more recent scholarly works (Heinonen et al., 2013) have criticised the notion due to the lack of emphasis placed on consumer-led value creation. Heinonen et al. (2010) propose consumer driven (CD) logic to highlight the fact that value creation is multi-contextual and depends on the dynamics of consumers' lives and ecosystems. Saarijärvi et al. (2013) suggest that customers should not be viewed as passive targets of marketing activities, but as active operant resources that can create value. It is argued that, by involving customers in the product development and innovation processes, marketers can enhance their product value.

Nevertheless, value co-creation still remains an elusive concept. While scholars in this field hold different opinions regarding the nature and modality of co-creation, existing models (Chen and Nath, 2004;) offer a wide range of perspectives on this process. Nevertheless, co-creation needs to be considered as a non-linear and dynamic process (Dey et al., 2016; Romero and Molina, 2011). Rather, the co-creation process is collaborative and co-evolutionary by nature. Romero and Molina (2011) argue that organisations create the constellation of networks together that co-creates ideas, knowledge and value. Our research receives theoretical motivation from this dynamic and iterative nature of the constellation of networks that co-creates knowledge.

In this paper we seek to address the issue of the co-creation of knowledge by exploring how online user communities support the use and appropriation of smartphones and other mobile applications, independent of the firms' involvement. We study the way in which creativity is stimulated by the users themselves and we characterise the process of co-creation and co-production of ideas, solutions and inventive ways of using technologies within the user communities. The paper's broad aim is to contribute to theory in this field by strengthening our understanding of the contribution of on-line user communities in relation to the development of creative digital technologies and knowledge management. We focus this research, empirically, through a study of the ways in which users' creativity is mobilised in smartphone development and enhancement, focussing on the central technological artefact, the smartphone itself, as well as the various applications running on smartphone devices.

## **1. Methodology**

VE has been used to seek convergence regarding the conclusions for the case used. The VE technique augments and enriches the data, as well as offering an opportunity for triangulation. It is regarded as a valuable instrument in revealing the unfolding of practice (Ljungberg, 1997). The analysis of community member interactions and problem-solving processes in social media, blogs and chat rooms is an exciting new method for which we have had to develop new analytical tools. This provides greater validity for the constructs identified through the interviews and strengthens the internal validity and reliability of the research design (Hein, 2000). The main goal in identifying detailed patterns of interaction is to develop a better understanding of how interactions in the virtual world facilitate smartphone use and appropriation in daily lives.

In this research we observed participants in social media based groups, blog forums and chat rooms. This can be regarded as a form of 'lurking' (Nonnecke et al., 2006) that does not rely on direct interactions between the observer and the observed but focuses on the interactions amongst the members in the public space. However, in order to clarify some of the issues that popped up during the observation, brief and informal interviews were conducted with concerned individuals. During the observation, we chose not to intervene with our own opinions or offer any indication. Rather than waiting for a particular release, we decided to glimpse into the virtual system's functioning in order to gain insights into the community's implicit rhythm.

The following table provides a summary of the social media groups, blogs and chat rooms that were accessed for this research.

## **TABLE-1**

The groups were chosen on the basis of the number of followers and their recent activity levels. There are many groups with thousands of members, but they appear to be not very active and, hence, are not very useful for this research. At the same time, it was important to notice the member engagement levels in each of these groups. The Facebook groups chosen for this research have formidable member engagement. The same notion is applicable for the blogging sites. While the public groups were mostly identified and located through Facebook and Google searches, the closed groups were referred to by the members in the open groups. It is relevant to mention that obtaining access to closed social media groups or chat rooms was not very easy. The authors had to send join requests and were often denied access.

All the excerpts collected from online sources were put into NVivo for analysis. Thematic coding (Boyatzis, 1998) was used to analyse the data that involved identification and classification of themes, with a view to eliciting communal interaction in social media and the resulting impact on people's smartphone use. While some of the codes were theory driven, others were data driven, as in previous scholarly works (Chen et al., 2011; Dey et al., 2013; Fereday and Muir-Cochrane, 2008). Accordingly, data are interwoven with theory: while the data generate 'facts' that reflect contextually-embedded 'events', the theory organises these 'events' into meaningful patterns or sequences. Data analysis was simultaneously conducted along with the data collection.

