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Towards Sustainable Base of Pyramid Market: Role of ICTs in Shared Innovation

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ABSTRACT

The purpose of this paper is to make a systematic review of the literature on role of Information and Communication Technologies (ICT) in sustainability of the Base of the Pyramid (BOP) markets by studying the impact of ICT on innovation development at BOP. BOP markets are those segments of the global markets that have an income of about two to four dollars or less and are untapped fortunes for the business (Pralhad, 2002). BOP is fraught with dearth of infrastructure and resources which make it hard for business firms to work out viable and sustainable strategies as the separations between the producers and end users are much wider in these markets compared with developed markets. Use of ICT helps reduce these separations by developing shared innovations with the people at BOP. Systematic literature review approach has been adopted to analyze the peer-reviewed journals for the period 2000 to 2019 using Google Scholar and Science Direct. BOP, ICT and Shared Innovations were the key words used in this search. Our findings suggest that ICT has significant role in development of shared innovations at the BOP markets as it bridges the physical market separation with its internet and web-based networks. This research has implications for business managers, as it will guide them in making viable and sustainable strategies to run their businesses in these huge un-tapped markets.

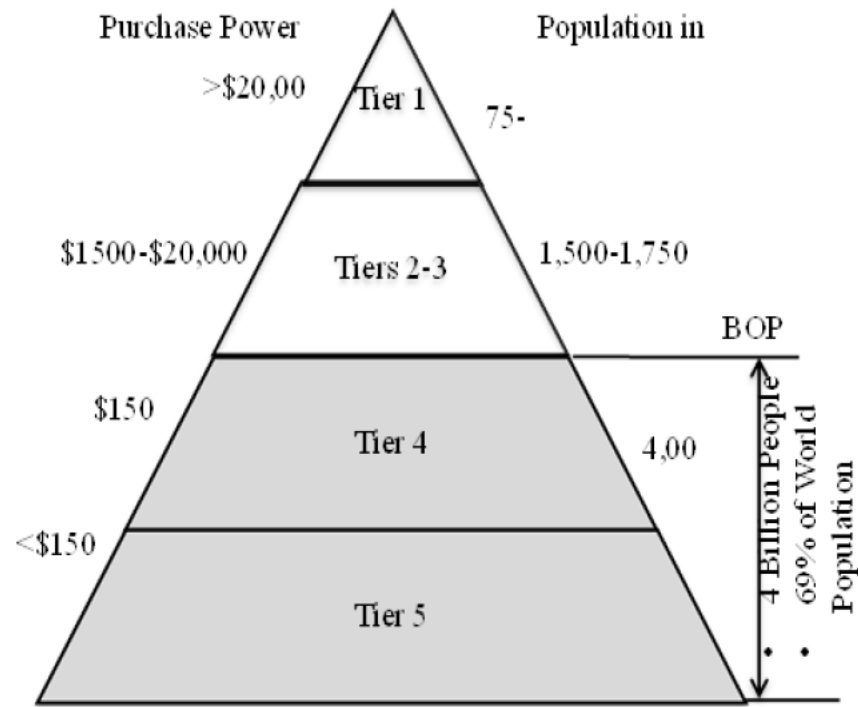
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1. Introduction

The split of global markets may be depicted in the shape of a pyramid with affluent people at

the top and people with daily income less than \$2 at the base. This base of the pyramid constitutes a huge market of over 4 billion people which has been neglected by business firms (Prahalad, 2002). (Ahmed et al., 2015) have classified the market pyramid in 5 Tiers based on the earning per person per month: Tier-1 with > \$ 20,000, Tier-2-3 from \$1,500 to 20,000, Tier-4 \$ 150-1500 and Tier-5 < \$ 150. Tier-4&5 contain the BOP market which has the largest share of 69% of the whole world market. The BOP markets, though neglected, have huge hidden business potential that can be explored and tapped.



Inclusiveness in the supply chain linkages to make successful business operations in BOP is hindered by lack of infrastructure, that leads to the aggravation of market separations, and ICT make up for this lack of infrastructure and reduces the separations by building supply chain linkages through ICT enabled innovations which are shared with the members of supply chain both downwards and upwards (Tarafdar & Scott, 2012). This paper will explore the existing literature to address the following key questions in this regard.

- What are shared innovations and what is their significance at BOP?
- How ICT can contribute to the development of shared innovations at BOP?
- How shared innovations and ICT are linked with sustainability at BOP?

BOP is a huge market and most of the Multinational Enterprises (MNEs) and business firms who were traditionally operating in conventional markets i.e., top of the pyramid (TOP) are turning to BOP due to saturation of markets at TOP. This research is very significant for such firms as it will help them align their business strategies.

