HOGESCHOOL UTRECHT

MASTER OF INFORMATICS

MASTER'S THESIS

BOP & ICT MNCs

Base of the Pyramid approach reflected

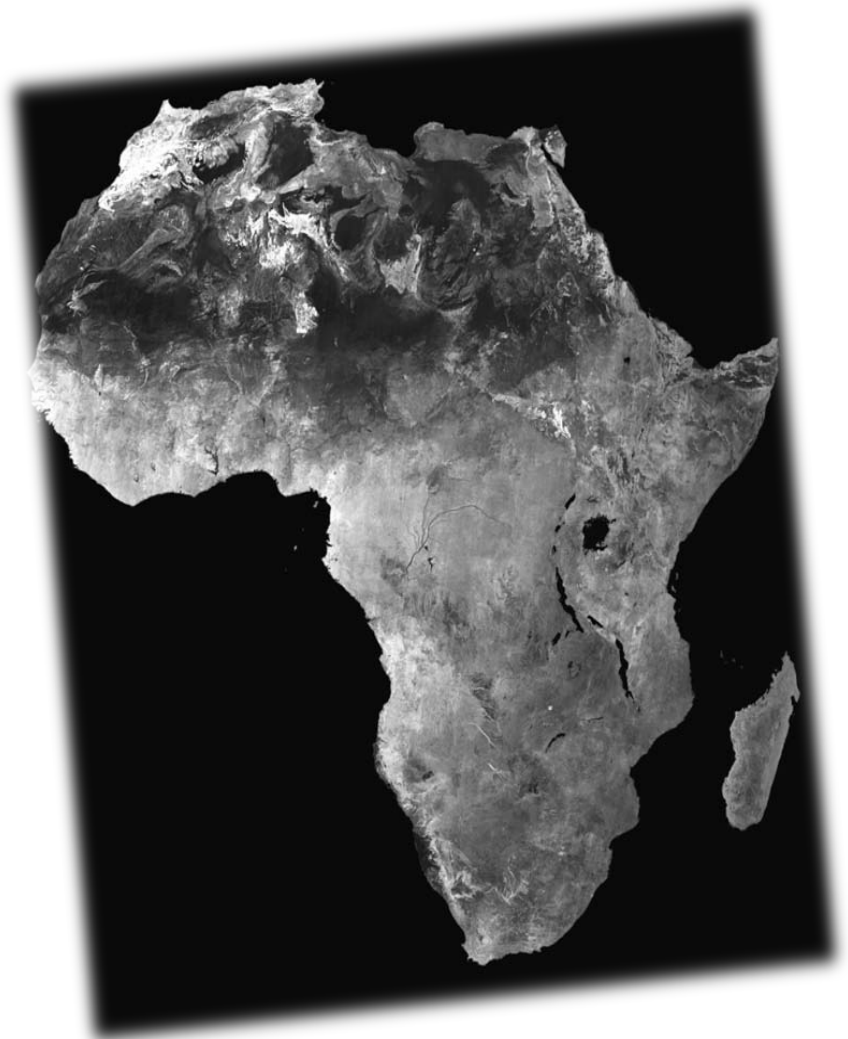*on the strategy of multinational ICT companies*

Author:

Anand Sheombar

Supervisor:

Gilbert Silvius, Professor of Business, ICT and Innovation
Utrecht University of Applied Sciences
The Netherlands

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The illustrations on the cover depict the Base of the Pyramid (the lower one-third section of the triangle) and the geographic area of this research, Africa. Sources: (Prahalad and Hammond, 2002), respectively Canadian Space Agency, mosaic of RADARSAT-1 satellite images.

FOOD FOR THOUGHT

"Connectivity is the key enabler of the ongoing transformation in the economic fortunes of many Asian and African countries"
Leonard Waverman, London Business School (2008)

"Look, microfinance is great; Yunus [*2006 Peace Nobel laureate for microfinance & founder Grameen Bank*] deserves his sainthood, but after 30 years, there are only 90 million microfinance customers. I'm predicting that mobile-phone banking will add a billion banking customers to the system in five years. That's how big it is."
Richard Hammond, World Resources Institute

"The BOP [*Base of the Pyramid*] is an incubator for new technologies and business models. It is the breeding ground for next generation global competitors"
Chris Laszlo, Sustainable Value Partners, LLC

"By finding innovative ways to penetrate low-income markets and respond to the needs of the poor, companies can unlock new business opportunities, and contribute to social and economic development."
C.K Prahalad (2005)

"Western capitalists need to enlist the entire human community in the capitalist dream, which is about pulling yourself up. Unless we can do that for everyone — in a way that respects local culture and doesn't destroy underlying ecosystems — global capitalism is in trouble".
Stuart Hart (2005)

"There are many positive ways for business to make a difference in the lives of the poor – not through philanthropy but through initiatives that, over time, will help build new markets."
Kofi Annan, former United Nations secretary general

Clearly, poor communities are ready to adopt new technologies that improve their economic opportunities or their quality of life.
C. K. Prahalad and Allen Hammond (2002)

"Advanced technology solutions are critical to alleviate poverty. One underlying cause of poverty is the asymmetry of information between the poor and the rich, including the middlemen. Commitment to building a framework for empowerment of the poor must therefore, start with access to information and connectivity."
C. K. Prahalad (2007)

Contents

List of figures

List of tables

List of abbreviations

BOP	Base of the Pyramid of bottom of the pyramid
CAPEX	Capital expenditure
cf.	Confer, meaning "compare" or "consult"
CSR	Corporate Social Responsibility
et al.	et alii means "and others"
e.g.	exempli gratia means "for example"
ff.	foliis meaning "from pages"
GSM	Global System for Mobile Communication, most popular 2-G standard
IDB or IADB	Inter-American Development Bank
ICT / IT	Information and Communication Technology / Information Technology
ICT4D	Information and communication technologies for development.
ITU	International Telecommunications Union
MNC	Multinational Company
NGO	Non governmental organization
OECD	Organization for Economic Co-operation and Development
OLPC	One Laptop Per Child
OPEX	Operational expenditure
PC	Personal Computer
PPP	Purchasing Power Parity or public-private partnership
SL	Sustainable livelihood
SMS	Short Message Service
UNDP	United Nations Development Program
WBSCD	World Business Council for Sustainable Development
WiMAX	Worldwide Interoperability for Microwave Access
WRI	World Resources Institute

Abstract

The Base of the Pyramid (BOP) comprises the majority of the world population. However, the majority seemed to be neglected by multinational companies, until recently. Since the landmark publications of Prahalad & Hart much more attention is attributed to the BOP.

This research examines the attention some multinational ICT companies have given to the BOP so far. A case study research was conducted of 5 projects involving multinational ICT companies, which were studied as separate case studies for this thesis, all in the geographical space of Africa.

Qualitative data was collected using the multiple case study method and the data was analyzed for emerging patterns. The cases were analyzed on three main units of analysis, namely the BOP businesses model & strategy, the products & services and the partnerships needed for engaging with the BOP community.

It was found that regarding BOP businesses model & strategy an assessment of the BOP business model qualities is useful. The study revealed in all cases a hybrid view of market creation and socio-economic development by (ICT) companies engaging with the BOP, dubbed a hybrid form of BOP 1.0 & 2.0 strategies. The research also suggests that for successful BOP ventures alignment is needed between "BOP Business model & strategy", "Partnership" and the "BOP Product & Service development". The BOP products and services development confirmed the presence of disruptive innovation and innovation blowback. It was found that problems with partnerships revolve around six core categories namely driving force factors, skill factors, input-output factors, socio-cultural factors, systems factors, and trust factors.

Acknowledgements

Executive Summary

The world is flat[1] and hopefully it will it will also be so for those at the Base of the Pyramid. In recent years, more and more people have drawn attention to the so called Base of the economic Pyramid (BOP). The BOP population segment is defined in this report as those with annual incomes up to and including $3,000 per capita per year in local purchasing power. The Base of the Pyramid economies represents four billion people living in or near poverty. This and the following information is derived from the literature and is discussed in detail in the thesis.

Africa has a BOP market of approximately $429 billion. The BOP is by far the region's dominant consumer market. Although relatively small compared with other demands, the market for information and communication technologies (ICT) is estimated to be $51 billion but probably twice as much, $100 billion per year, as a result of rapid growth.

Perhaps as interesting as the market potential for ICT products and services is the development potential that ICT promises. ICT can be a powerful enabler of development goals because its unique characteristics dramatically improve communication and the exchange of information to strengthen and create new economic and social networks.

The hybrid view of market creation and socio-economic development by (ICT) companies engaging with the BOP was fundamental for this research.

Despite the size of this market, it remains largely untapped and unserved by multinational companies. There are however some exceptions.

Although opposing viewpoints exist in the literature regarding the extent to which there is a business opportunity at the BOP, there is agreement that serving the low-income sector profitably requires a different business model. Two main varieties of strategies occur, called BOP 1.0 and BOP 2.0. The difference between BOP 1.0 and BOP 2.0 strategy can be summarized as "selling to the poor" versus "business co-venturing" (see Table 9, page 32).

The basic **research questions** for the research that is reported in the thesis were:

How can multinational ICT companies (ICT MNC) gain benefit from entering the Base of the Pyramid (BOP) market in a commercial successful and sustainable way? And what could be the opportunities in the BOP market for multinational ICT companies?

This two-fold question was deconstructed in six objectives and three main units of analysis, namely "business model & strategy", "partnership" and "products & service development". As a research

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[1] Cf. Friedman (2006); in this book Friedman argues that ICT tools have co-helped to make the world "flatter".

strategy, the multiple case study[2] method was used. Fives cases were examined. Vodafone mobile payment service M-PESA, Nokia Grameen MTN Village Phone, Nokia Siemens Village Connection, Intel World Ahead (Classmate PC) and Microsoft Unlimited Potential (Telecenter). The cases are reported in chapter 5.

The answer on the research questions is summarized here.

How can multinational ICT companies (ICT MNC) gain benefit from entering the Base of the Pyramid (BOP) market in a commercial successful and sustainable way?

The literature provides plenty of clues for preparing the company for the BOP venture (see chapter 3.A). But following a recipe or checklist is not enough. The process and awareness for the BOP concept requires a **shift in mindset**, namely from the poor people of the BOP as a development problem towards the BOP as an active market and even more boldly to the BOP as a source of innovation. The answer of how the BOP business model should look like is not simple to answer. A myriad of possibilities exist. The approach was taken to assess the **quality** of the BOP business model instead using an assessment tool derived from the BOP literature. Chapter 3.A provides up-to-date insight form the literature and chapter 6.A shows the **quality aspects of the business model** of the researched cases.

None of the researched companies entered the BOP market on its own. For this journey one needs intelligence data and experience on the ground and then a partnership comes to hand. This also requires a shift in mindset as **unconventional partnerships** prove to be invaluable when engaging with the BOP. The research also identified a range of **factors that could impact the health of the partnership**, hence affecting the outcome of the venture. These factors were categorized as driving force factors, skill factors, input-output factors, socio-cultural factors, systems factors, and trust factors.

The research suggests that a shift in mindset from just "selling to the poor" (BOP 1.0) toward "Business co-venturing" (BOP 2.0) is taking place and I suggest labeling this in-between phase a **hybrid form of BOP 1.0 & 2.0 strategy** (cf. table 9). The companies not only approached the BOP as micro-consumers, but also as business partner for distribution or as participant in the product and service development.

The research also suggests that for successful BOP ventures **alignment** is needed between "BOP Business model & strategy" with the chosen "Partnership" and the "BOP Product & Service development".

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[2] A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin, 2003)

From the sustainability perspective the "planet" aspect has been less highlighted by the researched companies so far. There was certainly **attention to the socio-cultural and economic aspect of sustainability**. Time will tell whether a convergence of clean technologies and BOP strategy will actually take place in the provision of ICT products and services to the BOP but it seems inevitable that something will happen as natural resources become scarce.

Referring to the second part of the research question:
And what could be the opportunities in the BOP market for multinational ICT companies?

Several sources of opportunity for the companies are identified and they confirm the BOP literature:

- All cases confirm that the BOP has massive and **growing underserved markets**.

- Many local innovations can be **leveraged across other BOP markets**. The findings show that all concepts described in the cases are designed to be scalable, both in magnitude as well as geographical spread as there is large potential.

- In all cases it is observed that the multinational ICT companies **learn** from local partners or from the local BOP community, either via field research, ethnographic research, or via the community's involvement in the business development.

- Multinational companies learn capabilities, practices and innovations that they might **transfer to their higher-income markets (innovation blowback)**.

The case studies show that the Base of the Pyramid cannot be ignored as it comprises the majority of the world population. The BOP demonstrates its value as an incubator for new technologies and business models. The BOP further demonstrates that inclusive business, implying the merger of profitability for the company and sustainable development for the community is possible.

Translating the thesis outcome towards practicality, a short hands-on summary, based upon the findings of this research, is presented which provides some advice for managing BOP projects (chapter 8.E). The thesis concludes with a summary of the implications this thesis could have on research, business practice and education (Chapter 9).

1. Introduction

An event during the summer of 2007 marked the beginning of the idea which led to this thesis proposal. I watched a documentary called 'The last market' (Tan, 2007) in which professor C. K. Prahalad, the author of "The Fortune At The Bottom Of The Pyramid: eradicating poverty through profits", states that the poor should not be seen as victims or a burden but as price conscious consumers (Prahalad, 2005). This new vantage point opens up a whole range of exciting possibilities. That evening the thought of new and exciting possibilities stayed in my mind and I wondered what this paradigm would imply for ICT. It has captivated me since and I began to immerse myself in this field.