A priori themes were used to identify the groups, hashtags and sites. For instance, the literature review shows that missed call is an example of appropriation and it was, thereby, used as a code. Contrarily, through Facebook groups it was found that 'forking' is increasingly becoming popular. The term was eventually looked up on Twitter, with a hashtag, for further research and was used as a code. This back and forth movement between theory and data enables data interpretation based on the earlier empirical findings while highlighting the processual nature of the methodology chosen. At the same time socio-political history and background information were taken into consideration while analysing the data. Through establishing these links between community activities and structural shifts, we hope to open the processual black box and to make more meaningful interpretation of people's interactions in virtual space.

## **Findings**

### **Social media and adoption of smartphones:**

The VE study offers a detailed account of people's intentions to adopt various information and communications technology (ICT) applications, including smartphones. It is understood that there is a growing awareness regarding the product and design attributes of digital technologies in the form of smartphones amongst the South Asian population.

A recent product marketing campaign by Apple resurrected the iPhone 4 for India, Indonesia and Brazil. Price sensitive customers welcomed this measure and the iPhone consumer base in India subsequently doubled. However, the quality-conscious consumers suspected that the quality might have been compromised. Twitter posts reflected the initial optimism and subsequent scepticism among different consumer groups:

*“Apple restarts #iPhone4 production for #India, that's a 'revolutionary' step AHEAD”.*<sup>2</sup>

This year Apple announced a big price cut to iPhone4 .... They knew then they weren't going to update it to iOS 8. Bogus!<sup>3</sup>

Hence, people differ in terms of their opinions and perceptions of smartphone offers and not everyone appreciates generous price reductions. There are also differences in the nature and extent of use: one group is capable and expert in using multi-faceted and complex technologies, such as smartphones, while the other group might have limited knowledge and expertise in their use. However, they co-exist and interact with each other through physical and virtual networks.

Social and normative influences can be attributed as reasons behind smartphone adoption by South Asian communities, who have an inherent collectivist orientation and tend to appreciate social and communal bonds. Influences from friends, family members and colleagues on individuals' decision-making processes are, therefore, a common phenomenon. However, the widespread use of social media and virtual communities has expanded the nature and scope of social interactions. People now have more opportunities to learn about new products and innovations through social media, which complements their knowledge gathered from the physical world. This influence not only works on the adoption decision, but it also has a huge impact on people's actual use of the technologies.

#### **Use and appropriation of Smartphones:**

As discussed earlier, there are less privileged users in South Asia, as in many other developing countries, who have limited knowledge, expertise and financial means to adopt and/or use smartphones. Hence, the vast majority of the South Asian population might not be able to buy smartphones and, even if they do, their adoption does not guarantee full and maximum use. Situational creativity and contextual smartphone use in this regard could be interesting to note.

'Jailbreaking', an activity through which users break the operating system to gain root access and to install applications that have not been approved by the mobile phone company (Salerno et al., 2011), enables them to apply creative means to ensure contextual and customised use. Smartphones, tablets and game consoles usually have a layer of Digital Rights Management (DRM) software, which determines which software can be run on them. Jailbreaking hacks these devices to bypass DRM restrictions, allowing users to run software not authorised by the original designers and to make changes to the operating system. Hence, jailbreaking offers users greater control over their devices. In doing so, it enables them to remove Apple-imposed restrictions and to install apps and other content that are not available in the official Apple App Store. Malpractices, such as downloading pirated music and apps, have made jailbreaking a controversial mechanism, although the process itself is not illegal. The process has been widely appreciated by liberty-seeking users who prefer to have a wide range of apps on their smartphones.

Jailbreaking has gained popularity in South Asian countries, particularly among younger users. Closed Facebook groups and IRC networks are often used to exchange opinions and expertise on jailbreaking. Small businesses operating in high streets take this opportunity to spread their service information on social media. The following excerpts offer a snapshot of such discussions:

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<sup>2</sup> Tweeted on 7<sup>th</sup> February, 2014

<sup>3</sup> Tweeted on 3<sup>rd</sup> June, 2014



*“Member-1: I have jailbroken an iPhone 3GS set. I downloaded iOS, set it up, then changed language and location. However, I cannot select the network. I need some help asap<sup>4</sup>.*

*Member-2: Please follow the instruction on this video and let me know if you have any further difficulties. <https://www.youtube.com/watch?v=8KmwoB7ggWI&hd=1>. Alternatively, please visit our business located in the second floor of the Bashundhara market<sup>5</sup>.*

