

CHAPTER 2: THE MOBILE PHONE MARKET IN THE BOP

Most of the world's population who inhabit the middle and bottom of the "economic pyramid" is being underserved in realizing the transforming benefits of IT.

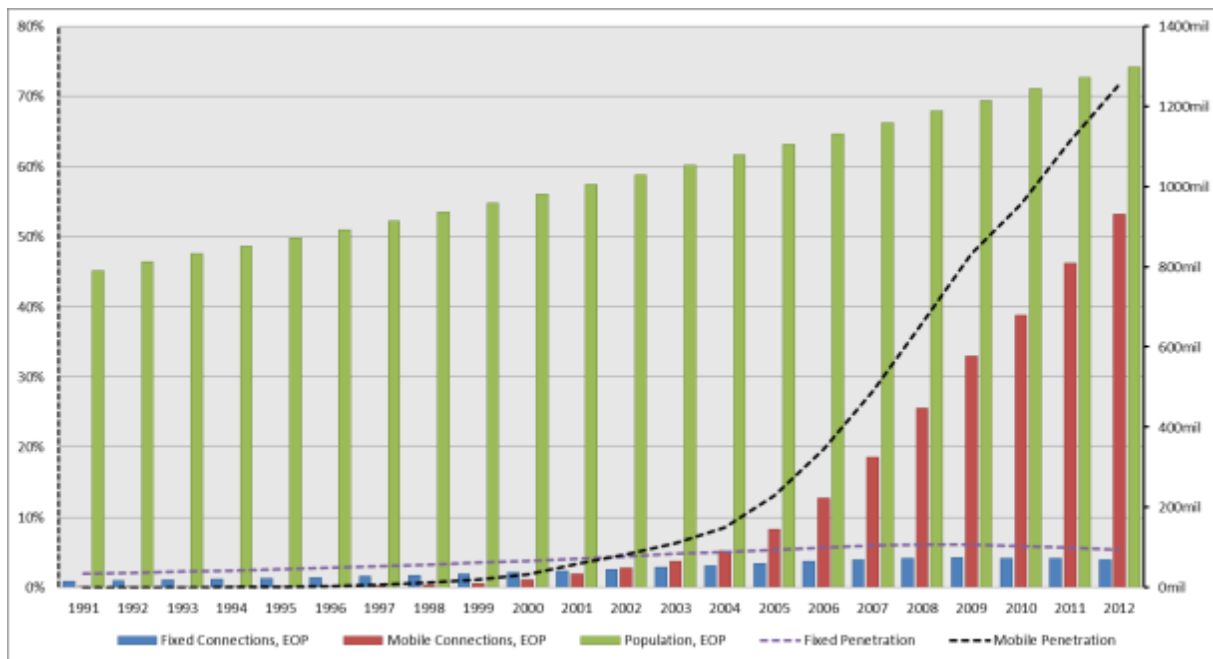
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2.1 INTRODUCTION

South Africa can be seen as having a captured telecommunication market as mobile phone penetration already surpasses 100% based on the number of active simcards (UNICEF, 2012:11). In comparison, other African and Middle Eastern countries indicate a penetration level of around 70%. This number may be somewhat misleading as some people may have more than one simcard. This makes it difficult to gain market share given that any gain in market share would need to be acquired or 'stolen' from competitors. Markets not yet catered for are typically the lower income, lower margin markets which add to the difficulty in catering to these markets. Greenfield opportunities no longer exist, but the notion of un-captured markets will be explored. The lower income (BOP) mobile phone market not only offers opportunity for companies to increase revenue but also for lower income consumers to help themselves.

Evident from figure 2 is the significant growth experienced in mobile phone penetration in the Middle East and Africa since 2004. This is an indication of the fast adoption rate opposed to landlines that are experiencing extreme slow total connection growth in real terms and a decrease in penetration rate given the faster population growth.

Figure 2: Fixed and Mobile Connections and Penetrations in the Middle East and Africa



(Source: Adapted from *The Mobile World*, 2013)

Research conducted by de Silva *et al.* (2012) found that mobile phone adoption is subjected to social influence in two ways. The first is through social pressure on individuals themselves to adopt and the second through benefits that could be generated as a result of economic and business networks. The latter can be seen as poverty alleviation through profits initially contextualised by Prahalad (2004). This notion is further supported by literature as will be discussed later in this chapter.

Simanis and Hart (cited by Agnihotri, 2012:421) "...assumed that a huge market exists at the BOP from which multinationals can make profits. But overall they found only the microfinance and telecommunication industries had successfully been reaching and reaping profits from the BOP." Applications and uses such as mFarming, mHealth, mMoney, disaster response and learning and education are but a few enabling platforms to the BOP for poverty reduction as proposed by Karnani (cited by Pitta *et al.*, 2008: 395). A report on the South African BOP telecommunication usage by The World Bank (2012) found that the "...BOP want what ROP want, but more cheaply." Varman *et al.* (2012:19) found that it is difficult to balance profit seeking with poverty alleviation if supporting government structures

and policies are not in place to support this. This place emphasise on a third roll player, the Government.

Given that this paper aims to investigate the retail aspect of telecommunication companies at the BOP, different subject fields need to be considered. These include:

- BOP;
- Technology adoption;
- Mobile phone expenditure;
- Entries to market methodologies.

The above themes establish an outline for chapter 2 which will be aided by different subsections. This will ultimately establish the groundwork and function as inputs to chapter 3 – the empirical investigation of this research. GIS retail analysis is another theme that will be used in chapter 3 to underpin the methodology.

2.2 BASE OF THE PYRAMID (BOP)

“Markets at the bottom of the economic pyramid are fundamentally new sources of growth for multinationals. And because these markets are in the earliest stages, growth can be extremely rapid” (Hammond & Prahalad, 2002:50).

The ‘Base of the Pyramid’ (BOP), also referred to as the Bottom of the Pyramid, was contextualised by Hart and Prahalad (2002) and only after Prahalad’s book in 2004, did business start thinking in this direction. The above originating research argues that businesses can unlock opportunity in this market whilst alleviating poverty, which is a win-win scenario for all involved. This notion is supported by Hammond *et al.* (2007:7) indicating that “Nigeria’s subscriber base grew from 370,000 to 16.8 million in just four years...surveys confirm substantial and growing mobile phone use in the BOP population, which has clearly benefited from the access mobile phones...” The value proposition from the lower income groups offer a potential lucrative market for companies looking to expand and diversify into the BOP. Hammond *et al.* (2007) argue that this opportunity enjoying increased support can be viably unlocked through a market-based approach. Contrary to charity or public assistance, a market-based approach would be able to alleviate poverty in a sustainable manner.

2.2.1 Identifying the BOP

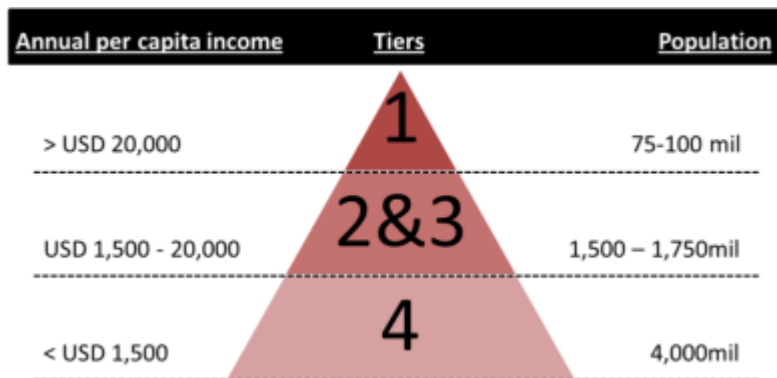
Hart and Prahalad (2002:2) split the overall market into four tiers.

- At the top are 75 to 100 million people earning more than USD 20,000 per annum. This tier reflected an affluent population of mid to upper income groups predominantly situated in urban areas from the developed world.
- The previous focus of companies was the rising middle class which formed part of tiers 2 and 3, involving poor people in developed countries and middle income groups in developing countries who encompassed this emerging market. This saw a market of between 1.5- and 1.75 billion people earning between USD 1,500 and 20,000 per annum.
- At the other end the lowest tier or the base of the pyramid equates to roughly 4 billion people earning less than USD 1,500 per annum. This tier is mostly found in rural areas of the developing countries. Other research by Hammond *et al.* (2007) and Hammond and Prahalad (2002) offers a wider range to the extent of less than USD 3,000 and USD 2,000 per annum, respectively.

The different tiers are characterised on the following factors deduced from Hammond *et al.* (2007:14):

- Income levels;
- Residing in developed or developing countries;
- Residing in rural or urban areas;
- Informal or formal economies;
- Level of service received;
- Competitiveness of the area and market.

Figure 3: Four tiers of the market



(Source: Hart & Prahalad, 2002: 4)

The work entitled *The Next Four Billion* by Hammond *et al.* (2007) builds on the above initial work of Hart and Prahalad (2002). In this research the BOP is classified as people earning less than USD 3,000 and further broken down into six increments of USD 500 e.g. 2,500; 2,000; 1,500. The underlying characterising factors of the BOP in Hammond *et al.* (2007:14) are described as “often rural ... very poorly served, dominated by the informal economy, and as a result relatively inefficient and uncompetitive.” This is very similar to the description of tier 4 in Hart and Prahalad (2002) which indicates that the BOP has been identified as a specific market but that the exact income ranges are still under some scrutiny and can rather be seen as a range than an exact number.

Hammond *et al.* (2007:14) classify the mid-market segment (those earning between USD 3,000 to 20,000) as “... largely urban, already relatively well served, and extremely competitive.” These differences between the tiers can be contextualised through the assumption that higher income earners would be residing in urban areas where population density is also higher. Subsequently, this higher density of higher income earners offers an increased opportunity in a defined area that is easier for companies to target which then drives the offering products and services. Accordingly the digital divide increases as telecom companies focus on the urban areas. The digital divide is an inequality between groups. In this case the urban population have better access, use and knowledge of information and communication technologies (ICT). This contributes to urbanisation as the rural population’s need is not met while adding to the digital divide (UNICEF, 2012: 13).

The BOP proposition would require businesses to 'turn the market on its head' or make use of a 'bottom-up approach' by focusing on the majority at the lower end of the scale for sustainable business growth through accessing this lower value, high volume market. In order to fully understand the BOP, the changes and development of BOP thinking require some exploration.