2. Literature Review

2.1 BOP Markets

BOP has gone through number of iterations over time in literature: BOP 1.0 which was coined by Prahalad declaring it as an untapped fortune of potential consumers, BOP 2.0 in which people at BOP were considered as the producers, BOP 3.0 in which element of sustainability was incorporated with poverty alleviation and environmental preservation included in the BOP strategies, BOP 4.0 in which it was stressed that role of BOP strategies should be that of enabling to facilitate the people in preserving their indigenous skills and technologies (Borchardt, Ndubisi, Jabbour, Grebinevych, & Pereira, 2020). Zhu, Wei, Bao, and Zou (2019) have developed a new construct, BOP Orientation which is defined “*as the organizational capability to serve the needs of BOP consumers based on a thorough understanding of their unique characteristics*” stressing the need for inclusive policies for a business to succeed in a BOP market. Sustainability aspect of the BOP is also very critical as people at BOP resist to adopt the product which pose a threat to their environment and customs, therefore, the marketers should avoid to include such elements in their business plans (Zhao, Cavusgil, & Zhao, 2016). 4As model comprising of Availability, Affordability, Acceptability and Awareness has proved to be very effective in rolling out new products in the BOP markets, this model incorporates the local determinants of the BOP to make such products click in these markets (Reynoso & Cabrera, 2019). For successful BOP venture, a win-win approach is must for the firms to have with people at BOP so that maximum out can be extracted from the scarce resources available at BOP (Reynoso & Cabrera, 2019). Sheombar (2010) finds that the firms operating in BOP must align three major elements of their business to have inclusive operations of their business namely: strategy, partnership and products (Sheombar, 2010). For inclusiveness in BOP ecology should consider four approaches: a multi-factor approach be preferred over top-down approach, social embeddedness be ensured, service co-creation approach and multi-dimensional value creation approach (Letaifa & Reynoso, 2015). Esko, Zeromskis, and Hsuan (2013) finds that the BOP business plan should be a top-down plan with involvement of all the stake holders down the line with co-creation of value in the form of an integrated value chain. Sustainable supply chain management strategies complement social, economic and environmental dimension of the BOP ecology (Gold, Hahn, & Seuring, 2013). Goyal, Sergi, and Kapoor (2017) establishes that the collaborative features of the ecology at the BOP support the social entrepreneurship in the BOP markets. Aggressive promotions by the marketers incite the people at BOP to go for the purchase of aspiration or luxury goods from the limited disposable instead of spending the same on the necessities of life. The people at BOP are very conscious of their status as they have an inbuilt desire to match the lifestyle of upper middle and upper class, and this desire makes them spend heavily on the aspiration goods (Srivastava, Mukherjee, & Jebarajakirthy, 2020). Bricolage innovation is the concept of development of innovations to meet the challenges of constraints by recombination of available resources, firms can use this approach to develop customized products for the BOP consumers in a cost-efficient manner (Witell et al., 2017). Marketing orientation theory encompasses identification of consumer needs and wants to develop marketing and product strategies to satisfy these needs and wants (Gotteland, Haon, & Gauthier, 2007). (González-Benito, González-Benito, & Muñoz-Gallego, 2014; Kapur, Dawar, & Ahuja, 2014; Yang, 2018) have presented their works on market orientation and bricolage innovations in low income economies following the similar approaches. People at BOP, if engaged with entrepreneurs in the firms operating at BOP, readily adopt the innovations and contribute to the sustainability (Joncourt et al.). Kolk, Rivera-Santos, and Rufín (2014) have concluded that focus of BOP is not restricted to MNE only, rather, they added three aspects to this concept: BOP context has moved from consumption to production and entrepreneurship, BOP initiatives are being taken by small firms and local business instead of MNEs, outcomes of BOP initiatives have been diversified to

include the economic, social and environment aspects of Triple Bottom Line (TBL). The main purpose of BOP strategies should not be to exploit the consumption, rather they should focus on people development by developing people oriented products and services, which should create job and business opportunities to benefit the local people so that they could lead a more human life (Arnold & Valentin, 2013). Beninger and Robson (2015) posited that word of mouth (WoM), mobile marketing, social marketing and emotional marketing will be part of marketing strategies and enhance understating of the business dynamics at BOP. Business design models of top of the pyramid market (TOP) are driven by solution oriented strategies, whereas the designs at BOP are driven by problem oriented strategies (Jagtap et al., 2014). Reverse logistic could lead to value creation for the poor's financial benefit as well as for the environmental sustainability (Brix-Asala, Hahn, & Seuring, 2016).