*Member-1: That’s quite helpful. Thanks a lot.”*

Jailbreaking is also applied to decode iPhone sets in order to use them across borders. A large number of migrant workers from South Asia live and work in the Middle East, Europe and North America. The familial and collectivist ethos and practices in South Asian countries encourage these migrant workers living abroad to offer gifts to their friends and relatives back home. After spending time working and/or studying abroad, people return to their native countries with their mobile devices, along with other possessions. Hence, a lot of smartphone sets are brought to South Asian countries by these consumers and. Often, the country codes of these sets need to be broken for local use. The following tweet from a British Pakistani demonstrates this interesting culture:

*“Why do my cousins from **Pakistan** always ask me to send them an **iPhone**? I don't get this”.<sup>6</sup>*

Further evidence of the use of jailbreaking and country code unlocking can be obtained in the following conversation in a closed Facebook group (for iPhone users):

*“Member-1: “pls<sup>7</sup> help: one of my Friends sent iPhone 5 from USA, but it’s unlocked and it has TMobile SIM card. How can I unlock the iPhone and where?? At present I am in Chittagong<sup>8</sup>.”*

*Member-2: Please contact Mr. ‘X’ (his Facebook profile page enclosed).*

*Member-1: Thanks*

*Member-3: I did it a while back from ‘Y’ shop, located at ‘Z’. They are very helpful.*

*Member -1: Thanks.”*

Like jailbreaking, open source software innovators use ‘forking’ to develop new applications or changes to the existing software codes. In a closed IRC group, the following chat shows application developers’ interest in ‘forking’.

*“Member 1: .... indeed, constant refactoring keeps the code nice :D<sup>9</sup>*

*Member 2: With forking you are not resolving the problem. The issue is that there is no agreement on how to create the API*

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<sup>4</sup> As soon as possible

<sup>5</sup> A famous retail centre in Dhaka, Bangladesh

<sup>6</sup> Tweeted on 10<sup>th</sup> May, 2013

<sup>7</sup> Pls - please

<sup>8</sup> Bangladeshi port city

<sup>9</sup> ‘:D’ is used to express a ‘smiley face’

Member 3: So the problem remains

Member 4: (@Member 2): temporary fork to push patches we need and forking harder. *I'm not complaining though.*"

One of the most common iPhone use-related problems noticed on social media is battery drainage. Some of the tweets and Facebook posts reflect users' frustrations regarding their phones' battery life:

*"My phone's #battery ends quicker than #Pakistan's batting innings"*<sup>10</sup>

However, social media also offer solutions to these battery problems. The following conversation has been noticed on a Facebook group:

.....

Member-1: I am struggling with battery draining on my iPhone 4.

Member-2: Oh I see. You can try the Power Bank.

Member-1: what is that?

Member-2: It is an extra battery that looks like an iPhone cover.

Member-1: Where can I get it from?

Member-2: You can get it from shop XYZ<sup>11</sup>. The price ranges between INR<sup>12</sup>500 to INR 3000

.....

Product and use-related information is also disseminated through large companies' community blogs and discussion forums. The following excerpt shows how an Indian user receives an answer to his/her queries regarding iPhone use in India.

"Member: I want to buy iPhone in USA from Apple store. Need to buy this for my brother in India. Will I receive international warranty on the device? Will I have any other issues like charger socket difference in India?"

Webpage administrator: The warranty is country specific. If you buy in the USA the phone will need to be returned there for warranty issues. You can buy the phone in India, <http://www.apple.com/in/buy/>

In addition to more country-specific troubleshooting queries, the discussion forums offer general use-related guidance. Often these forums offer platforms for C-2-C<sup>13</sup> interactions. Although these appear to be C-2-C, further probing has revealed that small entrepreneurial groups have emerged who take to social media as freelance support businesses in small South Asian towns. In a supposedly C-2-C forum, the following suggestion came from another user, unlike the previous example when the forum administrator offered advice.