2.2.2 Evolution of BOP thinking

Different researchers have contributed to the evolution of thinking about the BOP. The different stages can be summarised as:

- Pre-BOP
 - Public aid and charity
- Post-BOP
 - BOP as consumers
 - BOP as producers
 - BOP as business partners

2.2.2.1 Public Aid and Charity

Pre-BOP thinking is entrenched in the belief that government subsidies, charity organisations and NGO aid are the only method in helping the poorest part of the population. One of the reasons for the development of the BOP proposition by Hart and Prahalad (2002:6) is that aid, subsidies and charity have delivered limited results in developing countries for alleviating poverty. Hart and Prahalad (2002:4) identified some assumptions that limit companies' focus on the BOP and subsequently drive pre-BOP thinking focussed on aid and charity to this potential market. These are outlined in table 1.

Table 1: Assumptions of the BOP

#	Assumption
1	The poor are not our target market as current cost structures do not allow companies to profitably compete for that market.
2	The poor cannot afford and have no use for the products and services sold in developed markets.
3	Only developed markets appreciate and will pay for new technology. The poor can use the previous generation of technology.
4	The BOP is not important to the long term viability of our business.
5	Managers are not excited by business challenges that have a humanitarian dimension.
6	Intellectual excitement is in developed markets. It is hard to find talented managers who want to work at the BOP.

(Source: Hart & Prahalad, 2002:4)

From table 1 it is evident that business in general did not consider the BOP for numerous reasons. The dominant underlying notion in all of these is that the BOP does not have money and therefore does not offer a market.

2.2.2.2 BOP as consumers

“If we stop thinking of the poor as victims or as a burden and start recognizing them as resilient and creative entrepreneurs and value-conscious consumers, a whole new world of opportunity will open up” (Prahalad, 2004:1). The perspective offered by Hart and Prahalad (2002) of the BOP as an untapped market opportunity for businesses offered an alternative way of thinking about poverty alleviation at the BOP. This perspective views the BOP as a massive consumer market which capitalist society could target sustainably. Underpinning this change in thinking about the BOP, Prahalad (2004:8) recommended a change in India’s policymakers’ thinking about the BOP and policies that could be changed or built on the notion that the BOP is a market and not a problem to the state. These recommended changes are summarised in table 2. The original logic and thinking of the BOP as per table 1 can be related to that in table 2 – the assumptions of business for not targeting and

catering to the BOP. Arguably the biggest difference between the two can be summarised as moving from thinking the BOP is a problem to seeing the BOP as a market.

Table 2: Changing dominant logic of public policymakers in India with regards to the BOP

From	To
The poor are a problem.	The poor represent a market.
	The private sector can and should participate effectively in this process. (A very selected subset of policy-makers goes one step further and recognizes that if large firms can service this Indian market, they could also access a global opportunity to serve 4–5 billion other people who are in a similar situation.)
Poor as wards of the state.	Poor as active consumers/entrepreneurs.
The poor do not appreciate new technology. Old technology solutions are acceptable.	Creative bundling of the most advanced technology with a local flavor.
Follow the Western model of development.	Selectively “leap-frog” and innovate.
Focus on resource constraints.	Focus on creativity and entrepreneurship.
Capital limitations.	Limitations of information and access.
	Imagination constraints.
Efficiency in a known model.	Innovation to develop a new model.

(Source: Prahalad, 2004:8)

With reference to table 2, the main change in logic here is that a shift occurred from viewing the BOP as a *problem* to that of a *market*. This change in logic in the South African context is evident in new shopping centres developing in lower income areas whilst large retailers such as Shoprite have a strong presence and market in the BOP.

2.2.2.3 BOP as producers

Contrary to the research conducted by Prahalad (2004), Karnani (as cited in Pitta *et al.* 2008:395) questions the profitability and simplicity of tapping into the BOP market. This argument is based on them disputing the value of the BOP and that companies

would not be able to service BOP profitability as a result of required high input costs. Supporting arguments for the latter include an anticipated diverse taste for products and services, low value products limiting potential margins on products while being very price-sensitive. Furthermore, the low density and widespread opportunity make it difficult for companies to unlock this opportunity offered by the BOP. The underlying belief of this school of thought is that the poor or BOP should be seen not as consumers but as potential suppliers to companies. In other words, through production in the BOP an income can be earned enabling a move out of poverty. This notion is supported by case studies encompassed in Jenkins and Ishikawa (2009:7).

The contradicting argument of Karnani is furthermore fuelled by the belief that the BOP is characterised by a subsistence factor forcing the BOP to spend much more on basic necessities such as food, clothing and fuel which can limit the available portion to be spent on other, perhaps more lavish, categories. This notion is supported by research conducted by Hammond *et al.* (2007:29) which will be discussed in more detail later.

2.2.2.4 BOP as business partner

The previous two sections see the BOP market as a one-sided approach whereby the company standing to profit from the BOP functions independently from its market. "...companies seeking to 'target' the poor with affordable products, while well-intentioned, may inadvertently be engaging in the latest form of corporate imperialism" (Hart & Simanis, 2008:2). Accordingly it is important to move away from this one-sided approach and place the emphasise on business co-creation which brings both sides (business and BOP communities) into close business partnerships ultimately increasing potential return for both parties which would not have been possible by either party in their own capacity.

BOP as business partners is in essence a next generation BOP strategy. (Refer to figure 4 for the differences between BOP as consumers (BOP 1.0) and BOP as business partners (BOP 2.0).) BOP 1.0 strategy caters for the demand of the BOP in an unsustainable manner through merely reducing price points and changing packaging. The initial introduction of food retailers to lower income areas can be

viewed as such an example. Conversely, BOP 2.0 strategy focuses on understanding the real needs of the market whilst a deliberate goal is set to poverty reduction and to develop sustainable markets (Louw, 2008:36).

Figure 4: BOP 1.0 and 2.0 protocols

Next Generation BoP Strategy	
BoP 1.0	BoP 2.0
• BoP as consumer • Deep listening • Reduce price points • Redesign packaging, extend distribution • Arm's length relationships mediated by NGOs	• BoP as business partner • Deep dialogue • Expand imagination • Marry capabilities, build shared commitment • Direct, personal relationships facilitated by NGOs
"Selling to the Poor"	"Business Co-Venturing"

(Source: Hart & Simanis, 2008: 2)

Arguably the most relevant example used for this next generation strategy (BOP 2.0) is whereby clean technologies (driven by environmental consciousness) are combined with BOP (driven by poverty alleviation) which will open an immense opportunity to address the world's biggest issues (Corena, 2013). In other words, catering to the growing demand in a sustainable and environmentally friendly manner, the BOP can earn an income which ultimately allows them to move out of poverty themselves.

2.2.3 Adding context to the BOP opportunity

Research conducted by Hammond *et al.* (2007), estimated that the worldwide market in the BOP during 2007 was around USD 5 trillion. In turn, Africa contributes roughly USD 429 billion to this worldwide estimation with South Africa's BOP assessed to be in the region of USD 44 billion. Of this worldwide potential, ICT contributes USD 51 billion to the total opportunity in this market segment but could already be much higher given the rapid growth experienced. In terms of ICT, Asia's market is determined to be USD 14.3 billion, placing 28% of the worldwide BOP market in this

area. Around 5% of the worldwide market is situated in Africa (Hammond *et al.*, 2007:28).

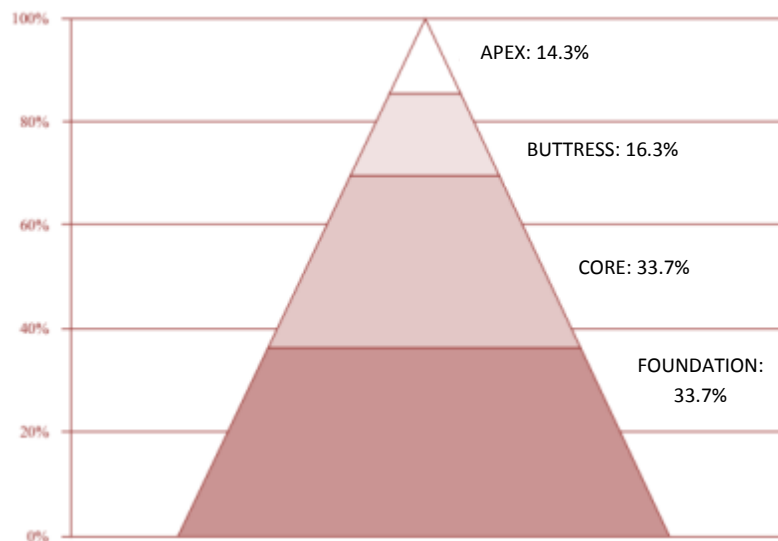
The African average household expenditure in the BOP is the lowest at an estimated USD 34 per annum while healthcare and transportation expenditure in Africa is amongst the highest in the world. Transportation and telecommunication show an increased rate of expenditure as household income increase (Hammond *et al.*, 2007:29). This is the anticipated market ('upper portion' of the BOP) that mobile operators will target for post-paid contracts. The fact that mobile operators will target this population is evident in the starting prices of post-paid packages as low as R49 per month for packages offered by MTN.

South African expenditure on ICT at USD 109 per annum is, however, much higher due to the more mature market, compared to the African average (Hammond *et al.*, 2007:30). A clear difference was also noted in expenditure patterns of urban-opposed to rural BOP. Urban expenditure was higher in ICT, water and housing categories with rural expenditure focussed on food and healthcare. As Karnani (2008) alluded to earlier, given the subsistence factor of the BOP, the food market is the biggest contributor to this worldwide market and is no different in the South African context.

2.2.4 The South African BOP

A study conducted by Chipp, *et al.* (2012) found that approximately 36% of the South African population (roughly 11.2 million) formed part of the foundation (indicated in figure 5). People in this part of the pyramid typically earn R1,312 per month (which equates to USD 1,575 per annum). This is in line with the figures suggested by Hart and Prahalad (2002), Hammond and Prahalad (2002) and Hammond *et al.* (2007). The study by Chipp *et al.* (2012) resulted in a realisation that it was possible to segment the South African market based on household goods. Thus, it would be possible to identify the BOP through the ownership of household goods. It was pointed out that even though the income was indeed lower, the pure volume of this market still offers a sizeable opportunity. This research found that the foundation of the SA pyramid represented around 35% of the total population.