The fact that my interest was drawn is not surprising in itself. In recent years, more and more people have drawn attention to the so called Base of the Pyramid (BOP). The phrase and concept of the "*Bottom of the Pyramid*" or "*Base of the Pyramid*" originated from the work of professors C.K. Prahalad and Stuart Hart (Prahalad and Hart, 2002). The Base of the Pyramid economies represent 4 billion people living in or near poverty. In economics, the Base of the Pyramid is the largest, but poorest socio-economic group. However by the sheer volume of the Base of the Pyramid, roughly 4 billion people, the spending volume is huge. Together they have substantial purchasing power: the BOP constitutes a $5 trillion global consumer market, according to a report by the IFC, the private sector arm of the World Bank Group, and World Resources Institute (WRI). Interestingly this market promises to have certain demands for ICT products and services as a recent survey reveals. Although relatively small compared with other demands, the market for information and communication technologies is estimated to be $51-100 billion per year (WRI, 2007a).

Until recently, not many companies have taken the challenge to enter this market and provide products and services to the people of the Base of the Pyramid (Prahalad, 2005). However, some companies have done so, and this research investigates how multinational ICT companies approach the Base of the Pyramid market. Those companies have made a socio-economic impact on the people of the Base of the Pyramid, by providing them much needed services and instruments for them to alleviate poverty. This will be elaborated on in chapter 2. The fact that business can be combined with social value creation[3] is the interesting dimension. Some companies acknowledge in their vision that they can play a role in tackling social problems in the world and have incorporated this in the way they approach the Base of the Pyramid people (cf. Hart, 2007). What is important to say at this point, is that in this research I was not primarily interested in charity or philanthropy. There is more to it. The aim was to explore the benefits. If done right, multinational ICT companies can actually build large and sustainable businesses based on these BOP markets. The question is how to build and what to offer. Furthermore, what benefits are there for all stakeholders, , not to mention the BOP consumers?

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[3] Social value is created when resources, inputs, processes or policies are combined to generate improvements in the lives of individuals or society as a whole (Emerson et al., 2001).

1.A. Research question & objectives

To come to the research question, first a diagram is shown. Figure 1 sketches the interactions studied in this research: those between the multinational ICT company and the local partner and those with the targeted market: the Base of the Pyramid market.
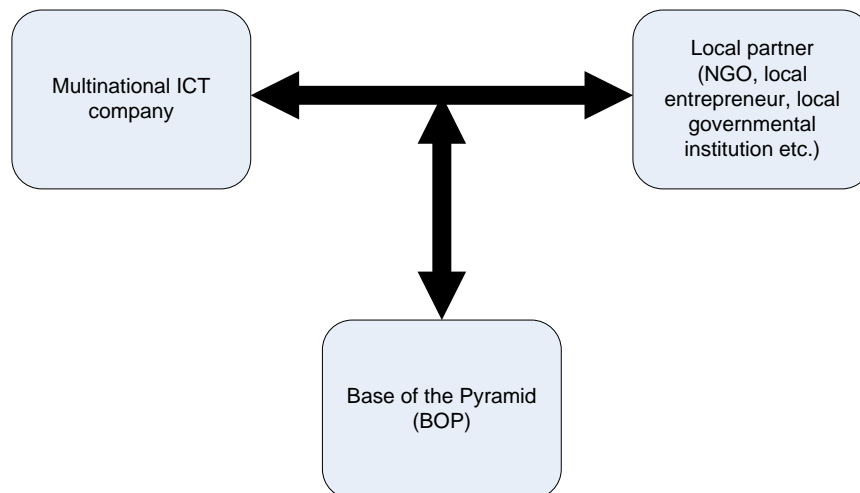
Figure 1: Illustrative sketch of research area.

The sketch provides some firsthand reflections on the process of narrowing down the research problem. The research is targeted at the way multinational ICT companies engage with the BOP (**business model & strategy**), and which local partners they join with (**partnership**) to engage with the BOP and deliver **products & services** for the BOP. These three aspects are important for analysis when engaging with the BOP (Prahalad, 2005, Simanis et al., 2008b). This thesis is structured around these aspects.

It could be argued the research problem is that not many multinational ICT companies are engaging the Base of the Pyramid (Prahalad, 2005). Therefore the research question is formulated as the following two-fold question:

> - How can multinational ICT companies (ICT MNC) benefit from entering the Base of the Pyramid (BOP) market in a commercial successful and sustainable way?
>
> - And what could be the opportunities in the BOP market for multinational ICT companies?

The first question deals with the way the multinational ICT company can manifest itself in this market and focuses on how to enter this area, most likely unknown terrain for most of these companies. A certain *business model and strategy* has to be utilized. Furthermore, *partnership* with others might be inevitable. The second question deals with *products and services* offered. In the research, the three

main units of analysis that were analyzed are "business model & strategy", "partnership" and "products & services".
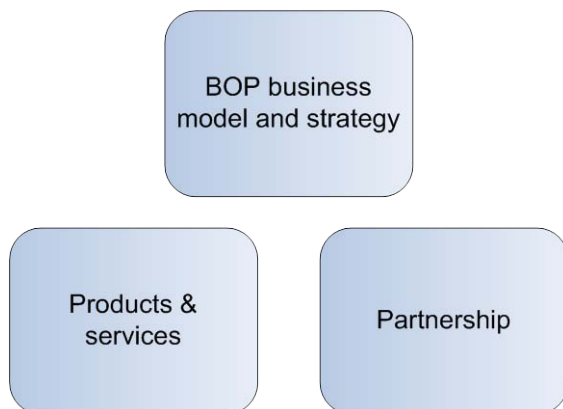
Figure 2: three main units of analysis of the research.

In the research the relation and interaction between these three units of analysis have been studied. This deconstruction of Figure 1 in the these "variables" (which are the units of analysis for this research) is based upon the identification made by for instance Prahalad (2005) that a different business model is needed for the BOP, and that other partnerships are involved and furthermore products and services need to be tailored to the needs of the people of the BOP. Alongside this Simanis et al. (2008b) have stressed the importance of partnership in the context of the BOP. To actually answer the two-fold research question, it has been deconstructed in the following six objectives, here formulated as sub questions.

Table 1: Objectives of research formulated as sub questions.

1. What is the so called BOP market and how does it look like in Africa?

2. Of what interest is the BOP for the researched multinational ICT companies?

3. What kind of BOP business models & strategies are pursued by the researched multinational ICT companies?

4. What kind of products & services are developed and delivered to the BOP by the researched multinational ICT companies?

5. Assuming ICT MNCs cannot or will not enter this BOP market alone, with what kind of organization is a partnership forged by the researched multinational ICT companies?

6. Is there an interrelation between the main units of analysis of this research, namely BOP business models & strategies, products & services and partnership?

To scope of the thesis was restricted along the following conditions:

- Focus on ICT MNCs as they provide possibilities to research their behavior in a market often unknown to them, the BOP market.

- Focus on local cooperation scenarios (e.g. PPP[4] with local government, or partnerships with an NGO or local entrepreneur).

- The cases are contained within the geographic region of Africa.

- The approach is mainly focused on qualitative and not quantitative aspects.

Both research questions and their accompanying objectives fit within the Business & IT Alignment (BIA) field of research. ICT companies have to align their business with those of their local partner in order to enter this BOP market. These local partners, such as NGOs, have a different kind of business, namely development, than ICT MNCs normally have to deal with (Beshouri 2006). Moreover the physical infrastructure in the BOP market is generally considerably different from Top of the Pyramid markets like Western Europe, such that new ways of applying ICT can be established. One could consider the usage of existing social networks (Sullivan, 2007). These aspects are interesting and innovative for the BIA field of research.

1.B.   Outline thesis research & document structure

Figure 3 depicts the research process and also shows the relation to the chapters of this thesist. The various steps in the approach correspond with thesis chapters. The process consisted of a two-way approach, labeled as theory and practice research. The aim was to combine and match findings from the literature review to the findings from the practice research of the examined case studies.

Chapter 1 starts with the research question and objectives. To elaborate the field of study, chapter 2 provides background information on the Base of the Pyramid concept and addresses some assumptions and criticism on the concept. Furthermore it shows some data from Africa related to ICT as the research is narrowed down to that geographical area. Chapter 3 provides an overview of literature in the field of the three main units of analysis of this research, namely "business model & strategy", "partnership" and "products & services".

Chapter 2 and 3 combine the "Theory"-branch of the two-way approach as shown in the next figure. Chapter 4 elaborates the research methodology which has been found appropriate for this research. The multiple case study method is explained and an overview of the researched cases is presented. Furthermore the structure of the case report and analysis is shown. Chapter 5 is the presentation of the case study reports, followed by individual case analysis reports. Chapters 4 and 5 represent the "Practice research" branch of the two-way approach.

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[4] PPP: Public Private Partnership.
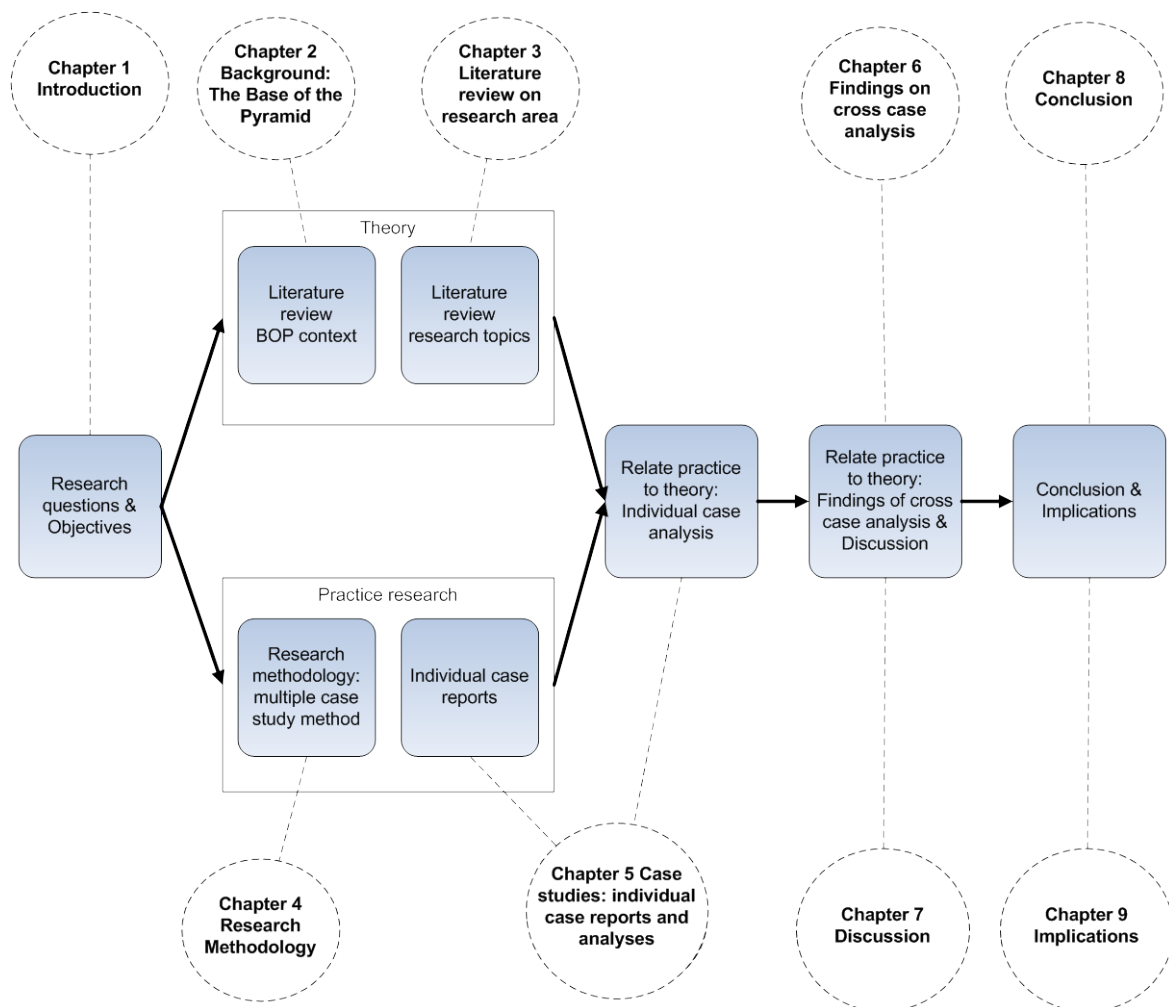
Figure 3: Overview of thesis research process and relation to thesis chapters.

Chapter 5 also relates practice to theory as the individual case analysis reports are included. This is chosen for the reader's convenience so that the analysis follows right after the case report of the same case study. The findings of all case analysis reports is combined in a cross case analysis in chapter 6.

These cross case analysis findings are discussed in chapter 7 and related to the theory of chapters 2 and 3. During the whole sequence the three main units of analysis ("business model & strategy", "partnership" and "products & services") are separately discussed. Chapter 8 consists of the conclusion and provides answers on the research questions, as well the objectives of the research. Finally, chapter 9 discusses the implications of this research.

2. Background: the Base of the Pyramid

In this chapter the concept of the Base of the Pyramid is explained. For navigational purpose the picture on the right indicates the place of this chapter in the research process.

In recent years, more and more people have drawn attention to the so called Base of the economic Pyramid (BOP). The phrase and concept of the "*Bottom of the Pyramid*" or "*Base of the Pyramid*" originated from the work of professors Stuart Hart and C.K. Prahalad (Prahalad and Hart, 2002).
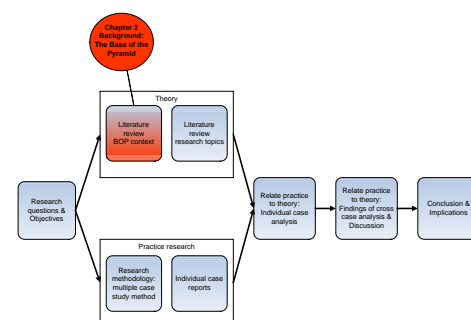
In the original papers various authors, including C.K. Prahalad and Stuart Hart described the Bottom of the Pyramid as the bottom segment of the economic pyramid. Their estimate of the annual per capita income of BOP people is *less than $1500*. It is represented by tier 4 of this graph.