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<sup>10</sup> Tweeted on 8<sup>th</sup> November, 2013; 'batting innings' is a term used in Cricket

<sup>11</sup> The name of the shop has been concealed

<sup>12</sup> INR – Indian Rupees; 1 USD = 62INR on 29<sup>th</sup> September, 2014

<sup>13</sup> Customer-to-Customer

*“Member-1: .... same problems here in India. The Wi-Fi button of my iPhone 4S is frozen and I can't connect with our router anymore.*

Member-2: I found an article online that had some fixes listed and it worked. <http://m.digitaltrends.com/mobile/ios-7-problems/>. Nevertheless, if you have further problems do not hesitate to contact me in this group.”

User-led innovative measures revolutionised writing in Bengali on the Internet. The Avro Keypad<sup>14</sup>, invented by some Bangladeshi university students in the United States (US), is a tool to write in Bengali. The advantage of Avro over the more traditional and expensive Bijoy software is its application of phonetics. Users can quickly learn Bengali typing by using the English-to-Bengali Phonetic method. Subsequently, Google introduced similar software for typing Bengali on the Internet, which is now also used on iPhone and Android devices.

### **Knowledge co-creation:**

Our findings have identified that social media-led interactions encourage and support knowledge co-creation by sharing three major aspects of adoption and consumption: dissemination of market and product information, user-end adaptation and creativity and troubleshooting.

In effect, these three components create and potentially enhance the value-in-use. Social media-led interactions inform consumers regarding new innovations, product availability and prices and support the diffusion of innovation and product marketing. Creative means, in the form of open source solutions and jailbreaking, enable consumers to overcome manufacturers' imposed limitations and facilitate product adoption and use. Likewise, small and medium businesses developed locally can support user experience by offering troubleshooting services. This is particularly useful in developing country contexts, where top multinational companies have limited after-sales services.

The following table summarises the value co-creation components and their outcomes.

## **TABLE 2**

### **Discussion**

Effective use of a technology and its subsequent impact on social and organisational developments are achieved through the mutual shaping of technology and human agents, resulting from their iterative interactions in a given context (Donner and Tellez, 2008; Orlikowski and Iacono, 2001), also known as appropriation. Our findings link social appropriation of technology and knowledge co-creation, as we demonstrate how digitally-enabled social media and virtual communities lead and facilitate the smartphone adoption, use and appropriation in South Asian countries. Based on these findings, we seek to expand on the existing literature on creative economy (Dhanasai and Parkhe, 2006; Jeppesen and Laursen, 2009), technology appropriation (Carrol et al., 2003; Dey et al., 2011) and co-creation (Pralhad and Ramaswamy, 2004; Payne et al., 2008) by analysing how social media, in the form of Facebook, Twitter and YouTube, and chat rooms and virtual communities built around these media, enable users to share their creative ideas, raise queries and gather information and knowledge, which not only expedites the diffusion of innovation in the community but also guides them on their effective use.

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<sup>14</sup><http://avro-keyboard.software.informer.com/>

Maicas and Sese (2015) argue that obtaining information can be extremely difficult and pricy for fast-growing volatile markets. We identify that the digitally-enabled exchange of information between consumers and small businesses offers an opportunity to overcome the market frictions.

Here, the underlying assumption is that virtual communities and social media offer a platform and interaction mechanisms that would not otherwise have been possible. The research findings lead to a model of smartphone appropriation in the South Asian context (Figure 1, as seen below) that illustrates the flow and interrelations between various factors and agents during adoption, use and socio-cultural integration. The following major steps are involved in this process.

**A) Exchange of information between large commercial organisations and virtual communities:** The notion that concerted efforts from large and medium enterprises are directed to engage with the customer community through social media is quite natural and predictable and has also been adequately explained in existing literature (Michaelidou et al., 2011; Saravanakumar and Suganthalakshmi, 2012). In contrast, companies have been warned of potential difficulties and negativities resulting from social media-led customer interactions (Tsimonis and Dimitriadis, 2014). Our findings concur with these paradoxes and highlight why large companies should meticulously monitor virtual communities and various social media. The paradoxical comments on social media regarding the re-launch of the iPhone 4 in India can be mentioned here to underscore the difficulties that large multinational companies might face while operating in a dual economy that has a skewed distribution of wealth and income. While the iPhone 4 price reduction resulted in an increase in sales volume in India, with the bottom end of the market being more likely to appreciate this move, there was also an outcry from the more brand-sensitive customer segment that comprises of more solvent and/or more brand-conscious users. Subsequently, Apple's management had to respond to the negativities surrounding the price reduction and they called off the campaign. Hence, stereotyping the consumer psyche and market dynamics of an emerging economy can be counter-productive. Furthermore, social media is increasingly becoming a place for dialogue and interactions between large companies and user communities, benefiting both parties. On a positive note, large companies can disseminate product and price information, generate a positive 'vibe' and build corporate image through social media, which is widely accessed by digital natives in South Asia.