Figure 5: The South African Pyramid



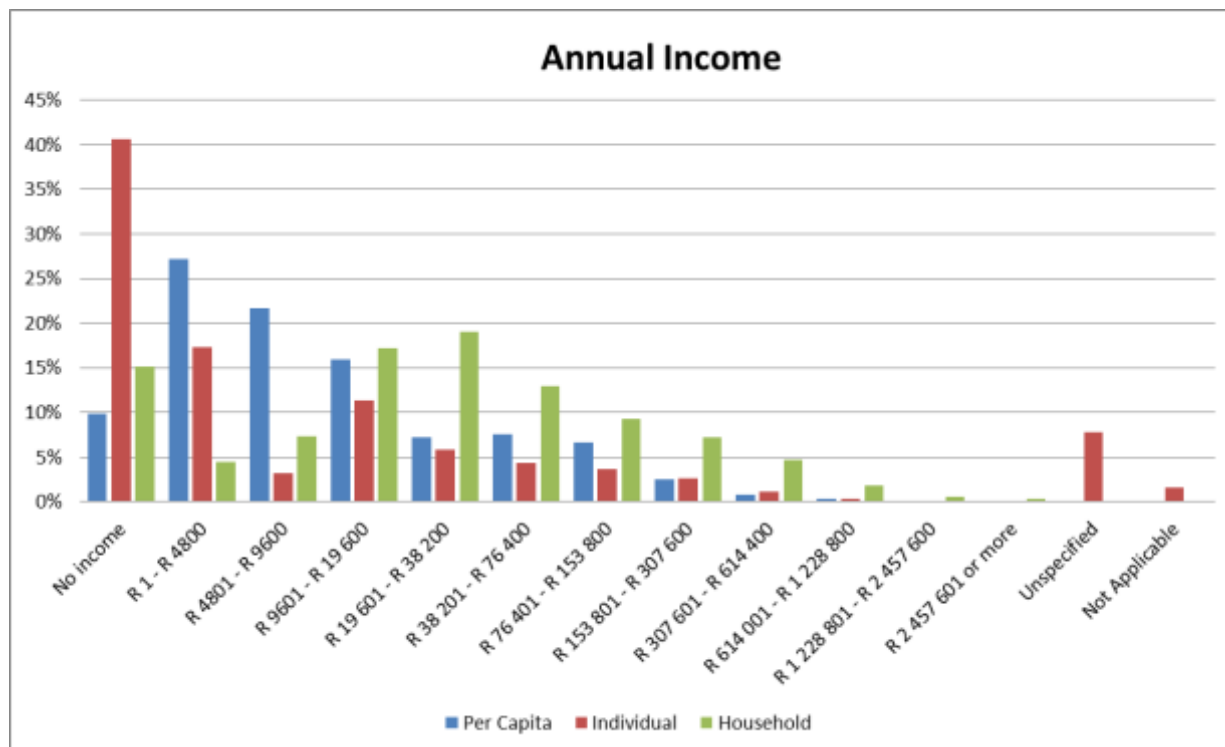
(Source: Chipp *et al.*, 2012:23)

The recent 2011 census conducted in South Africa during 2011 indicates that in terms of household income breakdown, 63% of households earn less than R38,200 (or ±USD 3,500) with 27% of total households earning less than R9,600 (or ±USD 875). This is in line with the market breakdown or BOP identification in Chipp *et al.* (2012). A difference will, however, exist in percentage breakdown between population and household counts which places emphasise on the measurement used. Given the grouping of income data in census 2011, all households earning less than R38,201 per annum were classified as the BOP.

Chipp *et al.* (2012) indicated that prior to their research only four studies had focused on the BOP in South Africa. These included Louw (2008), Naidoo (2009), Chipp and Corder (2009) and Jacob and Smit (2010). Different results are evident and dependent on the calculation methodology e.g. personal income, household income or income per capita. Figure 6 illustrates this difference through making use of different measures of evaluating income. These include data from the South African 2011 census (household and individual income) with another calculated from dividing the number of people per household (household size) into their respective household income groups. A calculation for this would be written as *Per Capita income = Household Income / household size*. This would then in essence reflect per capita income by income group. Initial research by Hammond and Prahalad (2002) also refers to per capita income which makes it difficult to compare the exact BOP with

that of initial research given the fact that some entire households are dependent on one individual's income.

Figure 6: Difference in reporting on annual income



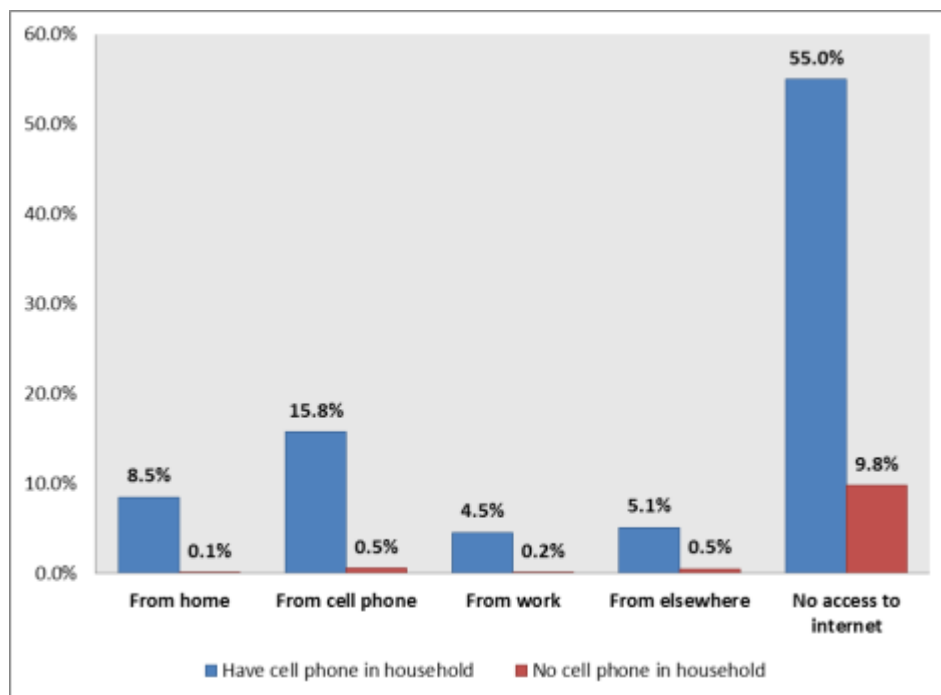
(Source: Own compilation adopted from Statistics South Africa, 2011)

The latest research from Chipp *et al.* (2012) indicates that the South African BOP has an annual household income of R 24,835.20. This research also proposes to make use of household figures as opposed to individual income. The underlying reasoning for this is that 12 million people receive social grants with the majority of households relying solely on this income (Chipp *et al.*, 2012:25). The most recent statistics on social grants by the South African Social Security Agency (SASSA) indicated that total number of social grants reached 16.17 million in July 2013 (SASSA, 2013: 2).

Hammond *et al.* (2007:143) quantified the total South African market and found it to be worth USD 136 million with the BOP contributing roughly 30% to this total market through 74% of the population whilst 58% of the BOP market is situated in urban areas.

Figure 7 below reflects data from the 2011 census conducted in South Africa. These figures indicate that 64.8% of the population do not have access to the internet. Thus these people cannot benefit from mobile applications as internet connectivity is one of the requirements to run mobile applications. These figures are mimicked by research conducted by De Lanerolle (2012) in Arnold, *et al.* (2013: 48) where it was found that roughly only one-third of South Africans have access to the internet. This number almost doubled over the past four years which shows the ever-increasing growth rate of mobile and ultimately internet connectivity.

Figure 7: Household access to the internet



(Source: Own compilation adopted from Statistics South Africa, 2011)

The following section considers the different generic adoption models and their application to that of mobile phone adoption and the BOP.

2.3 ADOPTION MODELS

Prahalad (2004) emphasised that BOP consumers already make use of technology and that the rate of mobile adoption is expected to be faster compared to the rest of the pyramid. The underlying reason provided for this statement is that the BOP has 'nothing to forget'. No landlines have been in place to move away from which would

typically hamper the change process. Thus, no change is required but the focus is rather on adoption. Two key conclusions can be drawn from Prahalad's (2002) research regarding mobile phones. The first is that the BOP is getting connected at an ever-increasing rate. This notion is represented in the number of mobile connections in the Middle East and African market as will be discussed later. The second and a contributing factor to the first is that the BOP is open to technology as long as it is affordable while meeting a need.

"In 2011 alone, 660 million new mobile phone subscriptions were noted...Developing countries accounted for 80 % of this growth" (Arnold *et al.*, 2013:46). Generic technology adoption models are discussed in order to provide the underlying rationale that technology adoption can be determined by variables driven by the end user. This is followed by an application of the generic adoption models. A telecommunication adoption-specific modelling was done to determine the input variables for technology adoption which could ultimately be modelled as part of the empirical research.

2.3.1 Generic Technology Adoption Models

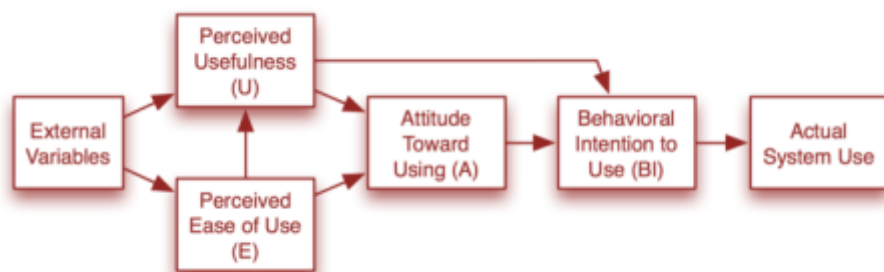
Given that the research focus on a technology market it is not only important to include the market aspects but the adoption aspects as well. For this reason generic technology adoption models were included discussing the principles relating to technology adoption. Similar to the development of literature on the BOP, generic technology adoption models have also evolved through different research and theoretical applications thereof. Different types of technology adoption models exist and are used to explain the adoption rate of a specific technology. These will now be considered in the following subsections. A review on technology adoption models by Oliviera and Martins (2011:110) points out that the most commonly used models when considering technology adoption by individuals are the technology acceptance model (TAM), the theory of planned behaviour (TPB) and unified theory of acceptance and use of technology (UTAUT). In an effort to establish a theoretical base for adoption models, the evolution of the TAM will now be discussed, followed by the UTAUT model.