Annual Per Capita Income*	Tiers	Population in Millions
More Than $20,000	1	75–100
$1,500–$20,000	2 & 3	1,500–1,750
Less Than $1,500	4	4,000

* Based on purchasing power parity in U.S.$
Source: U.N. World Development Reports

Figure 4: The world economic pyramid; tier 4 is the Base of the Pyramid (BOP)[5]. source (Prahalad and Hart, 2002).

The BOP is often referred to as the Bottom of the Pyramid, but many BOP researchers have moved away from that use, as a population of over four billion is more than the bottom of the world's income pyramid, it represents the majority of it (BRINQ, 2008). The segment has been named "Base of the Pyramid" as previously mentioned, or "Bulk of the Population" (Chandra, 2007), "Business for/with the Majority" (Jarvis, 2006), or "Sustainable markets" (UNDP, 2007b) or "Pro poor markets" (Scott et al., 2004). In the rest of the thesis the term Base of the Pyramid or its abbreviation BOP will be used.

However, recent surveys have provided a more accurate picture on the actual size of the BOP market. The joint WRI/IFC report is based on household income and consumption survey data in 8 important sectors (e.g. food, energy, ICT etc), drawing on household surveys in 110 countries for income and a

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[5] *Please note that in recent research the boundary of the BOP segment has changed by definition to include all with an annual per capita income of less than $3000 (WRI, 2007b).*

subset of 36 more for expenditures. This research has been conducted by the IFC, the private sector arm of the World Bank Group, and the World Resources Institute (WRI). This report has led to a more accurate measurement and definition of the BOP.

The BOP population segment is defined in this report as those with *annual incomes up to and including $3,000 per capita per year in local purchasing power* (WRI, 2007b). The Base of the Pyramid economies represent four billion people living in or near poverty. In economics, the Base of the Pyramid is the largest, but poorest socio-economic group.

The wealthier mid-market population segment – tiers 2 and 3-, the more than 1.5 billion people with per capita incomes between $3,000 and $20,000, represents a $12.5 trillion market globally. This market is largely urban, already relatively well served, and extremely competitive. BOP markets are often rural, very poorly served, dominated by the informal economy, and, as a result, relatively inefficient and uncompetitive. Yet these markets represent a substantial share of the world's population.

In contrast to the Tier 1 market that represents a relatively saturated market, the Base of the Pyramid or even the middle is virtually a green field.

Looking at the market size of the Base of the Pyramid (BOP) markets, they make up for 72% of the total world population. In the table below the distribution of the BOP markets across the world is shown, including their income size in purchasing power parity (PPP). "*PPP is a method a method of measuring the relative purchasing power of different countries' currencies over the same types of goods and services*" (Worldbank, 2008). PPP makes more accurate comparisons of standards of living across countries.

Region	BOP income (millions) total (PPP)	BOP share of total income (%)	BOP populations (millions)	BOP share of total population (%)
Africa	42.9	70.5	486	95.1
Asia including Middle East	3,470	41.7	2858	83.4
Eastern Europe	458	36.0	254	63.8
Latin America and Carribean	509	28.2	360	69.9

Table 2: The markets at the base of the pyramid (BOP), by region. BOP population segment is defined as those with annual incomes up to and including $3000 per capita per year (2002 PPP). Source (WRI, 2007b)

To translate this to a national level I give some examples from the aforementioned report. In U.S. dollars the income of BOP people is less than $3.35 a day in Brazil, $2.11 in China, $1.89 in Ghana, and $1.56 in India.
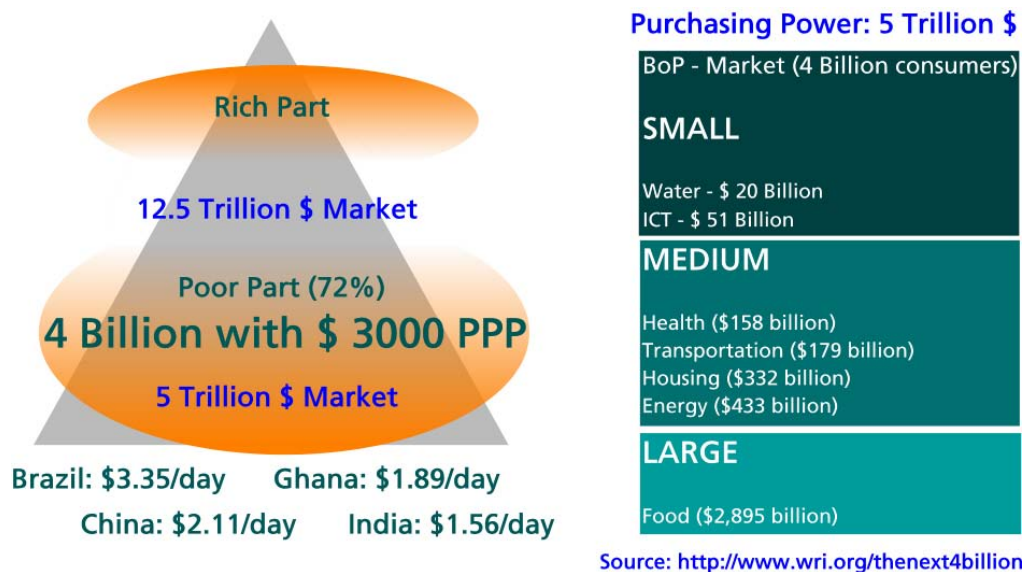
Figure 5: The Base of the Pyramid constitutes of 4 billion people with the adjusted data on purchasing power by (Kandachar, 2008a) adapted from (WRI, 2007b).

By the sheer volume of the Base of the Pyramid, roughly 4 billion people, the spending volume is huge. Together they have substantial purchasing power: the BOP constitutes a $5 trillion (PPP) global consumer market, according to the IFC/WRI report. The report also explains that the choice for the $3000 upper limit is based upon the world mean income (Hammond, 2007).

2.A.   Characteristics and data of BOP

The Base of the Pyramid communities, although geographically not bounded to one particular region, have some general shared features (WRI, 2007b, Brewer, 2003, Hammond and Prahalad, 2003):

- As previously mentioned approximately **4 billion people** with a low income of **below US$3,000** per capita per year (PPP). This number of people could increase to 6-8 billion over the next 25 years.

- Most live in **rural villages or urban slums** and shanty towns; there is a movement towards urbanization. **Many BOP Markets are Geographically Concentrated**. Emerging markets are centered on megacities. These clusters may represent about 1.0 billion BOP consumers served primarily by the informal economy in clearly identifiable and restricted locales. Access to these markets can be very efficient.

- **Education levels are low** or non-existent (especially for women).

- **Significant unmet needs** such as the lack of access to water, sanitation services and basic health care services. Often people have no bank account and when they borrow money they have to pay high interest rates to local moneylenders. Most people do not own a phone and many live in an informal settlement and don't officially own land or a house.

- **Dependence on informal or subsistence livelihoods.** A key issue in understanding BOP markets is informality. Most of those in the BOP are poorly integrated into the formal economy, which limits their economic opportunities. As producers, they often lack good access to markets to sell their labor, handicrafts, or surplus crops and have no choice but to sell to local employers or to middlemen who exploit them. Such markets are hard to reach, disorganized, and very local in nature.

- **Impacted by a BOP poverty penalty**. **The poor live in very high-cost economies.** Many of those in the BOP, and perhaps most, pay higher prices for basic goods and services than do wealthier consumers – either in cash or in the effort they must expend to obtain them – and they often receive lower quality as well. For some services BOP consumers lack access altogether. This is the so called BOP penalty. Due to local monopolies, inadequate access, poor distribution, and strong traditional intermediaries, the poor pays 2 to 75 times what the rich pay in the same economy. Reducing the poverty penalty is both a business opportunity for the private sector and defines a policy agenda for the public sector (WRI, 2006).

Cost	Dharavi (A)	Warden Road (B)	Poverty premium (A/B)
Credit (annual interest)	600 percent-1,000 percent	12 percent-18 percent	53X
municipal-grade water (per cubic meter)	$1.12	$0.03	>37X
phone call (per minute)	$0.04-$0.05	$0.025	1.8X
diarrhea medication	$20	$2	10X
rice (per kilogram)	$0.28	$0.24	1.2X

Table 3: Example of the BOP poverty penalty; Dharavi, a shantytown of more than one million in the heart of Mumbai, India compared with the costs of essentials in Warden Road, an upper middle class community in a nice suburb of Mumbai. Adapted from (Hammond and Prahalad, 2003).

Against the view of the BOP as a market there are researchers who apply a nuance to this interpretation. "It's worth noting that the Base of the Pyramid is a socio-economic demographic. It is not a market ", as Simanis and Hart (2008) argue. This difference in point of view has an interesting result in the way strategies to engage with the BOP people are carried out. This stance will be explained later on and is been referred to as BOP 1.0 and BOP 2.0 strategies.

Roughly 4 billion people make up the BOP. Surveys show that the BOP makes up 72% of the 5,575 million people and an overwhelming majority of the population in Africa, Asia, Eastern Europe, and Latin America and the Caribbean—home to nearly all the BOP(WRI, 2007b). Although the name BOP has been given collectively to the world's poor, the political, social, and economic environments they exist in are highly diverse, in reality. For this reason, it is difficult to group them all into the BOP and think that a giant market consisting of 4 billion people exists. Even if it is called "The Next 4 Billion

Market," major differences in population makeup are apparent when viewed in terms of income bracket. There are also wide varieties in different regions as Figure 6 shows.
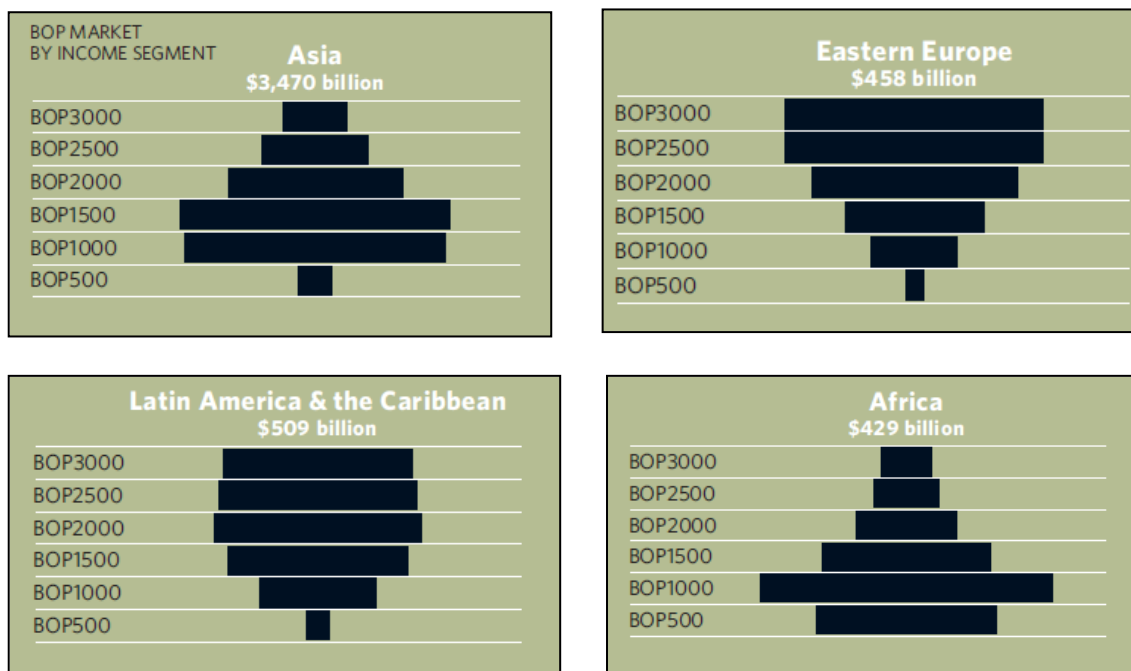
The figure that half of the sub-Saharan Africa's population is living on less than a dollar a day has to be examined carefully. Families of five or eight people might share a single dwelling. This means that households could earn $5 to $8 per day as a household, or $180 per month (Mahajan, 2009).

Africa has a BOP market of approximately $429 billion. The BOP is by far the region's dominant consumer market, with 71% of purchasing power. It includes 486 million people in 22 surveyed countries, 95% of the population of those countries. South Africa has the region's strongest and most modern economy, yet 75% of the population remains in the BOP. The South African BOP market has an aggregate income of $44 billion. Other countries in the region offer even larger BOP market opportunities, notably Ethiopia ($84 billion) and Nigeria ($74 billion)", according to the World Resources Institute (WRI, 2007b).

2.B. Why Africa?

The choice for Africa as region for focus of my research is two-fold. First of all, much literature was to be found on BOP related initiatives in large emerging markets, especially about the so called BRIC[6] regions, but the continent Africa was hardly mentioned in early initiatives. Secondly, the economic development, especially in the field of mobile communication is booming in Africa and thus highlights the potential that lurks for business as development.

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[6] BRIC is an acronym that refers to the fast growing developing economies of Brazil, Russia, India, and China.