2.2 Shared Innovations

Innovation is something that is new to an individual, group or an organization, and it should be aligned with the settings to make it acceptable and inclusive (Zhu et al., 2019). Dimensions of inclusive and shared innovation are: the innovation relevance for BoP firms, innovation involvement with BoP firms, innovation benefits for BoP firms (Siddiqui & Othman, 2016). Adeola and Anibaba (2018) has identified five factors that impact the diffusion and sharing of an innovation: "relative advantage", "compatibility", "complexity", "trialability", and "observability". Anderson and Billou (2007) has also classified four key factors for firms to include in their business strategies for rolling out their new product and services, these are: "availability", "affordability", "acceptability" and "awareness". These factors will facilitate the sharing of innovations in people at the BOP. Anwar, Zaman Khan, and Ali Shah (2020) have operationalized Innovation on four dimensions: Product innovation, Process innovation, Marketing innovation and Organization innovation. Methodology for measurement of "shared innovation outcomes" will be adapted from previous works (Anderson & Billou, 2007; Anwar et al., 2020; Irani, Arvanitis, Loukis, & Diamantopoulou, 2013). (Lehikoinen et al., 2018) has combined both the commercial and social aspects of serving the BOP markets. They have employed the 4A model of (Anderson & Billou, 2007) in explaining to the MNCs how they can make their products or services available, affordable, acceptable and make the people at BOP aware of it from a commercial perspective. From sustainable social perspective, they have used the triple bottom line (TBL) framework of people, planet and profit (Elkington, 1999) to make the MNCs realize that their business plans should support the BOP markets in poverty alleviation and sustainability also. These studies are in line with the works of Anderson and Billou (2007), Witell et al. (2017) & Fernandes, Mason, and Chakrabarti (2019). Customer integration in supply chain leads to customer orientation and inclusiveness in innovation development in products as well in processes of the supply chain linkages (Ku, Wu, & Chen, 2016). Social innovations cannot be implemented in the subsistence or BOP markets without bringing about the institutional change. Institutional theory implies that facilitated institutional changes in the local communities for implementation of the social innovations by the social enterprises are indispensable (Venugopal & Viswanathan, 2019). As per (Ilyas, Rasheed, & Faiz, 2020), institutions are social structures composed of norms, values, symbols, regulations and principles that bring meaning to life and institutional changes are dynamic, and they evolve over time and have jurisdiction at different levels from macro level, in global and societal perspective, to micro level in interpersonal perspective. (J. L. Chen & Lee, 2017; Dembek, Sivasubramaniam, & Chmielewski, 2019) have also made similar studies employing institutional theory for adoption of innovations in the BOP markets. BOP orientation has positive relationship with firm performance indicating that the firms who adopt the bop market orientation policies have better financial performance. Due to limited resources and low disposable

income of people in BOP, the firms developing innovations with bricolage strategies perform better as bricolage innovations mediates the relationship between BOP orientation and firm performance (Zhu et al., 2019). BOP model should gradually evolve from interim models to the final business model by embedding the local context in the model by interacting with the pull / push forces of the local market (Ausrød, Sinha, & Widding, 2017). Based on the protection motivation theory, Zhu et al. (2019) argue that threat and coping appraisals of the BOP people lead them to adopt the environmentally sustainable behaviors and greener strategies. Social enterprises can perform financially well by adopting good business models if the institutional environment around them in the BOP is conducive for inclusive businesses (De Beule, Klein, & Verwaal, 2020). Co-entrepreneurship by having inclusive supply chain system covering distribution and customer service systems tailored to related BOP segment instead of one-solution-for-all approach lead to shared innovations (Heuër, 2017). Micro-business should have a balance of interests among entrepreneurs, employees and customers by having an all-inclusive integration in the informal service sector at BOP (Reynoso & Cabrera, 2019). Acosta, Kim, Melzer, Mendoza, and Thelen (2011) used heat maps to measure the inclusiveness in businesses keeping track of supply and demand dimension of related markets around the mapped area. Acceptance of retailer's business at BOP depend upon two type of factors: exogeneous factors which are external to the retailers setup like trading area characteristics, competitors intensity etc.; endogenous factors like retail store environment, promotion tools of the retailer etc. (Alur & Schoormans, 2013).