2.3.1.1 Technology Acceptance Model

Contrary to TPB, TAM looks at more than merely an individual's beliefs when determining technology adoption. Conversely, Lu *et al.* (2003:207) highlight that the TPB incorporate additional factors not included in the TAM. TAM evolved from the theory for reasoned action (TRA). As such the underlying argument for TAM is that beliefs determine behavioural intentions. Ultimately, the TAM aims to "...provide an explanation of the determinants of computer acceptance that is capable of explaining user behaviour across a broad range of end-user computer technologies and user populations, while at the same time being both parsimonious and theoretically justified" (Davis *et al.*, 1989:985).

TAM is arguably one of the most widely used technology adoption models in research while certain adaptations of it have also been used in numerous other research projects as a base for models (Davis & Venkatesh, 1996:20; Lu *et al.* 2003:207). Indicative from the name of the model, TAM investigates how individuals accept and ultimately make use of technology. Research by Davis (1989:319) developed and validated the notion that two variables are fundamental determinants of user acceptance namely perceived usefulness and perceived ease of use. A study by Davis (1989) furthermore found that perceived usefulness was better correlated with ultimate usage of technology. Thus, the more useful the technology was perceived by the sample in the research, the greater the acceptance thereof.

Figure 8: The Original Technology Acceptance Model

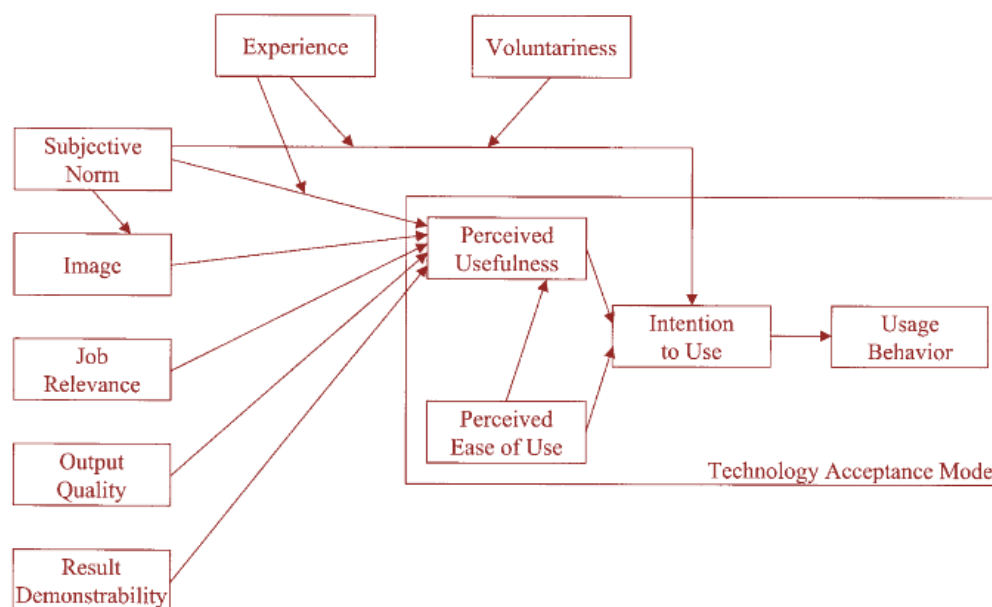


(Source: Davis *et al.*, 1989:985)

Venkatesh and Davis (2000) proposed further development of TAM which is vetted in TAM2. While TAM2 keeps up with the underlying TAM beliefs – perceived usefulness

and ease of use – it recommends an extension by adding, firstly, subjective norm, voluntariness and image all of which form part of the social influence processes. Secondly, it extends through cognitive instrumental processes which include experience, job relevance, output quality and result demonstrability. These adjustments or extensions can be seen as variable influences on ‘perceived usefulness’ as per TAM. A further change to the original TAM was the exclusion of ‘attitude towards using’ recommended by Davis and Venkatesh (1996:21) as a result of a study that found that perceived usefulness is only partly mediated by attitude. This, along with the respective influence on the original TAM is indicated in figure 9.

Figure 9: TAM2 - Extension to the original TAM



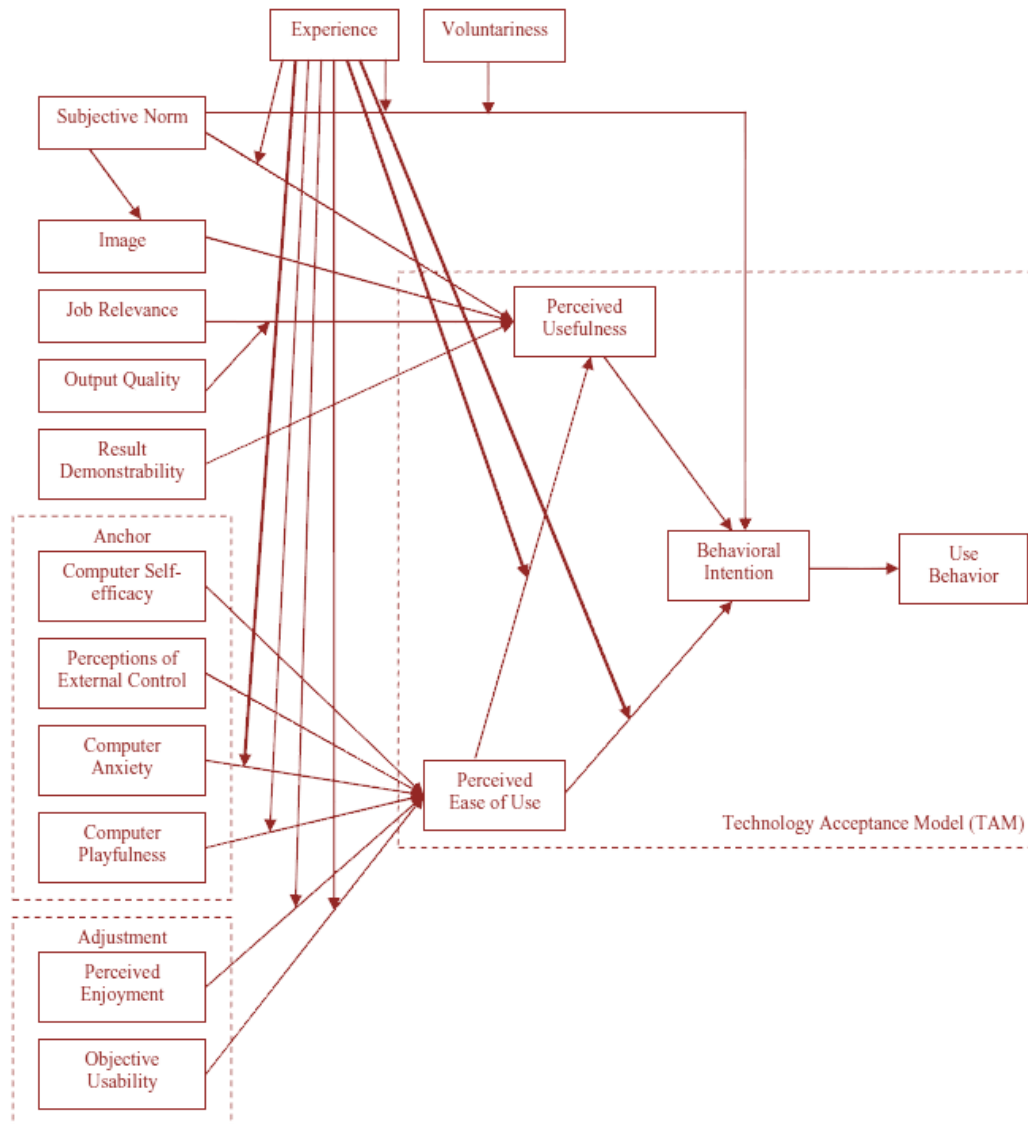
(Source: Venkatesh & Davis, 2000:187)

The further development of TAM2 proposed by Venkatesh and Bala (2008) resulted in the extension of the model to include determinants for perceived ease of use. This also aided in addressing some of the criticisms of TAM namely “...the lack of actionable guidance to practitioners” (Venkatesh & Bala, 2008:274).

The evolution of TAM into TAM3 is displayed in figure 10. The extensions to the original TAM result in more manageable and usable guidelines to determine variables in order to develop industry-specific models of technology adoption. From

this figure it is also clear that experience have the widest influence sphere within this generic model.

Figure 10: TAM3 - Extension to the TAM2



(Source: Venkatesh & Bala, 2008:280)

The above gives an indication of the development of TAM into TAM3 over a time period. Even with the development of three generations TAM models, it still only offers limited insight into the explanation of mobile phone adoption. The following model to be considered is the UTAUT model.

2.3.1.2 Unified theory of acceptance and use of technology

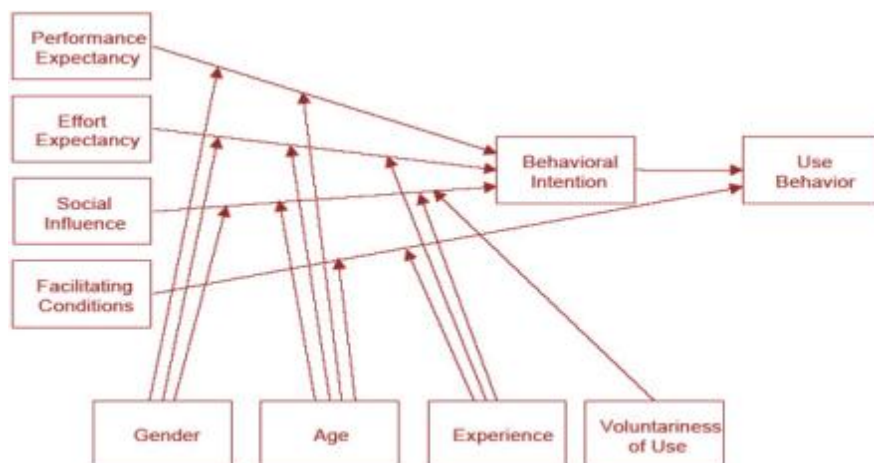
The UTAUT model builds on the initial research by Davis (1989) to further expand on technology adoption and further reviewed eight different models used in information technology acceptance modelling. This theory conceptualised in Venkatesh, Morris, Davis and Davis (2003:425) ultimately adds two variables to those used in TAM, explaining technology adoption through four core determinants. These are:

- Performance expectancy (perceived usefulness in TAM),
- Effort expectancy (perceived ease of use in TAM),
- Social influence, and
- Facilitating conditions.

This research further found four variables which can be used to facilitate the relationships among the core determinants. These are listed below with their respective influences on the core determinants depicted in figure 11. The four facilitating variables include:

- Gender,
- Age,
- Experience, and
- Voluntariness of use.