Mobile subscriptions skyrocket in Africa. Africa outpaces the rest of the world in average annual growth of mobile phone subscriptions. Africa has been the fastest-growing mobile market in the world during the past five years (Coyle, 2005). According to the International Telecommunication Union, from 1999 through 2004 Africans signed up for cell phones at a far greater rate than Asians and nearly three times as fast as Americans. Most of that growth was in the sub-Saharan region.
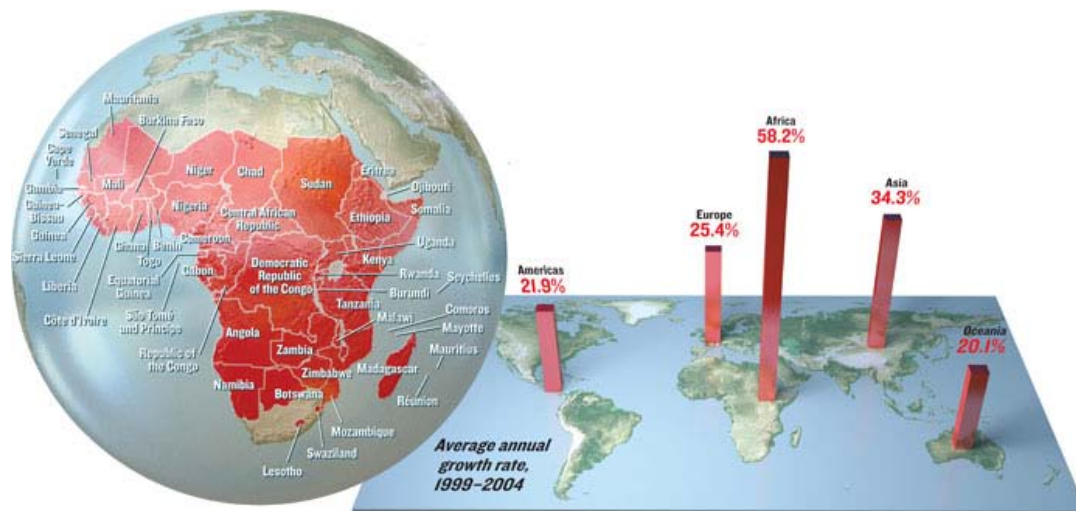
Figure 7: Mobile subscriptions skyrocket in Africa (Mbarika and Mbarika, 2006)

In 2005 there were 52 million mobile subscribers (about 7 percent of the African population) compared with 25 million for fixed lines, with the mobile accounting for at least three-quarters of all telephones in 19 African countries (Coyle, 2005). Today and increasingly in the future, mobile telephony is going to be the predominant mode of access to the information society for African citizens. Africa is a very voice-centric market, and value-added services, except SMS, have made little appreciable impact so far.

Scott et al. (2004) estimates that the number of mobile subscribers in Africa will continue to expand at the rate of 35 percent a year over the next few years. These numbers are conservative; teledensity[7] figures mask the extent of mobile access because people in Africa, especially the poor, tend to share mobile phones (McKemey et al., 2003, Davis and Ochieng, 2006).

Arguably, Africa's greatest success story to date in telecommunications is the remarkable spread of mobile telephony throughout the continent. Africa's mobile market has been the fastest-growing of any region over the last five years and has grown twice as fast as the global market (see Figure 8).

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[7] The most common measure of telecommunication access is teledensity or the number of telephone lines per 100 inhabitants (source ITU).
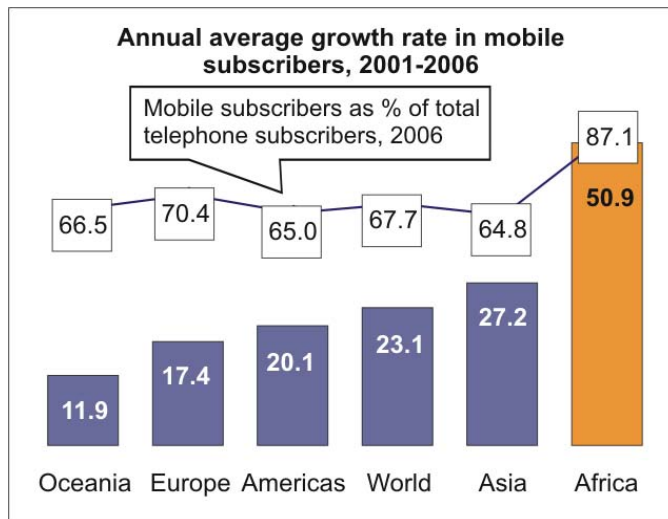
Figure 8: Mobile growth per region (ITU, 2007b)

Some facts on Africa (ITU, 2007b). In 2006 Africa:

- Accounted for 14% of the world's population, but for only 5.6% of all fixed and mobile subscribers worldwide.

- Had its own digital divide. For example, Egypt had 11 times the fixed line penetration of Nigeria. While sub-Saharan Africa (excluding South Africa), had an average teledensity of one percent, North Africa (Algeria, Egypt, Mauritania, Morocco, Tunisia) had a comparable average of eleven percent. Almost three quarters of the continent's fixed lines were found in just 6 of the continent's 55 countries.

- Had 221 million total telephone subscribers, 198 million of which were mobile cellular subscribers. The continent has the highest ratio of mobile to total telephone subscribers of any world region, and has been dubbed "the least wired region in the world".

- Was the region with the highest mobile cellular growth rate. Growth over the past 5 years averaged around 50% year on year. The total number of mobile cellular subscribers continent-wide at end 2006 was 198 million.

- Had some 22 million Internet users, for an Internet penetration of just 5%. Europe's Internet penetration is 7 times higher.

Expressed in quantitative terms, Africa lags behind all other regions in availability of telephone and internet and even electricity (ITU, 2007b). This picture, though grim, is the starting point for researching the potential ICT could have especially for those of the BOP on this continent.

2.C.　　*Logic of multinational companies as it relates to the BOP*

Multinational companies (MNCs) are businesses that have operations in more than one country. Corporations that control assets in more than one country are also known as transnational corporations (TNCs). In this thesis I have adopted this definition of an MNC by UNCTAD (2006).

In their article Prahalad and Hart summarized the arguments used by multinational companies (MNCs) not to pursue business in this BOP market so far (Prahalad and Hart, 2002). I have written down a few counter arguments posed by these authors in the last column. Their article deals with these assumptions in greater detail.

Table 4: The Dominant Logic of MNCs as it relates to BOP and the reality according to Prahalad & Hart; source (Prahalad and Hart, 2001)

Assumption	Implication	Reality
The poor are not our customers.	Our cost structure is a given; with our structure, we cannot serve the BOP market.	At the aggregated level there is money at the BOP. E.g. India has 1.00 billion people → $3 trillion in PPP.
The poor do not have use for products sold in developed countries.	We are committed to a form over functionality. The poor might need sanitation, but can't afford detergents in formats we offer. Therefore, there is no market in the BOP.	The poor are very brand-conscious; They are also extremely value conscious by necessity, especially in durable goods like TVs, washing machines, etc.
Only developed countries appreciate and pay for technological innovations.	The BOP does not need advanced technology solutions; they will not pay for them. Therefore the BOP cannot be a source of innovation.	The BOP consumers accept advanced technology readily.
The BOP market is not critical for the long-term growth of MNCs.	BOP market is at best an attractive distraction.	Urban areas attract the poor, especially from unproductive rural areas. So the poor in those areas are relatively easy to access.
Managers are not excited by business challenges that have a humanitarian dimension.	We can't find people to work on in BOP markets. BOP markets are at best an attractive distraction.	MNCs can bring market efficiencies and lower costs to the BOP.
Intellectual excitement is in developed countries; it is difficult to recruit managers for BOP markets, i.e. nobody wants to go 'there'.	We can't assign our best people to work on market development in BOP markets.	

But while the majority of multinational corporations have seen these challenges as too big to overcome, other have quietly pursued strategies of experimentation in developing unique product and service propositions for some of the world's most needy consumers. Some multinational companies have accepted the challenge of serving the poor and have been able to do so profitably.

Prahalad and Hart provide several compelling reasons for MNCs to enter the BOP market, while overriding the before mentioned assumptions, showing them to be misconceptions (Prahalad, 2006c, Hart, 2007b):

Table 5: Compelling reasons for MNCs to enter BOP market (Prahalad, 2006c, Hart, 2007b).

Reason	Elaboration
Resources	Building a complex commercial infrastructure for the Base of the Pyramid is a resource- and management-intensive task. Developing environmentally sustainable products and services requires significant research. Few local entrepreneurs have the managerial or technological resources to create this infrastructure.
Convening of power	MNCs can be nodes for building the commercial infrastructure, providing access to knowledge, managerial imagination, and financial resources. MNCs are well positioned to unite the stakeholders to reach markets like the BOP. These stakeholders include NGOs, communities, local governments, entrepreneurs and multilateral development agencies.
Knowledge transfer	MNCs with their global reach and knowledge base have better abilities to transfer knowledge from one market to another.
Upmarket migration	MNCs have the capacity to move innovations up-market. The BOP market can be a testing ground for disruptive innovations[8] that enable a more sustainable living. Many of the innovations for the bottom can be adapted for use in the resource- and energy-intensive markets of the developed world.

There has been written about social entrepreneurship in the BOP market; there are publications about companies entering this market, but still there hasn't been a general overview about the potential for ICT companies in this area. My research wants to provide some clues on this area.

In this research I am not primarily interested in charity or philanthropy. There is more to it. The aim is to explore the benefits. If done right, multinational ICT companies can actually build large and sustainable businesses based on these BOP markets. The question is how to build and what to offer. Furthermore what benefits are there for all stakeholders, not in the least for the BOP consumers?

As a market, the Base of the Pyramid is clearly different from those that multinational firms currently serve. It comprises the majority of the world's population, the 4 billion people with purchasing power of less than $3000 per year.

Despite the size of this market, it remains largely untapped and unserved by MNCs. Companies tend to assume that people with such low incomes have little to spend and buy little beyond food and

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[8] Disruptive innovation describes a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors (Christensen, 2008)

shelter. They also assume that inadequate infrastructure, illiteracy, currency fluctuations, corruption, bureaucratic red tape and other barriers make it difficult to build a profitable business serving poor communities.(Hammond and Prahalad, 2003). The authors argue that such assumptions reflect a narrow and largely outdated view of the developing world. The fact is, many multinationals already successfully do business in developing countries although most currently focus on selling to the small upper-middle-class segments of these markets), and their experience shows that the barriers to commerce - although real - are much lower than is typically thought. Prahalad (2005) states on this development:: "*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." Therefore a shift in mindset is needed.
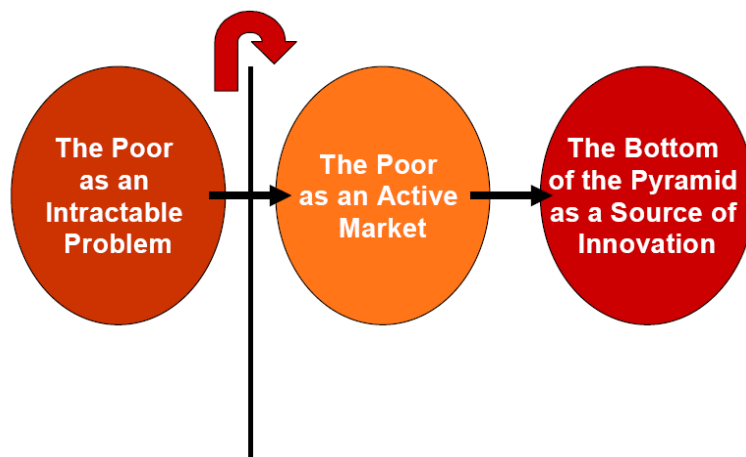
Figure 9: The needed shift in mindset (Prahalad, 2002)

Several sources of opportunity for firms to understand and cater to the Base of the Pyramid (BOP) are identified:

- BOP has massive and a growing underserved markets. Some BOP markets are large and attractive as stand-alone entities (Prahalad and Hart, 2002).

- Many local innovations can be leveraged across other BOP markets (Prahalad, 2005).

- It is also argued that by getting engaged in BOP markets, multinational companies can learn about important capabilities, practices and innovations that they might transfer to their higher-income markets. (Prahalad, 2005, Hart and Christensen, 2002). E.g. the BOP provides breeding ground for next generation, global scale competitors (Christensen et al., 2001). MNCs can help BOP markets to develop, but MNCs can also learn from BOP markets.

The World Business Council for sustainable Development (WBCSD) has also identified several global trends and drivers that are creating a favorable environment for companies to start engaging with the Base of the Pyramid people (WBCSD, 2004):

Table 6: Global trends and drivers to start engaging with the Base of the Pyramid (WBCSD, 2004).

Global trends and drivers for engaging with the Base of the Pyramid
• **Many companies see a need to break out of mature market sectors.**
• **Framework conditions in many developing countries are improving.**
• **Communications are faster and cheaper, making the world a smaller place.**
• **Public expectations of corporations are changing.**
• **New and better partners are available.**
• **Aid and investment are beginning to reinforce one another**

But is it all about markets? Or is there more to it? To quote (Prahalad, 2005):

> *"When the poor at the BOP are treated as consumers, they can reap the benefits of respect, choice, and self-esteem and have an opportunity to climb out of the poverty trap"*

And from a lecture he gave at Tilburg University (Prahalad, 2006b)

> *"I have gently made three transitions. First, we should not think of poverty as an intractable problem. We should start seeing poverty as an opportunity to create an inclusive market based system. Secondly, the poor as micro consumers and micro producers can help create large and growing markets. It is no more just a hope. The evidence is mounting. Third, once we conceive of the poor as a market, we have to innovate to meet the goals of 'awareness, access, affordability, availability'. So BOP becomes a source of innovations. It is unwise to ignore this opportunity for too long."*

This is the moment to reflect on the arguments proponents of engaging with the BOP make and criticism upon it.