**B) Social media's roles in supporting smaller businesses and individuals' capacity building:** Existing academic literature shows that rapid diffusion of mobile telephony in developing countries gives rise to supporting businesses (Cheneau-Loquay, 2008; Dey et al., 2013). We have identified a new dimension to this phenomenon as SMEs resort to social media to promote their businesses. Some of these businesses are initiated to address user-end problems, which large mobile telephone companies often do not normally undertake. The application of 'jailbreaking' to break the country code of foreign-made smartphone sets is a fascinating example of how users find their own way to circumvent the limitations and difficulties of using a phone with or without direct support from the original designers. As mobile telephone accessory shops offer such services, we gain an understanding of how the socio-economic practices and enterprises of a community revolve around new innovations and receive support from social media. More recent scholarly work (Parmentier and Mangematin, 2014) demonstrates how large companies can engage with customer communities for co-production, as the boundary between producer and consumer is now

becoming blurred. However, there is limited evidence of empirical works explaining customers harnessing their resources and networks to use and appropriate technologies, as suggested by Dey et al. (2013). Concurring with their arguments, we further add that the role of SMEs in supporting both customers and large companies should not be ignored. Particularly in emerging economies, their contribution to creative industries is immense.

Furthermore, virtual communities and social media have direct influence on individuals' skills, knowledge and expertise, as more and more people these days resort to Facebook groups, Twitter and blogs for troubleshooting and finding solutions to user-related problems. By expanding on the existing literature (Usoro et al., 2007), our findings demonstrate that these communities and social media offer information on where to get smartphone accessories and quality products at reasonable prices and can be particularly crucial in markets that are fraught with counterfeit products, variable prices and high transaction costs and for consumers who might not have the requisite product knowledge. Individuals' capacity building also leads to communal expertise, as people share their experiences and ideas on social media and help each other.

**C) Appropriation of smartphones leading to value co-creation:** Patel and Haon (2014) argue that value creation and value appropriation mechanisms affect technology's market acceptance. However, adoption and acceptance do not always guarantee continuous or effective use and a technology needs to be integrated into the socio-cultural context if it is to make contributions to a community's socio-economic spheres. We argue that the value creation and appropriation should be examined over the entire period of a technology's use. We have noticed that social media-led interactions eventually contribute to the diffusion of innovation and contribute to socio-economic practices. The creative means, in the forms of forking, open source software, miscall and jailbreaking, support the situated and contextual smartphone use.

Here, we make a significant advancement to existing literature on value co-creation. The DART model suggested by Prahalad and Ramaswamy (2004) does not take into account user-led innovation and adaptation. Our research particularly emphasises the simultaneous and spiralling flow of adoption and adaptation that not only appropriates the technology with a socio-cultural context, but also provides, creates and enhances the value-in-use. We would also like add to Payne et al. (2008) by suggesting that value co-creation is not a dyadic interrelationship between marketers and consumers but, rather, there are more complex relationships involving consumer-to-consumer and consumer-to-other businesses. In a more recent review of literature on value co-creation, Ranjan and Read (2016) have combined the co-production with the experience of value. However, we argue that value co-creation is not a mono-dimensional process but, rather, it needs to be examined as an iterative and spiralling phenomenon, as demonstrated in Figure-1.

**D) Contribution to the creative economy:** While positivist research has identified trust, cognitive proximity and social capital influence on organisational innovativeness (Parra-Requena et al., 2015; Filieri et al., 2014), we argue that it is important to analyse the complex dynamics and iterative interrelationships between various agents within the broader socio-economic structure that not only encourage innovation within an organisation, but also fosters an industry's creative development. We argue that the diffusion of innovation and subsequent contribution to the socio-economic development would also encourage new product development ideas. Innovation and creativity at the organisational level can hugely benefit from such influence. A better understanding of the market dynamics can enable an organisation to explore opportunities through mutual exchange of ideas and support, as

suggested in the existing literature (Burger-Helmchen and Cohendet, 2011). However, we demonstrate that the complex interactions within digital environments resulting from the diffusion of innovation can also enable organisations to obtain new product development ideas and/or to alter existing marketing strategies. This effectively closes the loop and shows that innovation on both sides of the market spectrum can help each other and lead to more sustained growth for creative economies.