Figure 11: UTAUT Research Model



(Source: Venkatesh *et al.*, 2003:447)

Research conducted in Venkatesh *et al.* (2003:425) found that the UTAUT model could explain 70% of the variance in technology adoption compared to the TAM and TPB which from 17 to 53%. From this research it can be deduced that the UTAUT model is the most comprehensive model to be used as a generic technology acceptance model even though it may still have limitations. The model has been criticised by Bagozzi (2007:245) indicating that “...UTAUT is a well-meaning and thoughtful presentation. But in the end we are left with a model with 41 independent variables for predicting intentions and at least eight independent variables for predicting behaviour.” Another limitation is highlighted by Van Raaij and Schepers (2008:840) as the model utilises multiple models, it becomes a too complex system, limiting the actual usefulness of the model. Despite these limitations, UTAUT is still widely used in research.

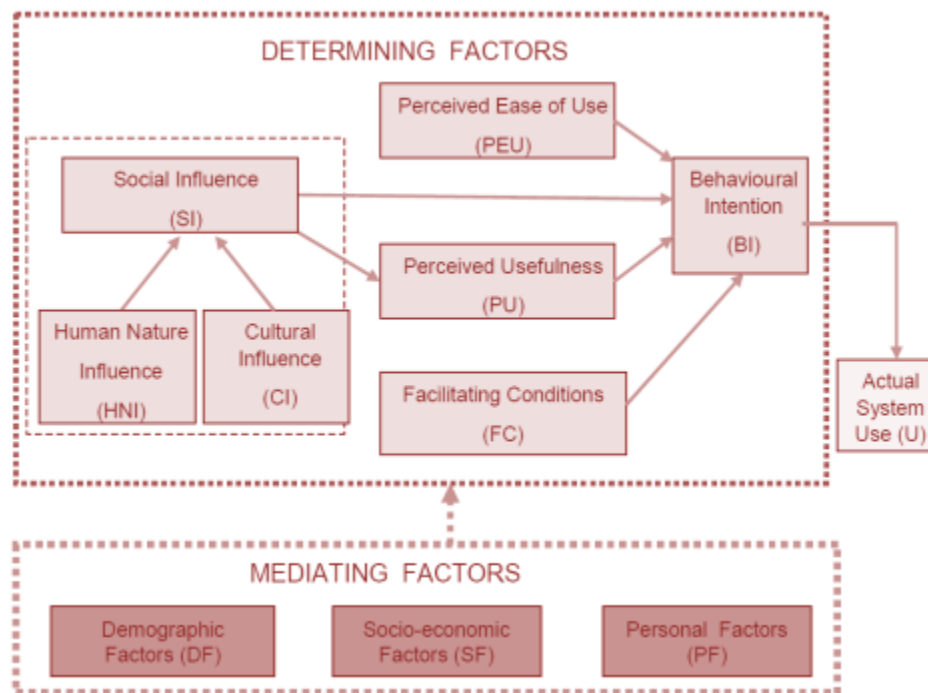
The following section looks at the application of generic technology adoption models in mobile phone specific adoption methodologies.

2.3.2 Mobile Phone Adoption Model

Evident from the above section is the existence of generic models which can be used to explain and determine technology adoption. The next challenge is to apply these generic models to the mobile phone industry.

Van Biljon and Kotzé (2008) researched the influence of cultural factors in mobile phone adoption. The model makes use of mediating and determining factors similar to the TAM and UTAUT whereby facilitating factors influence core determinants. Van Biljon and Kotzé’s model aims to evaluate the applicability of cultural factors on mobile phone adoption. In developing this model, reference is made to the TAM and UTAUT among other theories with their model building on the domestication or adoption school of thought while it can be seen as an extension of TAM. The proposed model is summarised in figure 12.

Figure 12: Model for Mobile Phone adoption



(Source: van Biljon & Kotzé, 2008:2668)

As previously stated, a study by Chipp *et al.* (2012) found that the BOP can be identified through the ownership of household goods. This begs the question as to whether the opportunity and ultimate adoption of mobile phones could be determined through applying this same characteristic or measurement of variables. In other words, looking at goods households already owned and determining whether a mobile phone would be adopted by the household or not. This could be measured through determining whether a correlation would exist between i.e. a TV, radio, fixed line telecommunication and access to electricity when compared to the ownership of a mobile phone. Alternatively, variables contributing to the mediating factors as proposed by Van Biljon and Kotzé (2008) could be used as dependent variables in a logistic regression analysis.

2.4 CONNECTING MOBILE PHONE ADOPTION WITH THE BOP

Mobile phone adoption can be linked to the BOP through the diffusion of innovation model. At the same time business has a social responsibility to society, linking business and its potential customers. These will be used to contextualise the market in question.

2.4.1 BOP mobile phone adoption explained by the Diffusion of Innovation

This section aims to link the BOP with mobile adoption theories in order to determine what part of the market the empirical investigation (Chapter 3) should deal with. This is explained through the help of the diffusion model developed by Rogers (2003). Rogers identifies different stages which can be applied to technology adoption. These include the early adopters (innovators, early adopters, early majority) and late adopters (the late majority and laggards). The connecting point between the BOP and mobile phone adoption can be summarised as the late adopters forming part of the diffusion models. Rogers (2003:296) classifies these late adopters as lower-income and less-educated individuals along with other selected socio-economic characteristics summarised in table 3.

Table 3: Difference in Socio-economic Characteristics between Early and Late Adopters

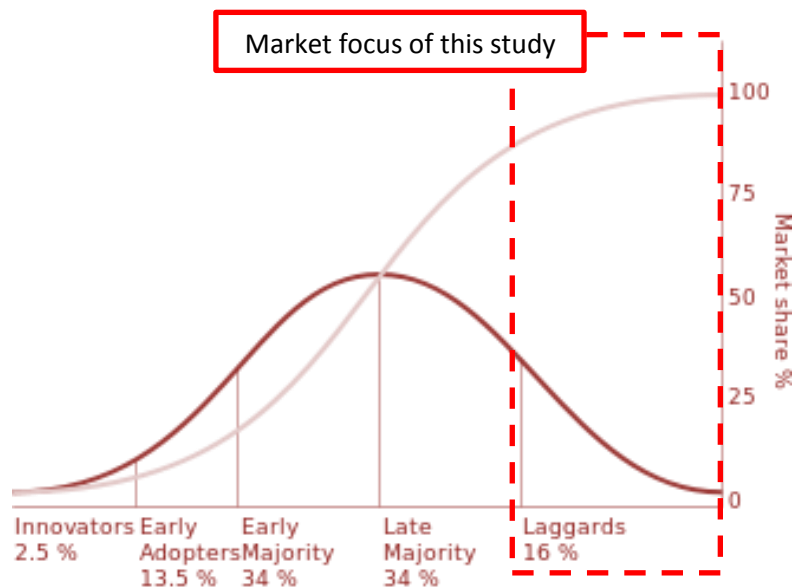
<u>Characteristic</u>	<u>Early Adopters</u>	<u>Late Adopters</u>
Formal Education	More years	Less years
Literacy Rate	Higher	Lower
Upward Social Mobility	Higher	Lower
Social Status	Higher	Lower

(Source: Adopted from Rogers, 2003: 288)

Arnold *et al.* (2013:45) identify the developed countries as early adopters and developing countries (including South Africa) as late adopters of mobile phones. The main reasons for supporting this statement include a better infrastructure and prosperity in developed countries.

Numerous factors influence the diffusion of technology apart from economic resources. However, it must be considered that the majority of the BOP groups are entrapped as part of the laggards given their lower socio-economic characteristics. Thus, laggards and subsequently the BOP are seen as a latent market potential which still offers market opportunity for business to unlock. In essence this can be seen as penetrating the entire market as oppose to the current telecommunication penetration rate.

Figure 13: Diffusion of Innovation



(Source: Adjusted from Rogers, 2003)

The above highlights the connection between mobile phone adoption and the BOP whereas the following section focuses on the BOP connection with business through social responsibility.

2.4.2 Social responsibility through telecommunication at the BOP

The positive spinoffs as a result of connecting the lower income groups are evident. The King Code of Governance (King III) among other sustainability reports can be used to guide telecommunication companies' responsibility to furnish the population with a platform which can offer services to them at a reduced rate and function as an enabler to the lower income, especially rural, population. This responsibility is evident in MTN's purpose, 'To bring world-class telecommunications to the developing world' and in its vision as 'To lead the delivery of a bold, new Digital World to our customers' (Mobile Telephone Networks, 2012a:i). Similarly, MTN's sustainability report (Mobile Telephone Networks, 2012a:30) makes reference to the following standards of sustainability governing operations:

- "King Code of Governance (King III);
- JSE Social Responsibility Index (SRI);
- United Nations Global Reporting Initiative (GRI) G3 and G4 Sustainability Reporting Guidelines and Telecommunications sector supplement;

- Carbon Disclosure Project;
- International Labour Organisation;
- United Nations Global Compact (first Communication of Progress Report due in 2014); and
- UN Protect, Respect and Remedy Framework for Business and Human Rights (Ruggie Principles).”

Sharma, cited in Arnold *et al.* (2013:45), expressed the view that potential worldwide revenue could reach USD 17.5 billion in 2012 from around 1 billion mobile applications already developed. “With the ability to access and exchange information, people can live, learn and conduct business in different ways. This has the most pronounced effect on people at the Bottom of the Pyramid (BOP), who prior to owning a mobile phone did not have the ability to engage in communication much unless they were willing and able to afford to travel” (Arnold *et al.*, 2013:40). Hammond *et al.* (2007:101) note technology as a driver to bring services traditionally not associated with the BOP, such as banking, to the people in the lower income groups.

A recent study by Arnold *et al.* (2013:26) indicates that 35% of Kenyans have an M-Pesa (a mMoney application developed by Safaricom) account which makes this Kenya’s largest money transfer service. In total 15.8 million Kenyans are subscribed to M-Pesa. This allows for easy and effective money transfers throughout the country servicing people with and without a formal bank account. Traditionally it has been difficult for banking services to reach the rural areas; however, this mobile application makes it easy to transfer funds from one user to the next. In essence mMoney services bring banking facilities to the unbanked. Currently there are 44 live and planned mMoney services in West and Southern Africa, followed by 22 in Southern Asia (Arnold *et al.*, 2013:33).