2.D.   Criticism on BOP

The idea of Prahalad, Hart and others about the BOP proposition are not without criticism. There have been intense debates between opponents and proponents. To start with one of Prahalad's statements:

> *"When multinational corporations attempt to penetrate new markets in the developing world, critics sometimes condemn them for preaching the gospel of consumer culture to the poor, for exploiting the poor as cheap labor, and for extracting and despoiling natural resources without fairly compensating locals.*

In truth, some multinationals have been guilty on all these counts. But the private sector may do more harm by ignoring poor consumers than by engaging them. After all, if the poor can't participate in global markets, they can't benefit from them either." (Prahalad, 2006b)

Criticism on the BOP proposition is focused on several issues. A list is summarized hereafter.

1. **Size of the BOP, measurement problem:** In the past years some concern and criticism has been raised about the validity of the claims made in literature about the size of the BOP market in terms of numbers of people and their purchasing power. The WRI has recently released a report based on household surveys worldwide and it provides currently the most accurate data (WRI, 2007a); in section 2.A this has been used to illustrate the size and other characteristics of the BOP.

2. **Access to ICT is limited**: Enthusiasts say ICT infrastructure offers economies of scale that stimulate network building and promote inclusive participation by overcoming barriers of physical distance and social standing. Its expansion generates benefits for both new and existing users. The immediacy of ICT promotes faster and more efficient decision-making. Sceptics such as Torero and von Braun (2005) argue that access to ICT depends on income. Limited education, inappropriate language skills or lack of resources prevent disadvantaged people from accessing ICT. This widens information gaps and income inequality between and within countries. This criticism is included in the case analysis, particularly looking at the *benefits* the BOP community and *accessibility* of the product or service.

3. **Doubt on poverty alleviation:** *"In sum, I find the suggestions put forth in Fortune at the Bottom of the Pyramid will challenge corporations to be innovative and creative. However, my contention is that Prahalad claims these strategies for entering emerging economies will eradicate poverty. There is no evidence in the past 50 years to support such a claim."* (Landrum, 2007). "*BOP products and services will probably never help the "bottom billion" who are in absolute poverty and need either jobs or handouts.*" (Collier, 2007). This criticism is included in the case analysis, particularly looking at the *benefits* and *sustainability.*

4. **Unsustainability**: "*Critics also point out that some companies have chosen to simply adapt environmentally unsustainable products and services to sell in the BoP "mass market." Left unchecked, this path clearly leads to environmental oblivion*" (Simanis et al., 2005). This criticism is included in the case analysis, particularly looking at the *sustainability* the BOP business and offered products.

5. **Only selling to the poor: "***A growing chorus of voices now raises concerns that corporate BOP strategies represent nothing more than veiled attempts to "sell to the poor," as though simply turning the poor into "consumers" will address the fundamental problems of poverty and sustainable development.*", according to Karnani (2007). This criticism is included in the

case analysis, particularly looking at the *strategy* (BOP 1.0 or BOP 2.); this is further explained in section 3.A.

6. **Irresponsible selling:** A criticism of the BOP proposition is that targeting the poor as consumers could lead to their making bad consumption choices not in their own self-interest. Thus the firms could end up exploiting the poor (Karnani, 2006a). The BOP proponents dismiss such arguments as arrogant and patronizing and assert that the poor are value-conscious consumers (Prahalad, 2006a, Gouillart, 2008). This criticism is included in the case analysis, particularly looking at the *sustainability* and *strategy* (BOP 1.0 or BOP 2.).

7. **Displacement of local economic activity:** "*Multinational enterprises – with their efficient production methods and deep financial pockets - can easily out-compete local firms and thereby 'crowd-out' local firms and local employment, which in the end might generate more poverty than it alleviates. In this case, the multinational enterprise introduces products that substitute for already existing products and services.*" (van Tulder, 2008b). This criticism is included in the case analysis, particularly looking at the *benefits.* This aspect is illustrated in section 2.F, Figure 12.

An effort has been made to embed the criticism on the BOP proposition in the research process, especially the analysis of the case studies, see chapter 5. This criticism has been fruitful in shifts in BOP thinking. The debate has past the point of asking whether the private sector should engage the poor, and is all about how to do so effectively (Reficco and Márquez, 2009). Having said this, let us look at the role ICT can have for development of the BOP and the market versus development approach towards the Base of the Pyramid.

2.E.   ICT and BOP: market opportunities and ICT4D

The OECD defines the ICT sector as ICT economic activities (industries): the production (goods and services) are primarily intended to fulfill or enable the function of information processing and communication by electronic means, including transmission and display (OECD, 2007). For the scope of the thesis research this definition is applied as multinational ICT companies are firms who deliver computer equipment, software, services, telecommunication equipment, services et cetera.

A specific area of interest is the use of information and communication technology (ICT) in the BOP market. Interestingly the BOP market promises to have certain demands for ICT products and services. Although relatively small compared with other demands, the market for information and communication technologies is estimated to be $51 billion but probably twice as much, $100 billion per year, as a result of rapid growth (WRI, 2007b).
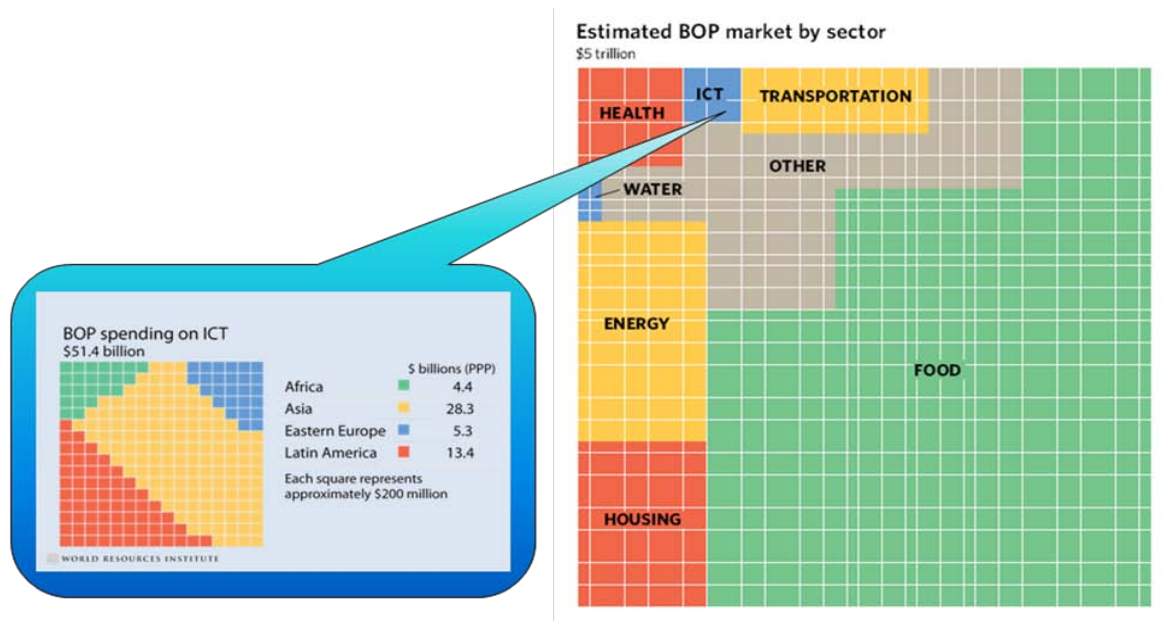
Figure 10: Estimated BOP market and focus on annual ICT spending per region (WRI, 2007b)

Continuing rapid growth in the ICT sector in developing countries suggests untapped demand.

Perhaps even more interesting than the market potential for ICT products and services is the development potential that ICT promises. ICT can be a powerful enabler of development goals because its unique characteristics dramatically improve communication and the exchange of information to strengthen and create new economic and social networks (UNDP, 2001).

Summarized the reasons for this potential are (UNDP, 2001, McNamara, 2003, Sachs, 2008):

- ICT is *pervasive and cross-cutting*. ICT can be applied to the full range of human activity from personal use to business and government. It is multifunctional and flexible, allowing for tailored solutions—based on personalization and localization—to meet diverse needs.

- ICT is a key enabler in the *creation of networks* and thus allows those with access to benefit from exponentially increasing returns as usage increases.

- ICT fosters the *dissemination of information and knowledge* by separating content from its physical location. This flow of information is largely impervious to geographic boundaries—allowing remote communities to become integrated into global networks and making information, knowledge and culture accessible, in theory, to anyone.

- The "digital" and "virtual" nature of many ICT products and services allows for *zero or declining marginal costs*. Replication of content is virtually free regardless of its volume, and marginal costs for distribution and communication are near zero. As a result, ICT can radically reduce *transaction costs*.

- ICT's power to store, retrieve, sort, filter, distribute and share information seamlessly can lead to substantial *efficiency gains* in production, distribution and markets. ICT streamlines supply and production chains and makes many business processes and transactions leaner and more effective. It facilitates division of labor as well.

- The increase in efficiency and subsequent reduction of costs brought about by ICT is leading to the creation of new products, services and distribution channels within traditional industries, as well as *innovative business models and whole new industries.* Intangible assets like intellectual capital are increasingly becoming the key source of value. With the required initial investment being just a fraction of what was required in the more physical-asset intensive industrial economy, barriers to entry are significantly lowered, and competition increased.

- ICT facilitates *disintermediation*, as it makes it possible for users to acquire products and services directly from the original provider, reducing the need for intermediaries.

Practically this could mean the following advantages for the poor (Kramer et al., 2007, Sachs, 2008):

- Reduction of transaction costs and thereby improving productivity

- Offering immediate connectivity improving efficiency, transparency and accuracy

- Substitute for more expensive means of communicating and transacting like physical travel

- Increase choice in the marketplace and provide access to otherwise unavailable goods and services, although the actual distribution of those physical goods should still be arranged.

- Widen the geographic scope of potential markets

- Channel knowledge and information of all kinds (including education and training)

In some parts of the world, information and communication technologies and services are contributing to revolutionary changes in business and everyday life. In other parts of the world, the lives of people have hardly been touched by these innovations. If people in developing countries are unable to acquire the capabilities for using the new ICT applications, they will be increasingly disadvantaged or excluded from participating in the global information society.

The idea that information and communication technologies (ICT) can play an important role in the developing world is not new. Heeks (2008) refers to the use of the first computer in Kolkata, India, in 1956 for statistical calculations as the first case of using (information) technology in developing areas. Things have progressed over the years to more advanced and complicated efforts. Heeks explored the evolution of ICT for development from ICT4D 1.0 and its transition to an emerging ICT4D 2.0 arguing that the first phase was dominated by Internet-enabled PC telecenters[9] catering to development causes that failed to deliver (cf. McNamara 2003, Heeks 2008), whereas the emerging ICT4D 2.0 phase is applying ICT much more creatively to development problems (Toyama and Dias, 2008).

From the so-called ICT4D 1.0 era projects lessons were learnt about sustainability, scalability and evaluation. Heeks describes the key issues in these so called ICT4D 1.0 projects:

- Sustainability: The failure of many ICT4D projects to deliver and survive

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[9] The term telecenter is a generic one for all kinds of arrangements that seek to provide shared and mediated access to information and services by using new technologies especially computers and Internet (Mukerji, 2008).

- Scalability: The limited reach of individual projects;

- Evaluation: ICT4D 1.0 was often held aloft by hype and uncorroborated stories, which fostered a new interest in impact evaluation

Effectively ICT4D projects needed a longer life, needed to reach more people and needed to be evaluated in a more objective manner. Heeks identifies three different modes for innovation for ICT4D projects.

- *Pro-poor* innovation occurs outside poor communities, but on their behalf.

- P*ara-poor* initiatives are undertaken alongside poor communities

- *Per-poor* innovation occurs within and by poor communities.. It marks innovations around processes, new products and business models that are devised by the poor with reference to their own self-defined needs and wants.

The social and economic potential of new technologies for development is enormous, but so too are the risks of exclusion (Mansell, 1999). Economic research suggests a positive correlation between the spread of ICT and economic growth.(Siegel, 2003). ICT can contribute to income generation and poverty reduction. It enables people and enterprises to capture economic opportunities by increasing process efficiency, promoting participation in expanded economic networks, and creating opportunities for employment (OECD, 2005).

These activities are known as ICT for development. ICT for development (ICT4D) is aimed at bridging the digital divide[10] and aiding economic development by ensuring equitable access to up-to-date communications technologies (UNDP-APDIP, 2004).

In recent years, stakeholders also started focusing on partnerships as a potentially influential factor in the success of development efforts in general (van Tulder, 2008a). This will be highlighted in section 3.C. These positive development effects provide an even stronger case for the development of the BOP market by ICT companies and local partners.

2.F.   Market versus Development

Markets are not the only solution to the problems of low-income communities, but market-based approaches have some benefits that, if properly addressed, have the potential to contribute to both human development and business growth (UNDP, 2007b). Hammond et al. (2007) argue that a market-based approach to low-income markets considers local people as both consumers and agents that can be part of the business process (e.g. as producers, distributors, promoters, et cetera).

Inclusive business models include the poor, whether as employees, entrepreneurs, suppliers, distributors, retailers, customers, or sources of innovation, in a way that furthers their human

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[10] The term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities. (OECD, 2006)

development and that is financially, environmentally and socially sustainable (UNDP, 2008). Sometimes it is referred to as sustainable livelihoods (SL) business: doing business with the poor in ways that benefit the poor and benefit the company (WBCSD, 2004). Examples of inclusive or sustainable livelihoods business include local employment, local sales to low-income people and small business especially productivity-enhancing goods and services, and local value chain linkages like distribution and franchising (Jenkins, 2007).

Proponents of market inclusion argue that consumers in lower-income communities can enjoy a better life if the business community offers them the ability to fulfill their basic needs for nutrition, health, education, housing and sanitation (SadreGhazi and Duysters, 2008).

For instance, mobile phones have a positive and significant impact on economic growth. A developing country with an increase of 10 more mobile phones per 100 people between 1996 and 2003 resulted in a 0.59% increase in GDP[11] per capita (Coyle, 2005, Waverman et al., 2005). In Africa like in other developing regions, mobile phones are the first communications infrastructure providing economic development. In some places prepaid minutes have become a form of currency (Mahajan, 2009).