## FIGURE-1

### **Theoretical contribution:**

This paper gathers three apparently distinct concepts to build a holistic understanding of the co-creation of knowledge through social media appropriation. While existing literature (Gold et al., 2001) mostly emphasises organisations' processes and infrastructural capabilities, we argue that the operationalisation of those factors is dependent upon the situated capabilities and creativity of actors involved in the information and knowledge management process. Resource-constrained SMEs rely on the shared understanding of multiple parties and their mutual collaboration. In doing so, the cultural and organisational barriers in knowledge creation, identified as major impediments in knowledge creation (Long and Fahey, 2000) can be overcome through symbiotic interactional support between various parties within the process.

Nevertheless, the relationships between the parties in the real world are neither monolith nor idealist. In effect, the quintessential interrelationship transpires to be dichotomous, competing and often self-destructing, calling upon the need to assess the process in a dialectic manner, which has not been properly articulated in knowledge management and co-creation literature. While structural properties are considered as a facilitating and inhibiting factor for information management and knowledge management literature, we argue that the fluidity and flexibility of structural relationships is also dependent on how individuals and organisations choose to adopt and adapt new technologies.

Social media offers a new stage in this regard by widening the platform of interaction and loosening the structural bondage – as all parties within the system enjoy flexibility in seeking, creating and disseminating knowledge. This is different from intra-organisational knowledge management systems (KMS) (Wang et al., 2014). Our findings complement and advance the work of the likes of Khodakarami and Chan (2014), who emphasise the simultaneous influence of collaboration and externalisation as central to customer relationship management (CRM) success. Founded on the resource based view (RBV) perspective, Irani et al. (2017) suggest that the collaboration and interaction offered by social media and Web 2.0 encourage product design. However, our research provides a more dynamic process that goes beyond the realm of product design and underpins how products can have extended lives through the mutual shaping of ideas and troubleshooting in non-standard environments where customers and support businesses lack resource, expertise and capabilities. Here, our empirical findings lend themselves to the formulation of conceptual scaffolding as we exhibit the organic, symbiotic and dialectic interrelationships between various resource-constrained parties in developing societies that lead to co-creation of knowledge.

## **Conclusion:**

This paper makes a significant contribution to the current understanding of how creative economies in developing countries can benefit from the co-creation of knowledge. It presents a robust model that explicates how creative industries can benefit from the social media-led market dynamics in South Asia. Although some of the issues and findings presented and discussed in this paper are context specific, there are several general issues that transcend geographic and contextual boundaries. For instance, troubleshooting and user-end innovation are common in other contexts. However, the importance of troubleshooting can be more crucial in developing countries' contexts, as large smartphone manufacturers have limited reach and after sales services in most parts of developing countries.

Based on our findings, we argue that digital technologies are neither a magic solution nor are malleable to individual or collective dominance. Rather, the contextual and reciprocal influence between the technologies' individual users, SMEs and/or their communities shapes their use and creates value. It is also understood that social media not only spreads micro-level innovation, skills, knowledge and experience to the wider public domain, but also offers a platform for collaborative learning, creation and dissemination of those skills, knowledge and expertise.

Adaptation and user-end innovation can be monitored through the use of social media. Furthermore, regular and interactive dialogue between customers and organisations is imperative for new product development and alteration of existing products and services. For instance, the wide use of jailbreaking in South Asian countries is an indication that customers are willing to exercise freedom, innovation and adaptation. In response to this practice, Apple have incorporated various apps into the iOS to discourage jailbreaking efforts.

South Asia has entered into a crucial stage of its development. Digital technologies can effectively contribute to the enhancement of the quality of life and business expansion if they are properly appropriated in local contexts. Correct and collaborative policies at the government level, in addition to individual and organisational innovation and creativity, would be instrumental to the sustainable success of creative industries.

The current paper provides exploratory and indicative findings that could be further investigated in country-specific contexts in South Asia and beyond. The VE-led findings of this research can be triangulated with data from other research methods to provide a better and deeper understanding.

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