A positive correlation was found between mobile phone penetration and social development. This was done through assessing the impact of mobile phone penetration on democracy, gender and education. All of these indicated a positive relationship as mobile penetration increased (Arnold *et al.*, 2013:43). Arnold *et al.* (2013: 45) also found a positive correlation between mobile technology penetration

and economic development. They found that for the two years leading up to 2012, the increase in India's mobile phone subscriptions resulted in 11.4% per capita GDP growth compared to China's 9.9%, Kenya's 1.5% and South Africa in line with other developing countries at 11%. Interesting to note is the United Kingdom's negative result due to an estimated decline in mobile subscriptions. Motivations for this decline include the existing high penetration of smartphones and growth in fixed broadband lines.

The above notion, that GDP growth is stimulated through an increase of mobile phone penetration rate, is supported by statistics from the World Bank which noted that for every 10% increase in mobile penetration sees a growth in the GDP of 0.8% (Alfreds, 2013:1). The question here, given that it is based on mobile technology penetration which allows for transactions to be recorded, is whether it is not merely counting something previously excluded from GDP calculations. In essence, that it is not generating additional value but that it is merely recording existing value in a formalised system. However, Arnold *et al.* (2013:45) suggest that the introduction of mobile phones and applications is an enabling platform for new services which offer additional opportunities, productivity gains and increased communication with access to information which drive informed business decisions.

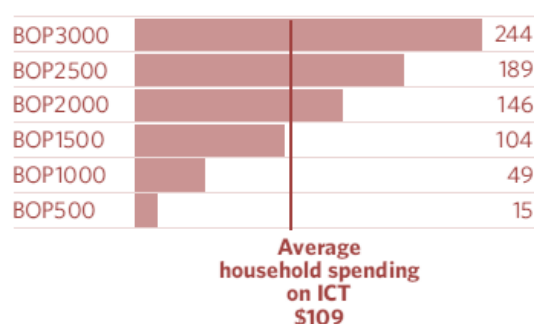
2.5 EVIDENCE ON MOBILE PHONE EXPENDITURE

Price elasticity on mobile phone usage formed part of the research conducted by Chabossou *et al.* (2009:399) which focused on mobile telephony access and usage in Africa. This subsequently also included research on mobile phone expenditure in terms of individual income. South Africa's lower segment of 75% (in terms of income levels) spent 10.9% of their income on mobile phones, while the top 25% only spent 4.8%. Other research in South Africa found that urban informal areas spent the most of their household income on communication, viz. 3.7%. This is followed by the formal rural areas at 3.1% with traditional areas spending 2.4% of household income on communication. The national average is 2.8% (Statistics South Africa, 2012: 20).

As alluded to earlier in section 2.2.3, Hammond *et al.* (2007:30) found that South African expenditure on ICT was much higher than that of the African average. This

research made use of different ICT expenditures per BOP segment in their calculation as in the below figure 14. Although Hammond *et al.* (2007) focused on ICT in general it was noted that by far the majority of the expenditure goes to phone services. In this research, annual ICT expenditure ranged between USD 15 and USD 244 depending on different BOP segments. The average ICT spending in South Africa was USD 109 per annum (approximately R90 per month).

Figure 14: South African ICT household spending by income segment (in USD)



(Source: Hammond *et al.*, 2007:30)

Comparing these sources with data from the AMPS (All Media and Products Survey) dataset as outlined in the below table indicates a significant difference. AMPS is a comprehensive survey covering product usage at the brand level in South Africa. This AMPS dataset will be scrutinised as part of input data to the ultimate model and analysis in chapter 3. Table 4 indicate the differences in mobile phone expenditure between the different sources. Expenditure from the different datasets ranges from R5.60 per month in the lowest income level as per Stats SA (2012) data to R262.51 per month in the BOP higher income bracket as per Chabossou *et al.* (2009). This represents a significant range with varying findings on BOP mobile expenditures. Percentage of annual income also ranges dramatically from 2.3% to 22.2%.

Table 4: Monthly expenditure on mobile phones

Annual Household Income	AMPS		Stats SA, 2012		Chabossou et al., 2009		Hammond et al., 2007	
	% of Income	Monthly ASPU per	% of Income	Monthly ASPU per	% of Income	Monthly ASPU per	% of Income	Monthly ASPU per
No income	0.0%	R -	2.8%	R -	10.9%	R -	0.0%	R -
R 1 - R 4800	22.2%	R 44.42	2.8%	R 5.60	10.9%	R 21.80	6.1%	R 12.23
R 4801 - R 9600	6.3%	R 37.93	2.8%	R 16.80	10.9%	R 65.40	6.7%	R 39.94
R 9601 - R 19 600	3.7%	R 45.08	2.8%	R 34.07	10.9%	R 132.62	8.4%	R 101.88
R 19 601 - R 38 200	2.3%	R 55.07	2.8%	R 67.43	10.9%	R 262.51	7.3%	R 176.45
R 38 201 - R 76 400	1.6%	R 77.43	2.8%	R 133.70	4.8%	R 229.20	n/a	n/a
R 76 401 - R 153 800	1.2%	R 118.06	2.8%	R 268.57	4.8%	R 460.40	n/a	n/a
R 153 801 - R 307 600	1.0%	R 185.94	2.8%	R 538.30	4.8%	R 922.80	n/a	n/a
R 307 601 - R 614 400	0.8%	R 303.95	2.8%	R 1 075.67	4.8%	R 1 844.00	n/a	n/a
R 614 001 - R 1 228 800	0.4%	R 303.95	2.8%	R 2 150.40	4.8%	R 3 686.40	n/a	n/a
R 1 228 801 - R 2 457 600	0.2%	R 303.95	2.8%	R 4 300.80	4.8%	R 7 372.80	n/a	n/a
R 2 457 601 or more	0.1%	R 303.95	2.8%	R 5 734.40	4.8%	R 9 830.40	n/a	n/a
Unspecified	n/a	R -	2.8%	R -	4.8%	R -	n/a	n/a

BOP

ROP

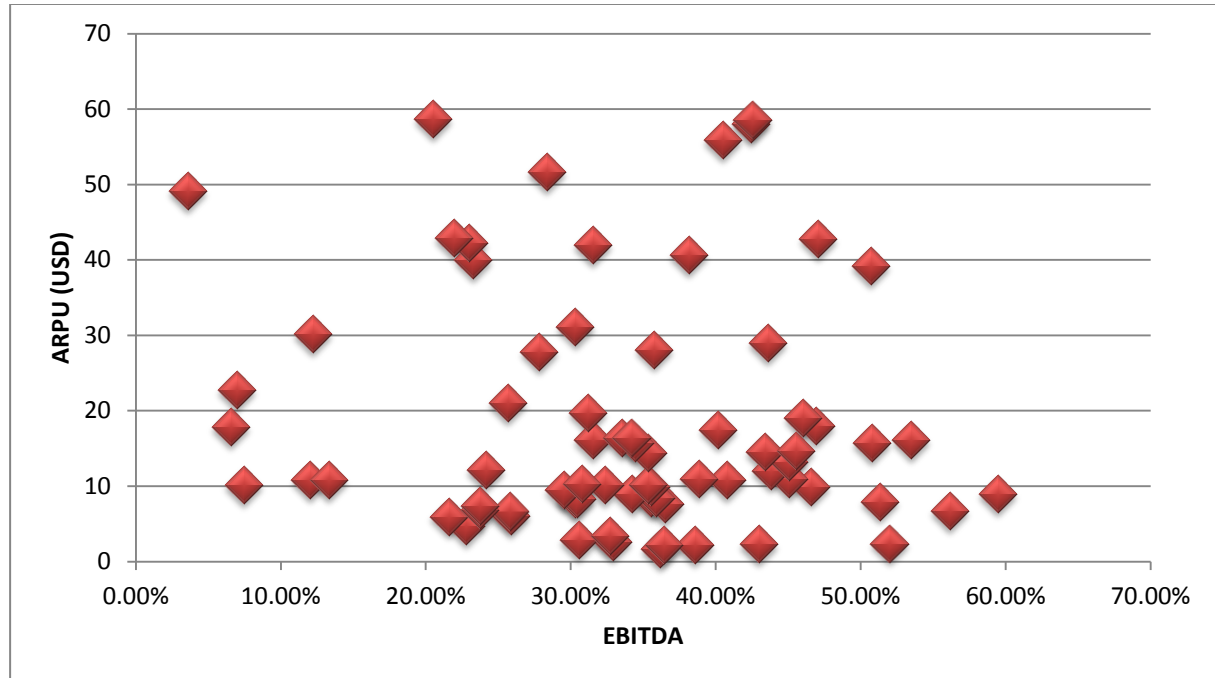
(Source: Own compilation)

While referring to laggards as part of the diffusion model, it should be noted that laggards do adopt but then many of these discontinue as a result of disenchantment (Rogers 2003:191). This discontinuation is known as “churn(-ing)” by telecommunication companies whereby individuals move away from a communication provider. It is important to note that churning also includes the migration of individuals between companies and not only the discontinuance of the service. Subsequently, this emphasise the total offering by one company to the next which in terms of telecommunication, points toward mobile application development as part of their total offering.

Figure 15 represent a selection of telecommunication companies' ARPU in relation to their EBITDA (earnings before interest, tax, depreciation and amortisation). Effectively this measure indicates the profitability before other deductions. This shows that companies can be profitable, represented by EBITDA at a lower margin, represented by ARPU. Companies in countries with an ARPU of lower than USD 15 include India, Pakistan, Bangladesh, Egypt, the Ukraine, Sudan, Brazil, Mexico, Russia and China. All these companies have an EBITDA of greater than 30%. MTN's operations in different African countries indicated ARPU's of between USD 3 and 9 with EBITDA ranging from 23% to 58%. In South Africa, MTN reported an ARPU of R122 and EBITDA of 35% (Mobile Telephone Networks, 2012b: 46). Similarly,

Vodacom showed and ARPU of R328 for post-paid customers and R76 for pre-paid customers with an EBITDA of 38% (Vodacom, 2013: 42).

Figure 15: A selection of telecommunication companies' EBITDA and monthly ARPU



(Source: Adjusted from *The Mobile World*, 2013)

This indicates that telecom companies can in fact target lower value customers, profitably. The following section investigates the different channels or strategies to enter markets.

2.6 MARKET ENTRY

Companies can make use of different generic methods and strategies to enter markets. Such generic strategies are summarised by Porter, as cited in Thompson *et al.* (2012:184), as a low cost, broad differentiation, market niche low-cost, market niche differentiation and best cost strategies. Generic strategies however only focus on strategies to enter markets whilst section 2.6.1 and 2.6.3 focus more on the method or channel that can be utilised to enter the market. These can be seen as vehicles or mechanisms to target the required market. Section 2.6.2 however focuses on building on the strategy to specifically target the BOP through a focused product offering.