This is in that sense a new approach that aid is not regarded as the only solution of the problems of the poor. However this thesis does not argue that aid should be omitted and that only trade can effectively bring benefits to the poor, which seems to be the (academic) discourse between opponents and proponents of the "trade not aid" mantra. On one side people such as Collier (2007) and Easterley (2008) cast doubt on the effectiveness of aid and argue that this easy money' stimulates corruption. On the other side people like Sachs (2008) argue that aid can be effective when targeted right.

Lenstra and Wälholz (2008) are cautious about the link between BOP activities and poverty alleviation and find this ambiguous, not least because poverty is a multifaceted phenomenon. BOP products and services may contribute to poverty alleviation in several ways (Lenstra and Wälzholz, 2008), such as increasing employment, productivity (e.g. saving time which can be used to earn additional income), empowerment and quality of life (e.g. intangible benefits such as leisure or status matter as much to low-income consumers as to their richer counterparts).

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[11] gross domestic product
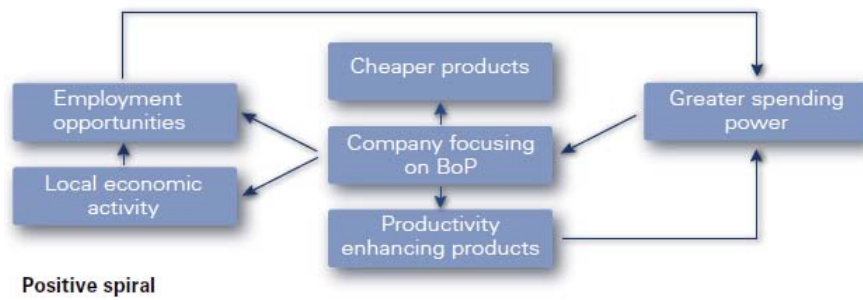
Figure 11: The link between BOP activities and poverty alleviation may be positive (Lenstra and Wälzholz, 2008)

The downside could be that poverty could be intensified (Lenstra and Wälzholz, 2008, van Tulder, 2008b). BOP products and services can force out local economic activity, or they can result in BOP consumers entering into debt when they buy products or services they cannot really afford, for instance through a (microcredit) financing scheme. BOP strategies that have a negative development impact may not achieve long-term commercial viability. Compare the positive and negative spiral as illustrated in Figure 11 and Figure 12.
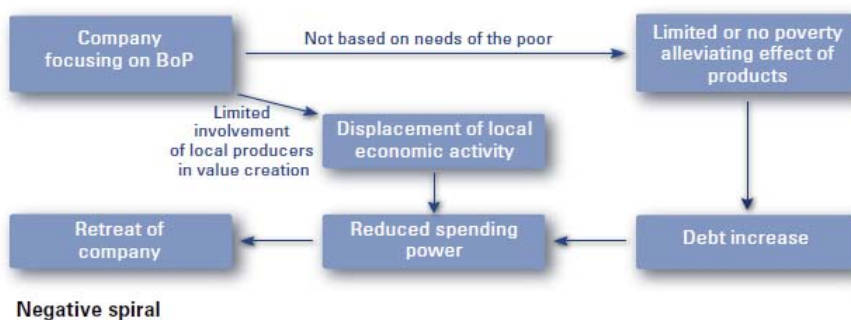
Figure 12: A negative spiral occurs when the company introduces products and services that increase poverty (Lenstra and Wälzholz, 2008).

The question remains whether economic development and social justice can co- exist. Prahalad agrees with this opinion (2006b) : "*I say yes if we pay attention to four critical issues: The system must be inclusive. We must co-create solutions at the bottom of the pyramid and not dictate solutions as we are used to. We must engage the poor in developing useful solutions. We must build a meritocracy; fairness in access to opportunities. Finally, we must protect property rights such that all of us can enjoy the benefits of our work. So, inclusion, co-creation, meritocracy and property rights are at the heart of economic development and social justice.*"

Boyer (2003) adds that companies can play an active part in marrying their own en the community's economic development and social justice by experiments and creative solutions both small and large, and by thinking more broadly about their role in society. It comes down to a question of market design and alignment.

This approach is endorsed by Porter in his preface to the report 'The value of Tomorrow's Markets' (WBCSD, 2002). "We are learning that the most effective way to address many of the world's most pressing problems is to mobilize the corporate sector in a context of rules, incentives, and partnerships where both companies and society can benefit."

The hybrid view of market creation and socio-economic development by (ICT) companies engaging with the BOP was fundamental for this research. This view does not reject or oppose the need for humanitarian aid or targeted support for disaster recovery for the lowest income levels of the BOP, cf. (London, 2007, Sachs, 2008).

I conclude with quoting Diego Rumiany, nowadays program manager at the NGO Section of the United Nations: "When "Bridging the Digital Divide"[12] means providing the infrastructure to a village to distribute their products, fostering entrepreneurial activity, creating business networks, stimulating trade, generating employment and, consequently, streamlining food distribution in a region and reducing hunger, then we are not "Bridging the Digital Divide" anymore but fighting hunger instead"

The Base of the Pyramid concept has been introduced now and the context for the thesis research has been clarified.

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[12] Cf. footnote page 35.

3. Literature review on research area

In this chapter a summary is provided of the literature gathered in the field of research of the Base of the Pyramid. The outcome is divided in three distinct areas, the main units of analysis, which are covered in this thesis, namely BOP business strategies & models, products & services and partnerships (see Figure 2). For navigational purpose the picture on the right indicates the place of this chapter in the research process.
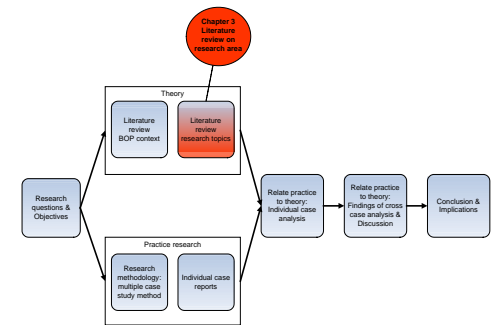
3.A.   BOP strategies and business models: literature review

When we are talking on strategies and business models we referring to the first unit of analysis "BOP business model & strategy" as mentioned earlier which means how the company approaches the BOP market. This will be discussed in more detail hereafter.

The mass markets of the base of the pyramid were relatively uncharted territory, and therefore great challenge to the entry of multinational companies. The first challenge to entry is having in-depth knowledge of these markets; the next step is establishing new business patterns and patterns of technological innovation. According to Prahalad and Lieberthal (1998), a new business model requires resource shifts, extensive rethinking of cost and structure, and redesign of the product development process.

The ground breaking 2002 article "The Fortune at the Bottom of the Pyramid," provided the first articulation of how companies focusing attention on serving the needs of the 4 billion poor at the bottom (Base) of the Pyramid (BOP) in the developing world by Hart and Prahalad (2002). Actually, already in 1998 the authors introduced this concept in a working paper, but it took four years to be published and to reach a wider audience (Prahalad and Hart, 1998). The most relevant piece of information on the poor is that they are underserved by multinationals.

Prahalad and Hart (2002) made clear that business strategy needed a paradigm shift and look beyond the obvious to truly appreciate the potential of serving the needs of the poor .

Despite opposing viewpoints in the literature regarding the extent to which there is a business opportunity at the BOP, there is agreement that serving the low-income sector profitably requires a different business model (Prahalad and Hart, 2002).

The stance Prahalad and Hart took for a paradigm shift in business strategy thinking towards focus for the needs of the poor is not merely corporate altruism but it is, as their 2002 article and subsequent books (c.f. Prahalad 2005, Hart 2007b) and separate articles of both authors state, a logical evolvement of multinational corporations (MNCs) towards more awareness for society, community involvement, and the notion that the customer might be valuable as co-designer or co-producer as well. Multinational companies cannot exploit these new opportunities without radically rethinking how

they go to market. From business strategy perspective Prahalad and Hart (2002) argue from their research that price performance, quality , sustainability and profitability are important.

Prahalad and Hart (2002) define four elements though which multinationals should structure their strategies to meet the needs of emerging markets:

1. Creating buying power;
2. Shaping aspirations through product innovation and consumer education;
3. Improving access through better distribution and communication systems;
4. Tailoring local solutions.

Each of these four elements demands innovation in technology, business models, and management processes. Prahalad and Hart argue that MNCs should use local creativity and research for innovation and to overcome infrastructure issues and serve the poorest population segments satisfactorily and profitably. Multinationals must foster local markets and promote local solutions, generating wealth at the lowest income levels, bringing together high-end technology and a keen perception of local needs, not letting business models break from the local culture and lifestyle.

MNCs must build an organizational infrastructure to address opportunity at the Base of the Pyramid. This **means building a local base of support, reorienting R&D to focus on the needs of the poor, forming new alliances, increasing employment intensity, and reinventing cost structures.** MNCs need not employ large numbers of people directly on their payroll, but the organizational model for the BOP must increase employment intensity (and incomes) among the poor and stimulate them to become new customers These before mentioned five elements are clearly interrelated and mutually reinforcing (Prahalad and Hart, 2002).

Prahalad and Hammond (2003) outline the following strategies for servicing the BOP markets:

- **Overcome External Barriers.** A critical strategy for overcoming infrastructure and other external barriers is to use information and communications technologies (ICTs) to link the informal economy to established markets.

- **Change Management Perspective.** One needs to develop managers, development engineers, and sales forces that understand and are excited by the opportunities BOP markets offer.

- **Build New Partnerships.** A key source of learning about BOP markets, as well as an effective strategy for entering them, is to partner with those who know them well, and who are key movers within the communities that are ultimately the customer.

- **Change organizational structure.** Most multinationals are not organized to address BOP markets. Structural changes may be needed to create a vehicle for activity in this for them new area.

- **Share Risks with all stakeholders involved.** Regardless of the opportunities, many companies will regard the Base of the Pyramid as uncertain and therefore risky territory. Consortia provide one way to share the risks.

Boyer (2003) suggests a list of strategies that appear to be adequate recommendations for companies to start the emerging markets innovation process:

- **Rethink technology platforms and their supporting business models**. This might include radical innovations, or a mix of high-tech and low-tech solutions. The end result: simpler, better, more accessible, cheaper, and cleaner technologies.

- **Focus on meeting functional needs and services, not just producing more product.** This will require identifying new sources of value through a demand-side lens. It may also require unlearning existing product profiles and developing a beginner's mind to product innovation.

- **Focus on capital efficiency, not just labor productivity.** The latter is less important where labor is cheap and abundant and people need employment. In most BOP cases, there is zero working capital involved, which is an inspiring achievement.

- **Explore shared use/access models that disaggregate access from ownership but widen the consumer base.** The result: increased asset productivity. Think of a community of users instead of a single user in a BOP world.

- **Replace assets with information.** For instance, cell phone services now provide weather, soil, and pricing data to farmers in rural markets. They are also procurement vehicles.

- **Shift from a grand scale operations mentality to smaller scale.** Instead, think about marrying world-scale capabilities with more distributed small-scale operations.

- **Focus on different metrics**. Managers are trained to concentrate on margins, but unit volume sales are often more relevant for BOP markets.

- **Tap into diverse knowledge sources across disciplines.** Learning to see old problems in a new light may come from a different perspective or practice.

According to a WBCSD study, the three building blocks of sustainable business with the poor are: focus on the core competencies of the company when adapting the business model, partner with external resources that offer complementary expertise, localize the value creation by harnessing local intelligence and capabilities (WBCSD, 2004).

Chesbrough et al. (2006) argue that a sound a business model is required for the successful penetration with new technologies in the BOP market. In order for the technology to succeed, a distribution channel must be created. The collaboration with NGOs both for business model design and setting up distribution channels is invaluable.

Jenkins (2007), draws on the results of eight industry-specific projects and identifies four key strategies that companies use to expand economic opportunity. These strategies are: creating inclusive business models[13], developing human capital, building institutional capacity, and shaping

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[13] Inclusive business models include the poor, whether as employees, entrepreneurs, suppliers, distributors, retailers, customers, or sources of innovation, in a way that furthers their human development and that is financially, environmentally and socially sustainable (UNDP, 2008).

public policy. She suggests that the business community and large firms have both the capabilities and the strategic business reasons to play a major role in creating economic opportunity.

The research of Weiser (2007) shows that there are five key strategies for achieving success in BOP markets :

1. Mine and translate **local market information**. It may need to collect different types of information, or collect information from nontraditional sources. It also is likely that a company will need to analyze the information in a somewhat different way for these markets than for mainstream markets. The same information, in two different markets, may carry different meanings.
2. Adapt the **business model to community realities**.
3. Change internal **incentives** and challenge cultural assumptions. These assumptions may need to be challenged if they include inaccuracies or biases concerning underserved individuals and communities like the BOP.
4. Create **partnerships** and strategic alliances
5. Improve the **enabling environment**. Businesses can and do often play an effective role in helping to improve this environment.

Seelos and Mair (2007) conclude from their research in the field of business in the BOP, that "planning" solutions has failed, while "discovering" solutions is key. Their findings for profitable business models for the poor include:

- Traditional resources and capabilities of a company are not sufficient to enter poor countries
- Create sufficient profits as well as important social benefits
- Recognize access and configure local resources and capabilities into new holistic business model, thus "structure follows strategy".