2.3 Information and Communication Technologies (ICTs)

Information and Communication Technologies (ICT) play a pivotal role in bridging up these separations with the advent of mobile communication and digitization of the commercial activities through internet (Chipidza & Leidner, 2019). ICT is the collection of telecommunication networks that carry voice, data and content traffic, and user-end gadgets or interfaces that make the voice, data and content available to the end users (Greene, 2016). ICT play pivotal role in fostering healthy partnerships in marketing channels (Sheombar, 2010). Moreover, Customer Relationship Management (CRM) based on ICT is very useful tool for building and maintaining productive connections with customers, as well as in building social networks (I. J. Chen & Popovich, 2003). Abraham (2012) argues that for doing business at BOP, non-traditional strategies are required to connect with the customers in an economical way reducing the cost of the busines in which e-commerce can support the firms operating in BOP (Abraham, 2012) . Baishya and Samalia (2020) have proposed a model of ICT adoption consisting of "Performance Expectancy" (PE), "Effort Expectancy" (EE), "Social Influence" (SI), "Perceived Monetary Value" (PMV) predict the "Behavioral Intention" (BI), and BI and "Facilitating Conditions" (FC) predict the "Use Behavior" (UB), they actually added the "Perceived Monetary Value" to the Extended TAM model of technology adoption (Venkatesh & Davis, 2000). "ICT access" has been operationalized on two dimensions: "Percentage of households with computers", and "Percentage of households with Internet". "ICT use and skills" have three dimensions: "Percentage of individuals using Internet", "Fixed broadband subscriptions per 100 inhabitants" and "Mean years of schooling" (Alderete, 2017). Quantitative methodology of Irani et al. (2013) will be adapted to develop measurement scales for "Access to Use of ICT". ICT and ICT enabled innovations in processes of the business increase responsiveness in product offerings resulting in economic value creation throughout the busines linkages (Belvedere, Grando, & Bielli, 2013), this has been established though a quantitative study based on questionnaire-survey of 1,376 supply chain management executives. Strategies to adopt ICT have been studied in two different ways; firstly, Unified Theory of Acceptance and Use of Technology (UTAT) by (Venkatesh, Thong, & Xu, 2016) has been adopted by the authors to study the adoption of different technologies by

different groups; secondly, the context specific study has also been made by focusing on BOP context. The key factors in UTAUT Model that determine the adoption of any technology are; performance expectancy, effort expectancy, social influence and facilitating conditions which determine the behavioral intention and use behavior due to significant relationship between them. “Social Influence” and “Facilitating Conditions” have significant relationship with “Behavior intention” and “Use Behavior”. “Performance Expectancy” of the smartphones also has a positive bearing on the “Behavior Intention”, it has been established in this study that this is more significant in the youth as compared to older people with the ease of use or “Effort Expectancy” (Baishya & Samalia, 2019). Later on , this model was adopted in different researches and was to found have significantly explained the 72% in intention to use technology and 52% in explaining the use of technology (Venkatesh, Morris, Davis, & Davis, 2003). (Berger & Nakata, 2013; Venkatesh & Davis, 2000; Venkatesh et al., 2003) have also used similar approach to study the factors and facilitating conditions for the adoption of technology in their works.

3. Research Methodology

Systematic literature review approach has been adopted to explore the extant literature to address the research questions of the study. Google Scholar, Elsevier, Springer and Science Direct were used to identify the relevant peer reviewed articles. Key words for the search were BOP, ICT and Shared Innovations. A period of 21 years was selected from 2000 to 2020. 88 peer reviewed articles were selected in this research, out of these 54 articles were finally shortlisted on further scrutiny for review.

4. Findings and Conclusion

ICT as enabler, inclusiveness, bricolage innovation, shared innovations, co-design and co-entrepreneurship are the main themes that have emerged out of this literature review. ICT enabled innovations when adopted and embedded in the business processes at BOP, tend to provide the missing connect between the stakeholders and bridge the deficiencies in the infrastructure(Ahmed et al., 2015). Conventional business tools and strategies implemented from the top fail to click at BOP due to lack of ownership and acceptability by the people at bottom. New ways of doing business need to be worked out in alignment with the local contexts, for which bricolage innovations are developed with the participation of local people (Zhu et al., 2019). Here again, ICT plays a key role in sharing such innovations up and down the complete chain of stakeholders in line with the BOP 4.0 concept which stresses for business firms to act an enabler to preserve, respect and promote the local norms and technologies of the BOP people (Borchardt et al., 2020).

We conclude that access to and use of ICT through ICT enable innovations has significant impact on the development of inclusive shared innovations, developed with participation of local people, at BOP which not only adds to financial outcomes of the businesses, but it also adds to human and environmental sustainability as well. This has implications for the business managers operating at BOP as this study will help them formulate their strategies fully aligned with the local norms and culture at BOP. This study also has limitations, as impact of ICT only on innovations has been studied leaving out many other key factors. Future studies may explore the impact of ICT on supply chain partnerships at BOP and impact of external and situated factors on ICT.

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