2.6.1 A Multichannel Offering

Traditionally, the retail market was catered for by retail stores situated in commercial nodes. Different channels have, however, emerged that can be used by retailers. The dominant change in recent years was as a result of online sales made possible by the development of the internet and infrastructure. This evolution of different channels offers opportunities but also risks that need to be considered. The evolution of multiple channels used in selling to the consumer has confronted the typical store within the retail industry which requires change and a shift in the primary objective of the retail store as it is known today (Deloitte, 2011:2). The reason for this is that the consumer in today's market is becoming more sophisticated with greater expectations to product, service and value. As different channels become available and more viable for distribution of product and services, fewer stores are required. The store is in essence becoming a showroom for the brand whilst the actual sale is conducted in another channel.

Deloitte (2011:3) lists five considerations as a source of pressure on the current retail environment. These are:

- Consumer spending weakening;
- Increasing business costs;
- Technological innovations;
- Increased competition; and
- Business is being forced to increase sustainability and environmental friendliness.

Contrary to this, the multichannel approach is widely researched in today's retail context and some retailers are still positive that the retail store will still function as the primary point of sale. At a recent conference held by the South African Council for Shopping Centres (SACSC), specific reference was made to the difference between developed and developing countries with markets differing considerably. The majority of the retail within Africa is very much still in the informal sector and would require to make the shift to the formal market before other channels would become more prominent. Alternatively, the shift to a multichannel offering can leapfrog the formal

retail environment given a lack in offering. This is not, however, foreseen given the lack of infrastructure in developing countries which is not conducive to online shopping as many African countries do not even have a formalised postal or address system in place (Van Huyssteen, 2013; Faithfull, 2013). This notion is supported by the statement of Sriram (2012), Chief Operating Officer of Tata Teleservices in India, that in today's world "...the Telecom operators provide value for money products but service and experience are the key drivers which brings customer delight, and these things are best offered at the Point of Sales thus making the Telecom Retail an untapped opportunity."

Sriram's (2012) statement is also mirrored by Gomes (2011) who highlights the fact that even with all the hype of mobile application (app) stores, the physical store remains prominent and important in the industry. Similar reasons are noted for pressure being exerted on the retail industry to that of Deloitte (2011) and four points of support a telecom company must consider in efforts to optimise its branded retail network are offered. These include (Gomes, 2011):

- A one-size-fits-all store format no longer exists. For this reason companies should align product offering to the market segment it is targeting through specific stores.
- Handset sales are no longer the sole focus. Devices are only one part of the selling proposition a representative can offer potential customers and focus is also required on service plans, applications and accessories.
- Stores are fundamental for brand development and physical presence aimed at instilling brand awareness. Retail stores remain the primary touch point between a company and its customers and as such can drive the customer experience of a brand. Although these may not aid in a sale-specific function but more towards a service function, market share can be retained and even gained opposed to financial return.
- Independent retailers are becoming more important. In the era of the internet it becomes increasingly easy for online sales through open application platforms. These re-sellers take a portion of the sale while it is easier for the customer to shop online with the aid of blogs, reviews and product comparison at one's fingertips. This drives the focus on informed service representatives in branded stores.

Complementing the above methods for optimising retail networks, Gomes (2011) further lists three steps in which the telecom retail channel can increase return from their stores. These include:

- Stores can help define a brand;
- A correct mix of stores is required;
- Retail stores should be complemented by other channels.

In essence a multichannel offering needs to be considered in the retail environment in South Africa; however, the main touch point (or contact with) for the BOP remains to be the retail store itself. This emphasises the importance of aligning product offering within each store to the market segment it aims to target. At the same time, it is important to build brand awareness through concept stores in higher income areas where the market can indeed make use of a multichannel offering.

2.6.2 Accessing the BOP

The BOP Protocol (as discussed in section 2.2.2) offers potential insights into accessing the BOP. Local entrepreneurs can act as distributors through a small investment from a business perspective. This will lower the required investment amount, increasing return on investment (ROI) while alleviating poverty in the lower potential (volume and value) markets where formal market investment is not warranted from a returns perspective. It is important that the difference between a normal public-private partnership and real business co-venturing be understood in order for an optimal venture as suggested by the BOP 2.0 protocol to be established. True collaboration should exist between the BOP and company in order to build bridges stimulating shared commitment.

The original work of Hart and Prahalad (2002:8), offers further insight into unlocking the opportunity at the BOP with the methods underpinned by commercial infrastructure as outlined in figure 17. Commercial infrastructure to convert the volume in the BOP to value and viable market opportunity is built on four pillars.

- Access to credit and income generation are the main two considerations in the first pillar which will aid in creating buying power. The lower income groups do not have access to banking facilities nor credit scoring. Without collateral it is

almost impossible to borrow money for investment which will in turn drive and sustain the economic cycle in the localised economy.

- The second pillar is built on shaping of aspirations in the BOP. Through consumer education, services such as electricity could be offered to a community who utilised wood and coal as main source of cooking and heating with no need for electricity. However, given the exposure to electricity drives aspirations for other electrical based appliances which then in turn drive sustainable development (Hart & Prahalad, 2002:7).
- Given the economic and physical isolated position of the BOP, improving access becomes more important and subsequently forms the third pillar. Current distribution systems focus on urban to urban supply but lack the ability to efficiently cater to the poor in rural areas. The lack of communication furthermore hampers this network and relies on traditional and outdated methods.
- Companies tend to think that what may work in the upper tiers would work for the BOP. This is, however, not the case with products required to be developed specifically with the BOP in mind. This can be achieved through a bottom-up innovation methodology which subsequently forms the final pillar in establishing a commercial platform to capitalise on the opportunity at the BOP (Hart & Prahalad, 2002:10). Managers, however, tend to focus on value which offers the opportunity of high margins. Conversely, Hammond and Prahalad (2002:55) motivate that managers should move away from this and rethink their opportunity in terms of volume. Ultimately, higher volume with lower gross margins could theoretically still allow for the same profits.

Figure 16: Commercial Infrastructure pillars required at the BOP



(Source: Hart & Prahalad, 2002:8)

Jenkins and Ishikawa (2009: 7) give supporting evidence through case studies that the implementation of the commercial infrastructure pillars can offer rewards. The first is a company that buys from the BOP which in turn fuels potential disposable income, which drives ultimate demand. Distribution can also be done through the BOP and furthermore aid in overcoming potential challenges in distribution and communication systems while at the same time again aids in generating income in the BOP. Ultimately, selling to the BOP drives aspirations and demand for other products.

Further to the commercial infrastructure proposed, a change in strategies is also highlighted by Hart and Prahalad (2002:6). These include price performance, quality views, sustainability aspect and profitability as outlined in figure 17. Hammond *et al.* (2007:30) list four strategies that business can use to target the BOP. These can be linked to Hart and Prahalad's (2002) proposed strategies and include:

- Unique products, services and technologies;
- Local value creation;
- Enabling access to goods and services; and
- Unconventional partnerships.

The first strategy is developing a unique offering that caters specifically for the BOP which would require financial investment and talent management from business' side. By building capacity and training programmes business can localise value creation through making use of local vendors or suppliers. The underlying notion in this strategy was again highlighted in Hart and Simanis (2008) as co-creation of business through partnerships. Enabling access can be achieved financially and physically. These include strategies such as lowering input costs which hamper the delivery of goods and services to lower value markets or new distribution strategies through unconventional partnerships.

Figure 17: New Strategies at the BOP

Price Performance	Views of Quality
• Product development • Manufacturing • Distribution	• New delivery formats • Creation of robust products for harsh conditions (heat, dust, etc.)
Sustainability	Profitability
• Reduction in resource intensity • Recyclability • Renewable energy	• Investment intensity • Margins • Volume

(Source: Hart & Prahalad, 2002:6)

These new strategies proposed can be applied to a retail-focused strategy forming part of the specific targeting of the BOP through the development of lower cost retail stores. The handsets and contracts offered by these stores following the 'BOP strategy' can have fewer functions whilst being more robust. The following section will look at the different methods ('tools'), telecom companies utilise in the retail channel. These can include formalised company branded retail stores, franchisees and partnerships.

2.6.3 Current Telecom retail ‘tools’

Telecom service providers offer products and services through an array of channels which can be seen as tools to target the market. One of these and arguably the most important in developing countries is the retail store of respective operators (evident from section 2.6.1). This is the primary touch point to customers to showcase total offering. The operations behind these stores, however, differ. Typical methods in operating retail stores include franchisees, dealerships, corporately owned and partnerships. Furthermore, different channels are utilised in selling product and services to consumers which include formal, informal and online or virtual. Given the focus on the BOP in this study, the informal and formal channels are explored with the focus on retail offerings. Important to note is the difference between post-paid and pre-paid clients. Historically the BOP is seen as pre-paid clients.

Post-paid contract offerings in South Africa are limited to only a few channels. These include firstly telecommunication service-provider branded stores such as Vodacom, MTN and Cell C. These stores can be operated by franchisees or corporately run. Vodacom has a programme whereby local (non-national) retailers can apply to be Vodacom Approved Dealers (VAD). As per their website, these stores offer a limited post-paid offering and are many times referred to as formalised branded stores. Secondly, retail dealerships such as Nashua Mobile and Altech Autopage have a post-paid offering. A negative aspect from a business perspective is that these stores carry the competitor's offering as well. Thus, while increasing the exposure to a specific telecommunication company's offering, it also adds a competitive angle.

An example of a totally different method used in targeting the market was used by Reliance, a telecommunication company in India, whereby entrepreneurs were trained and empowered to operate as business partners to the company. Around 50,000 entrepreneurs were recruited to deliver services in remote areas of India. "Through this programme, in addition to contributing to society by encouraging other enterprises, and creating economic opportunities for millions of young Indians, Reliance leveraged goodwill and networks" (Vaghese, 2006:11). This initiative can be viewed as forming part of the informal channel similar to that of MTN's informal operations across Africa. MTN started to put up umbrella stands which offered an

array of products. These could be operated by street vendors which, given the large number of hawkers, dramatically increased access to the entire market (Neuwirth, 2011).