While discovery is essential according to Seelos and Mair, other academics like London and Hart go even a step further and argue that co-creation based models should be preferred to discovery based models. The discovery approach assumes that problems and opportunities exist out there so you can do market research and use data to discover what the problem is. Discovery theory does not work as well in an uncertain or ambiguous decision-making context. "Creation-based entrepreneurship has a different starting point. The real entrepreneurial successes came from this approach. The entrepreneur doesn't presume that there is an opportunity. He is a participant in the co-creation of that opportunity.", says Hart, cited from Mahajan (2007). Examples of discovery-based models are BOP 1.0 strategies; examples of creation-based models are BOP 2.0 strategies (see Table 7).

Table 7: BOP Business Development, Discovery versus Creation, adapted from (Hart, 2007a)

Discovery-Based (e.g. BOP 1.0)	Creation-Based (e.g. BOP 2.0)
• Target the unmet needs in the BOP • Estimate the size of the market • Adapt current products and technologies • Extend current business model via structural innovation • Scale up (Scale vertically)	• Be humble; begin with an open mind • Spark competitive imagination • Co-develop something new • Build new business model on trust and social capital • Scale out (Scale horizontally)[14]

The Dansk Industri International Business Development has conducted a research on the BOP and it concludes that for a successful BOP business model three elements are key: market development by making BOP consumers aware of the products in relation to their needs and enabling them to buy the products, profitability of the mode by making the products available and tailoring them to local solutions and sustainability of the business model ensuring long-tem viability for all stakeholders (DI, 2007).

Lenstra and Wälzholz (2008) stipulate a prescription with three main areas of concern, named scoping, action an impact. Scoping concerns the identification of the potential that engaging with the BOP for the company brings and its position in the organization and scanning the company's product portfolio to its suitability for the BOP. Action implies defining a BOP strategy embedded in the corporate strategy and pursuing partnerships. Impact implies the concern around profitability and sustainability of the delivered product and services.

Mendoza and Thelen (2008) outline a variety of business strategies that could improve market inclusivity of the BOP. They sum up deskilling (i.e. simplifying or standardizing procedures once handled by specialists), leveraging 'soft networks' (e.g. leveraging ICT or community networks), supply chain financing, joint consumption, flexible payment (e.g. Pay-as-you-go or pre-paid cards), tiered pricing (i.e. differential pricing based on capacity to pay), contracting innovations (e.g. group lending), partnering (e.g. Public-private partnerships), total product solutions (i.e. complete products that better fit the environment of low-income markets). These strategies help manage and minimize risks for actors serving low-income markets. They help adapt products to the poor consumer's needs and they contribute towards improving the financial viability of serving the poor.

Seelos (2008) argues that setting up a dedicated "business unit" or separate organizational entity dedicated for engaging the BOP overcomes difficulties because of differences in strategic alignment

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[14] It will take three to five years before the BOP Protocol-generated business achieves "takeoff" at which point the network of businesses grows exponentially. The scaling process is, therefore, best understood as one of "scaling out" rather than "scaling up." (Simanis et al., 2008b). See BOP protocol, appendix D.

with business targets for the high-income market and the low-income BOP market, cf. Jochim, 2008. Furthermore this separation enforces the efficient management of the partners which are different for the before mentioned market-segments. Seelos (2008) recommends companies to ensure that the business model supports an increase in the real income of people and to look for cooperation with organizations that are already serving the poor and use existing corporate capabilities to overcome bottlenecks in achieving mutual goals.

When entering new markets, companies have to leverage their resources and develop certain capabilities to be able to operate in the new environment. Low-income markets, such as the BOP, have specific features which most of the multinational companies are unfamiliar with. The following table summarizes the main characteristics of low-income markets and the way in which core activities of multinationals in terms of R&D, production and distribution/promotion have to be adapted to meet the challenges of those specific markets (SadreGhazi and Duysters, 2008).

Table 8: Effect of low-income market characteristics on multinationals' activities (SadreGhazi and Duysters, 2008).

Effect of low-income markets' characteristic on Multinationals' activities			
	R&D	**Production**	**Distribution/Promotion**
Low purchasing power	Focusing on functionality, improving price/performance	Smaller packages/sachets, using local producers and local labor	combining financial services with the product , collective payment option.
Dispersed locations	developing scalable solutions, using local entrepreneurs	Partnering with local producers, modular design	Partnering with civil communities and NGOs
Lower skill/knowledge	Acknowledging endogenous solutions, proper user interface	Robust production to work in hostile environments	Customer education programs , viral marketing
weak infrastructure, etc	Building local research laboratories, turning infrastructure constraints to sources for innovation	Build local production capacity	Creating dedicated distribution network, adapting to existing means of transport

The BOP Learning Lab Global Network has identified several critical factors characterizing BOP businesses (Touesnard, 2008). BOP enterprises are **based on private-sector business models that are locally transformational**. In other words, these businesses create **mutual value for both the community and the enterprise.** Actually, implicit in this is the expectation that the business will be partner-intensive to achieve the greatest success. **An element of the triple bottom line must be embedded in the business strategy**; consideration of the environmental, societal, and economic impacts of the business practice. There must be **motivation to improve the quality of life for the community**. There must be the **aspiration and potential for scale and replication.** These elements

are also identified in the definition of sustainable business, namely adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future (IISD, 1982).

The report of UNDP (2008) showcases 50 case studies by researchers in developing and developed countries. These studies demonstrate the successful pursuit of both revenues and social impact by companies. The outcome results in a series of strategies that private businesses have successfully used to overcome the most common obstacles or constraints to doing business with the poor.

The obstacles are categorized as lack of market information, regulatory environment, physical infrastructure, knowledge and skills, access to financial products and services by the poor. The strategies are:

- Adapt products and processes

- Invest in removing market constraints

- Leverage the strengths of the poor

- Combine resources and capabilities with others

- Engage in policy dialogue with government

The World Resources Institute (WRI, 2007b) advocates improving the quality of life of the BOP people living in poverty through innovative solutions and comprehensive business models. In essence it's not about charity, but by creating value for both business and society (the BOP people) and through multi-sector collaboration.

Research by Anderson and Kupp (2008) has revealed a number of common behaviours of telecom operators who are developing particularly innovative approaches to serving the BOP market:

- **Value-chain reconfiguration** – The most successful operators have not simply focused on doing existing activities more efficiently to serve low-income customers. They have created *new* ways of configuring *different* activities to reach these consumers.
- **Collaboration with non-traditional partners** – Operators such as Smart and the Indian operator mentioned above have recognized the value of corporate and non-corporate partners. They have proactively established relationships with non-profit and other non-traditional partner organizations, and even with individual entrepreneurs.
- **Building local capacity** – The most innovative operators have recognized the value of existing local institutions. They have provided training to local entrepreneurs and other partners, and have seen gaps in local infrastructure or missing services as potential opportunities.

Additionally Lehr (2007) recommends in his findings to invest in consumer education (the BOP community consists of a large group of first time consumers of ICT). Furthermore he argues companies should be aware of potential regulatory restriction in certain countries limiting the operational activities (.e.g. monopoly by a state owned telecom company can pose barriers in market entry).

The World Economic Forum (WEF, 2009) presented a report on innovative approaches through which companies can tap the economic potential of the "base of the pyramid" (BOP), generating sustainable economic growth while improving the livelihoods of the poor. Their recommendations include: companies need to innovate their business models targeted to the BOP; they need to redesign their offers, their product supply chain arrangements and their (educational) marketing and communication to profitably and sustainably engage with the next billions and collaboration with other companies, government, civil society organizations and especially poor communities themselves is critical to improve economics, enhance offers and fill gaps. Their advice also includes the recommendation of the establishment of a separate division in the company with more flexibility and autonomy to operate and senior level commitment to focus on the BOP.

The opportunity that the BOP market offers, raises the question How ICT companies can develop and grow BOP businesses that create "mutual value", for the business and the community? In strategies for developing BOP markets, a shift can be seen, as summarized in Table 9. The BOP 1.0 strategy focus is on selling to the poor, whereas BOP 2.0 strategy focus is on co-creation & co-venture.

Table 9: First Generation BOP Strategy compared with the new BOP (2.0) strategy (Simanis et al., 2008b).

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

BOP 1.0 strategy, "selling to the poor" has shown one important message: business viability of serving lower income people, and that is according to Hart a radical innovation (Mahajan, 2007). Hart argues that it is natural companies began with resizing, modifying their product to make it affordable to sell it to people at lower income levels, e.g. adjusting packaging with micro-sachets. However these BOP 1.0 corporate strategies often failed to take into consideration from the perspective of the poor themselves (Hart, 2007a). Hart refers to the first generation BOP strategies as "The Child with a Hammer", a one methods fits all approach. He argues that business models based on business

experience that covers only Top of the Pyramid (TOP) markets are likely to fail in the BOP market. According to Hart the answer lies in co-creating the business. This requires a new strategy and business process: Co-Venturing. This is the essence of the second generation BOP strategy. The BOP presents not a marketing problem, not a technology problem but a business model challenge (Hart, 2007a)

Second generation BOP strategy requires an embedded process of co-invention and business co-creation that brings corporations into close, personal business partnership with BOP communities. It moves corporations beyond mere deep listening and into deep dialogue with the poor, resulting in a shared commitment born out of mutual sharing and mutual learning (Hart et al., 2008).

From a development point of view, BOP strategies should address the unmet needs of the poor in order to increase their productivity, income and welfare, in such a way that new dependencies are prevented and people are enabled to find their own way out of poverty (Bais, 2008). Innovations that improve the productivity of people at the BOP are the key to unleashing their latent economic power.

This is the case for the strategy pursued by the BOP Protocol. Simanis et al. (2008c) produced the 2nd edition of the BOP Protocol. The BOP Protocol is a new business innovation process, developed specifically for the BOP by a group of academics and practitioners. It summarizes the findings and analysis of over three years of in-field studies from two projects in Kenya and India. They assert that if the enterprise-based approach to poverty alleviation is to flourish in the future, it is imperative that we now move rapidly to a "second-generation" of corporate BOP strategies. Central to the BOP Protocol are the principles of "mutual value" and "co-creation, co-venturing as called in Table 9. The recommendations include engage in deep listening and mutual dialogue with income-poor communities, co-discover and co-create new business opportunities and business models embedded in the local cultural infrastructure and co-design and launch BOP businesses that generate mutual value for all partners. See for a further description appendix D.

Some considerations have to be made while reflecting on the BOP 1.0 or BOP 2.0 strategies. There is not one single solution. There are approximately 4 billion poor people identified as the BOP people, but one has to recognize that the BOP is a very heterogeneous and complex group and cannot be treated as a monolith. "*It is the variety that makes it interesting. Global standards, global scale, and technology must be coupled with local responsiveness to help solve the problems of poverty.*" states Prahalad (2006a).

The base issue of all BOP businesses is discovering how to simultaneously bring together quality, low cost, sustainability and profitability in a single solution. It is a consensus in the literature that a new and specific business model must be created to face the challenges of working with this market.

Although the title of this chapter suggests a clear subject, the notion what a business model or strategy is, it remains an area of fruitful (academic) discourse. As a research starting point the definition proposed by Osterwalder (2006) was adopted: "a business model describes the value an

organization offers to various customers and portrays the capabilities and partners required for creating, marketing, and delivering this value and relationship capital with the goal of generating profitable and sustainable revenue streams". However, there are a variety of definitions for business model and strategy in use (Klein, 2008, Morris et al., 2005). Klein researched the definitions and proposed one appropriate for the Base of the Pyramid environment. The definition is rather abstract but examples in his research explain the aspects.

Klein's (2008) research suggests performance differences of companies engaging with the Base of the Pyramid can be explained by certain business model qualities that, if incorporated in a company's business model, drive success at the BOP and therefore provide criteria for the development of profitable propoor business models.

The development of these business model qualities is grounded in the characteristics of the BOP and in existing literature, predominantly from business administration particularly strategic management on the BOP development economics, and anthropology. He introduces a framework which characterizes the qualities business models for the Base of the Pyramid constitute. These are then categorized along five dimensions, being:

1. The company's **value proposition,** which consists of the sum total of benefits and costs, thus value, that result from engaging in business with that company. It focuses both on the value proposition to the BOP as consumer and to the BOP as producer.

2. **Local capacity building** through the company's business model. It refers to the extent to which the company contributes to the local capacity of communities.

3. The **embeddedness** of the company in local communities, which captures the extent to which the business is an integrated part of the lives of those at the BOP and the BOP feels that doing business with the company is an actual possibility for them. This is an interesting concept which needs elaboration. Embeddedness can be achieved by including BOP people in the value chain by making them (co-) owners of the local business or distributor. They can tweak the business model to fit the local conditions. This ensures that the multinational company can work from a general blueprint of the business model and is able to use it for different circumstances. Cooperation with non-traditional partners (e.g. NGOs, non-profit organizations) who already have established a foothold in the BOP community could also be beneficial to increase embeddedness (Klein, 2008). New business models must not be disruptive to the cultures and lifestyles of local people but instead build upon the wealth of indigenous resources and alternatives argues Hart (2007b) and hence bring on embedddeddness.

4. Inclusion of learning in the business model, which captures the extent of **learning** by the company **through native capability** and therefore its capacity to improve over time.

5. **Scalability** of the business model, which captures the potential scale and scope of the business model.