The informal strategy of Reliance (India) was complemented by formal retail outlets in prime commercial areas that were easily accessible to the market it aimed to target (high volume, mid to upper income). This formal retail offering through Reliance stores was complemented by expanding their offering to exclusive distributors. These were in the form of retail partnerships whereby retailers offer Reliance products. This offering is, however, limited to pre-paid clients (Vaghese, 2006:11). A South African example is MTN's retail partnerships evident in stores of The Foschini Group (TFG) and Edcon group of retailers such as Markham, Foschini, Edgars and Jet. Similarly, service is also limited to the pre-paid offering in these retail partners. Although partnerships with other retailers offer a wider footprint for distribution of a company's products, only the branded retail store of a company can truly carry the entire range of products and offer the full spectrum of services customers require from a telecom company (Gomes, 2011). This is potentially not a problem catering to the BOP market as product offering can be limited to a couple of packages and handsets which could be carried by retail partners.

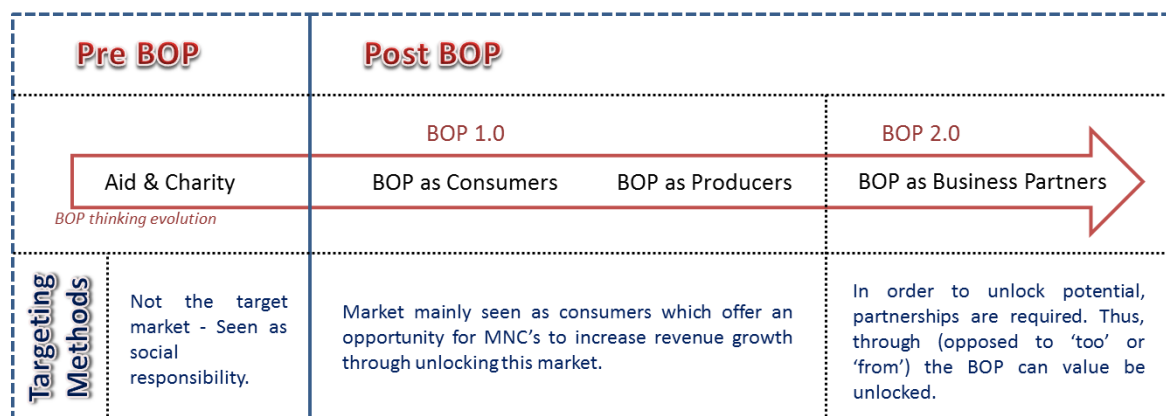
2.7 SUMMARY

Research indicated that only five studies have been conducted on the BOP in South Africa. This lack of existing research limits the application of BOP thinking to the South African market. Irrespective of this, the BOP was identified as those households earning less than R38,200 per annum, roughly R53 per day. Using this as the identifier, 44% of households in South Africa could be identified as the BOP. This is interesting when taking into account that 89% of households already own a mobile phone which indicates that the BOP is already adopting mobile phones. From the literature it is clear that different viewpoints, through the evolution of the BOP concept, exist regarding the opportunity at the BOP. Pitta *et al.* (2008:395) state that "...literature about the nature, scope, and value of the BOP proposition are mixed." It is also recommended that further research be done in order to determine whether

companies can convert the opportunity at the BOP into profits while alleviating poverty by bringing prosperity to the poor.

It is evident from the literature on BOP that thinking has evolved over the past decade since the initial conceptualisation and quantification of the BOP by Prahalad (2002). Figure 18 gives a summary of this evolution with the main notions from business on the BOP during each of the segments in the evolution.

Figure 18: Summary of the evolution of BOP thinking



Source: Own compilation

Numerous different variations and combinations of technology adoption methodology have been formulated with different aims in different research projects. It is evident from the evolution of the TAM and UTAUT that with every extension or new model, additional external factors are included to build on the underlying principles in the original theory. This establishes an opportunity to investigate further, more manageable variables as an input to these original models and theories. Contrary to the underlying assumption of this research that coverage is not in question and that the entire population have mobile coverage, Arnold *et al.* (2013:49) highlight the view that the difference between developed and developing countries' take-up rate of mobile adoption is mobile coverage and affordability. In Arnold *et al.* (2013) a regression is also utilised. This included an independent variable as GDP per capita growth modelled against the dependent variable, level of mobile phone adoption.

De Silva *et al.* (2011) identified two methods of research that have been used in order to explain technology adoption. These can either be theoretical or mathematically based on empirical studies. They furthermore point out that linear regression models are not an appropriate method given the dichotomous outcome when modelling mobile phone adoption. Subsequently, logistic regression modelling was used in their research when measuring the different influencing factors on mobile phone adoption in Asian countries. This methodology is also supported by Chabossou *et al.* (2009:395). Different variables can be included in statistical modelling to be used in determining the rate of adoption of mobile phone usage. De Silva *et al.* (2011) summarised Van Biljon and Kotzé's input variables for the mobile adoption model in figure 19. Some variables can be deduced from census data; however, other more complex variables require face to face interviews. This is evident in the regression analysis applied in this research to determine the level of mobile phone adoption in chapter 3.

Figure 19: Influential Variables for the Mobile Adoption Model

Variable	Hypothesized sign	Remarks (Van Biljon & Kotzé model factor)
Gender		Male = 0, female = 1; expect no gender difference (demographic)
Age squared ^a	–	Technology is usually adopted faster by younger people (demographic)
Ln (monthly personal income) ^b	+	Natural log of the monthly personal income; lack of income is key barrier to adoption (socioeconomic)
Primary Education		If highest educational level attained = 1, if not highest educational level attained = 0 (demographic)
Secondary Education		If highest educational level attained = 1, if not highest educational level attained = 0 (demographic)
Tertiary Education		If highest educational level attained = 1, if not highest educational level attained = 0 (demographic)
Number of top five contacts that own a phone	+	The more people in one's close network with phones, greater will be the social (social-economic-business) pressure to adopt (social influence; social pressure)
Emergency Perceived Benefits Index (PBI)	+	Phone enables emergency communication (perceived [safety] usefulness and/or personal)
Social PBI	+	Phone helps to maintain and improve social relationships (perceived [social] usefulness and/or personal)
Economic PBI	+	Phone brings economic benefits through lower transactions costs such as less need to travel to obtain business information (perceived [economic] usefulness and/or personal)
Fixed phone in household	–	Yes = 1, no=0; mobile phones are substitute for fixed phones at the BoP (facilitating condition)
Walk time to nearest town	–	Proxy for urban and rural indicator; rural adoption is lower than urban (demographic factor)
Access to electricity in household	+	Yes = 1, no=0; electricity as a facilitating condition for mobile adoption (facilitating condition)
Television in household		Yes = 1, no=0; impact of having a television in household on mobile adoption (socioeconomic)
Radio in household		Yes = 1, no=0; impact of having a radio in household on mobile adoption (socioeconomic)
Pakistan		Country dummy for Pakistan
Sri Lanka		Country dummy for Sri Lanka
Thailand		Country dummy for Thailand
Bangladesh		Country dummy for Bangladesh
Philippines		Country dummy for the Philippines
Constant		

Notes: a. Age-squared is used, as it has a higher explanatory power compared to Age, as the former magnifies the marginal differences in the age variable and will have better predictive power. As Teegne (1999) and Chabossou et al. (2009) point out, differences of the impact of the age in mobile adoption can be better modeled by using Age-squared instead of Age; b. Natural log of monthly income better explains the impact of monthly income on mobile adoption.

(Source: De Silva et al., 2011:6)

Ultimately, mobile phone adoption is a complex and integrated process highlighted in van Biljon and Kotzé (2008:2674) as “Mobile phones are the ultimate, personalised, personal computer, mobile phone adoption and usage therefore seem to differ from other technology adoption and use in ways we are only beginning to understand.” The following section aims to place the BOP in perspective with mobile phone adoption rate.

“Retail is by no means out of the picture... Smart telecoms will develop smart retail strategies” (Gomes, 2011). While different channels are becoming evident in

exposing customers to the product offering, it also dilutes the ultimate opportunity of a specific store. This has a negative impact on the financial feasibility of a store in its own merits. Irrespective of other channels becoming more prominent, retail stores is still an important function as a tool in targeting the market, especially the BOP.

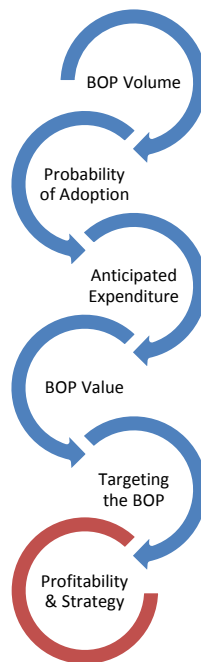
The literature underpins the importance of partnering with the community. In turn, this instils the drive to increase buying power while improving access to the product or service. In order to further drive the demand, aspirations need to be stimulated, aided by innovative new offerings from business. Product innovation should be underpinned by price and quality supported by sustainability from a production perspective and profitability from a business perspective. Ultimately, effort is required to work with the BOP, moving product closer to the community while instilling a demand for the specific product.

All literature forming part of this chapter has been applied to the research in this paper to ultimately drive the answer of whether a retail strategy could profitably unlock the opportunity at the BOP telecommunication market. This thinking is summarised in figure 20.

Worldwide the BOP is significant in size which offers opportunity for business to tap into in order to grow sales, market share and ultimately, revenue. Similarly, by increasing access to the internet through mobile phone penetration, significant opportunity on the consumer side can also be unlocked, thus, helping the poor to help themselves.

Mobile phone penetration is already considerably higher in South Africa compared to the rest of the developing world. This is also partly as a result of people having more than one simcard or mobile phone. Census 2011 data indicate that this is, however, somewhat skewed and that a portion of the population still do not own a mobile phone. The adoption rate and acceptance of technology are subject to different variables which can be determined from existing data.

Figure 20: Literature contribution aimed at ultimate result



(Source: Own compilation)

Expenditure varies across different segments of the market and countries. Telecommunication companies have, however, successfully catered to the lower value markets indicating a profitable opportunity irrespective of the lower spend. This can be done through targeting the BOP through unconventional methods. Increasing financial return can be effected by either increasing revenue or by cutting costs. An efficient approach would be to influence both these determinants through limiting required investment and daily operating costs while increasing market penetration and expenditure. In terms of retail this would require lower initial investment and daily operation costs of stores in lower value areas. By moving closer to the consumer, exposure and brand awareness are increased. This also allows entering into competitor dominant areas and underlining the notion that through the right product and service offering a business' position in the market can be strengthened.

The next chapter makes use of national demographic and retail data in an effort to empirically locate and quantify the mobile phone opportunity at the BOP.