Klein states that successful companies at the Base of the Pyramid (BOP) share common business model qualities, although a business model does not necessarily need all qualities to be successful. Klein argues that these dimension, although appearing general, are fundamentally different from those

in higher-income markets. The differences follow from the fact that their specifications, the business model qualities within these five dimensions, are based on characteristics that set the Base of the Pyramid apart from markets and people in higher tiers of the socioeconomic pyramid (cf. Klein, 2008).
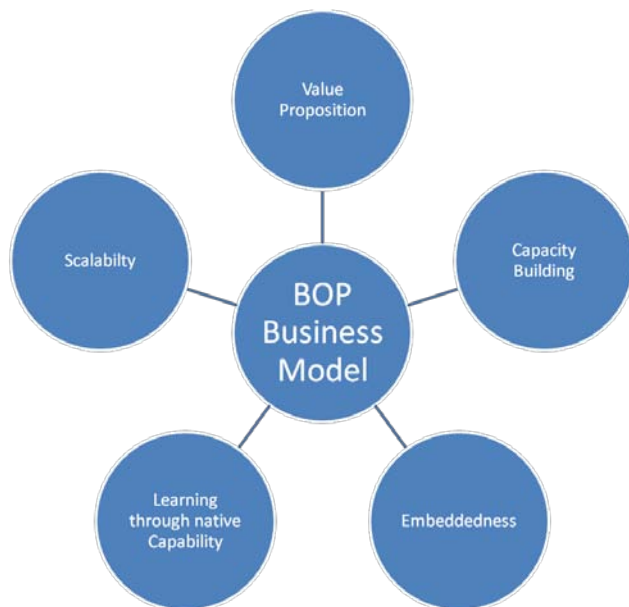
Figure 13: Quality dimensions of business models for the Base of the Pyramid, adapted from (Klein, 2008)

Klein's model provides an interesting and convenient framework for analysis of the case studies and as such has been adopted as a tool for business model analysis. Table 10 shows this analysis and as you can see these five dimensions also proved to be useful to categorize and recapitulate the literature on BOP strategies and business models. As we can see the literature has shown that BOP strategy and business model is important and now we move on to the next section discussing the products and services

Table 10: BOP strategy & business model literature summary categorized using Klein's framework (Klein, 2008).

BOP business model dimension	Aspect	Source(s)
Value proposition	Local market information	(Boyer, 2003, Hammond and Prahalad, 2003, Simanis et al., 2005, Weiser et al., 2006, Anderson and Vandermerwe, 2007, UNDP, 2008)
	Reinventing cost structures, Explore shared use/access models, flexible payment, tiered pricing.	(Prahalad and Hart, 2002, Boyer, 2003, Mendoza and Thelen, 2008)
	Identify gaps in local infrastructure or missing services as potential opportunities.	(Anderson and Kupp, 2008)
	Consumer education	(Prahalad and Hart, 2002, DI, 2007, WEF, 2009)
	Focus on different metrics; change internal incentives.	(Simanis et al., 2005, Hammond and Prahalad, 2003, Boyer, 2003, Weiser, 2007)
	Share risks with all stakeholders	(Hammond and Prahalad, 2003)
	Value chain reconfiguration.	(Anderson and Kupp, 2008)
Local capacity building	Build new (non-traditional) partnerships; usage of existing institutions, entrepreneurs, NGOs, local government etc. and train them; lower their skills levels (deskilling). Ensure long-term viability for all stakeholders.	(Prahalad and Hart, 2002, Hammond and Prahalad, 2003, Anderson and Kupp, 2008, Chesbrough et al., 2006, Weiser, 2007, DI, 2007, SadreGhazi and Duysters, 2008, Lenstra and Wälzholz, 2008, Mendoza and Thelen, 2008, Seelos, 2008, WEF, 2009)
	Leverage the strengths of the poor; increase employment intensity. BOP 1.0 (selling to the poor) versus BOP 2.0 (business co-venturing)	(Prahalad and Hart, 2002, Boyer, 2003, Jenkins, 2007, Hart, 2007a)
Embeddedness	Building a local base of support; tailoring local solutions; business model is indigenous and builds upon the local customs and conditions. Engage in policy dialogue with the government.	(Prahalad and Hart, 2002, Hart, 2007b, Klein, 2008, UNDP, 2008)
Learning by the firm through native capability	R&D focus on the needs of the poor, adapt the business to community realities. Complete products that fit the environment of low-income markets. Discovery based versus creation based.	(Weiser, 2007, Prahalad and Hart, 2002, Weiser et al., 2006, Hart, 2007a, Hart, 2007b, DI, 2007, Mendoza and Thelen, 2008, WEF, 2009)
	Tap into diverse knowledge sources; leverage the strengths of the poor. Harness local intelligence and capabilities.	(Boyer, 2003, WBCSD, 2004, Weiser, 2007, UNDP, 2008)
Scalability	There must be the aspiration and potential for scale and replication; develop scalable solutions, using local entrepreneurs. BOP-Protocol recommends to begin with small pilot tests and scale out in modular fashion. Prahalad: Scalable and transportable operations.	(Boyer, 2003, Prahalad, 2005, Touesnard, 2008, SadreGhazi and Duysters, 2008, Simanis et al., 2008b)
	Dedicated business unit with flexibility and autonomy; senior level commitment to focus on the BOP.	(Seelos, 2008, WEF, 2009)

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3.B. Literature review of product and service development for BOP

The second unit of analysis, namely "products and service" is the subject of this section in the literature review. Prahalad (2005) provides the following building blocks for creating products and services for Base of the Pyramid markets, 12 Principles of Innovation for Base of the Pyramid Markets:

1. Focus on (quantum jumps in) **price performance**.
2. **Hybrid solutions**, blending old and new technology.
3. **Scalable and transportable operations** across countries, cultures and languages.
4. Reduced resource intensity: **eco-friendly products**.
5. Radical product **redesign from the beginning**: marginal changes to existing Western products will not work.
6. Build logistical and manufacturing **infrastructure**.
7. **Deskill** (services) work.
8. **Educate** (semiliterate) customers in product usage.
9. Products must work in **hostile environments**: noise, dust, unsanitary conditions, abuse, electric blackouts and water pollution.
10. **Adaptable user interface** to heterogeneous consumer bases, taking into account language, culture, and socioeconomic level diversity.
11. **Distribution methods** should be designed to reach both highly dispersed rural markets and highly dense urban markets.
12. Focus on **broad architecture**, enabling quick and easy incorporation of new features.

For instance looking at principle 1, Mahajan (2009) said: "Traditional product development starts with the product and ends with selling the price, but pricing for Africa Three *[i.e. BOP market]* begins with the lowest currency possible (a few US cents) and works back to the product than can be sold for that price".

Prahalad says that the breakthrough innovations for the BOP market are started with the identification of the following four conditions (Prahalad, 2006c, Prahalad, 2006d, Perry Wooten et al., 2005). These are:

1. The innovation must result in a product or service of world-class *quality*. Use innovative technologies to solve the problems of the poor.
2. The innovation should be focused on *sustainable* development. One cannot help the vast BOP population if one doesn't worry about sustainable development as resources are limited and become scarcer.
3. The innovation must be *scalable*: It must be able to be produced, marketed, and used in many locales and circumstances.

4. The innovation must achieve a significant price reduction – at least 90% off the cost of a comparable product or service in the west. The innovation must be *affordable* at the bottom of the economic pyramid, reaching people with the low-levels of income in any given society.

This results in innovations under constraints such as limited infrastructure and resources (Figure 14). The richer part of the world in general is having abundance and the poorer (BOP) is having scarcity (Srinivas and Sutz, 2008).
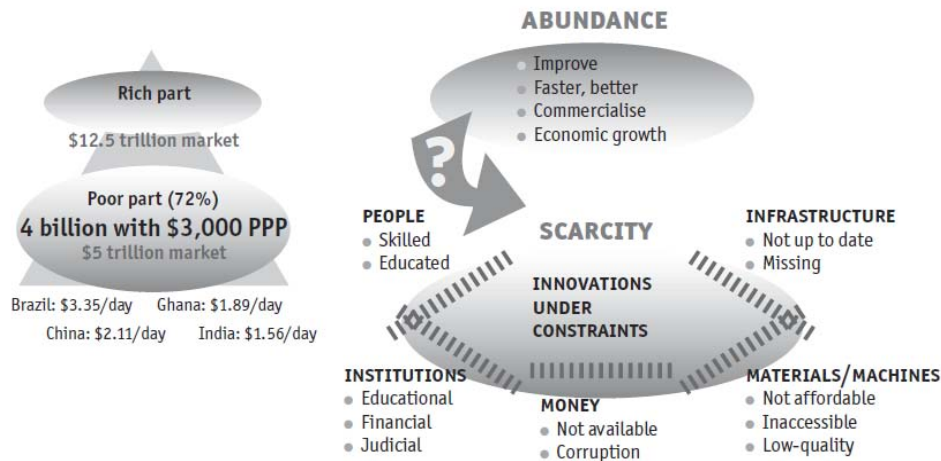
Figure 14: Innovations and socioeconomic context ; design under constraints for the BOP differs from the tip of the income Pyramid (Kandachar and Halme, 2007). Source based on (Srinivas and Sutz, 2008).

From a development point of view, BOP strategies should address the unmet needs of the poor in order to increase their productivity, income and welfare, in such a way that new dependencies are prevented and people are enabled to find their own way out of poverty (Bais, 2008). This has implications for production and marketing from a poverty perspective. From a business point of view a BOP product is successful when it is affordable and available. But from a development point of view, there is a another 'A' that could be added; it should also be acceptable (relevant and appropriate) and people should be made aware of the relevance and value the product could have for the BOP people in accordance with the moral principles of these people (Prahalad, 2006c, Prahalad, 2006d). In order to develop successful products and services for the BOP, '4 As', namely Affordability, Acceptability, Availability and Awareness have proven to be essential for business success and for creating value while serving the world's poor (Prahalad, 2005, Anderson and Markides, 2007). This 4A-framework is elaborated in Table 11.

This 4A-framework has to be aligned with sustainability aspects. Otherwise products and services designed for the BOP will lead to an unsustainable and unviable situation (Kandachar, 2008b). The following question has to be addressed in product and services innovation for the BOP: "How can we address the problem of poverty and at the same time how can we address the problem of sustainability?"

Table 11: 4A-Framework (Anderson, 2006b, Kandachar and Halme, 2007)

4 A framework	
Acceptability	Acceptability: The extent to which consumers and others in the value chain are willing to consume, distribute or sell a product or service relates to acceptability and responds to socio-cultural dimensions of product innovation. As stated earlier in this section by Prahalad (2006c , 2006d), the innovation must result in a product or service of high quality. BOP customers generally will be not satisfied with 'simplified' or 'stripped' western products.
Availability	Availability is the extent to which customers are able to readily acquire and use a product or service. Addressing challenges in distribution. Unlike the developed world, distribution channels in BOP markets can be fragmented or non-existent.
Affordability	Affordability relates to the degree to which a firm's goods or services are affordable to BOP consumers. BOP consumers have low disposable incomes and the product may need to match the cash flows of customers who frequently receive their income on a daily rather than weekly or monthly basis.
Awareness	Another dimension requiring the development of a new 'how' is awareness which relates to the degree to which customers are knowledgeable about product or services. With many BOP customers largely inaccessible to conventional advertising media, building awareness can be a significant challenge for companies wishing to serve low-income consumers in the developing world. To overcome these constraints companies must innovate in their use of alternative communication modes and methods.

Finding a balance between poverty alleviation and sustainability (while not forgetting the profitability) requires an approach which merges the product with the triple bottom line (i.e. people: socio-cultural, planet: ecological and natural resources usage, profit: economic development) and the before mentioned 4A-framework (Diehl and Christiaans, 2007, Kandachar, 2008b) .

Creating products for emerging and developing markets require a clear understanding of the needs and the context of the people within. Lehr (2007) recommends involvement of the potential users early in the design process. Design of products and services for the BOP requires an integral, multi-disciplinary approach and social, business and technological innovations (Kandachar and Halme, 2007, Kandachar, 2008b).
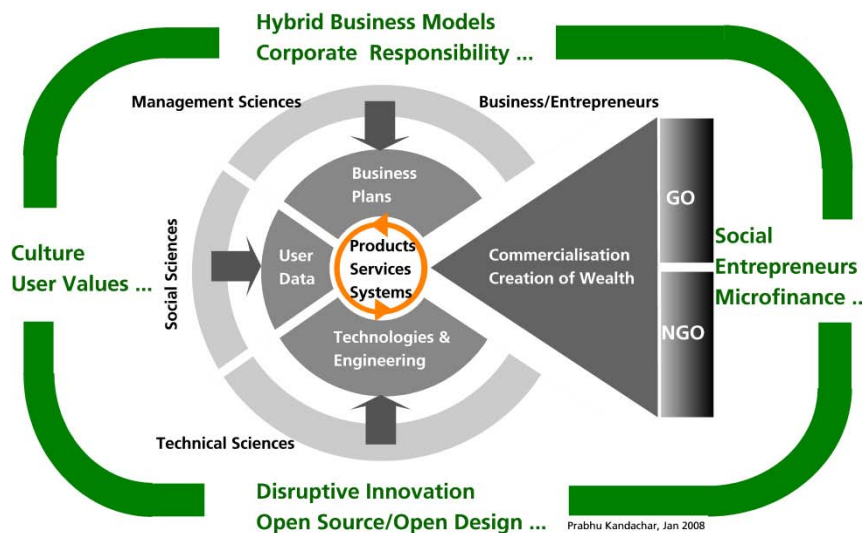
Figure 15: BOP innovation as a multifaceted issue, requiring a multidisciplinary approach (Kandachar, 2008a)

The model shows a holistic, multi stake-holder (human-centric) approach of design of products, services and systems for the BOP and stresses the importance for direct engagement with all stakeholders, especially with the BOP community. It recommends that company-designers embed themselves in the BOP community to actually understand the needs of the BOP people and from there together with the community initiate design of business model, products and services. Recollecting the embedded innovation as mentioned in the BOP Protocol (BOP 2.0 strategy), similarities between these two approaches can be found, cf. Simanis et al. 2008.

Kandachar (2008b) argues that the BOP promises more than innovative human-centered design. MNCs should be aware of the innovation blowback and therefore should be present in the BOP to proactively identify this benefit. Blowback or also know as spill-over to developed markets describes the unexpected consequences of the investments that companies have made in emerging markets like the BOP; the innovation has potential in a different often developed market (Brown and Hagel, 2005, DI, 2007).

In most BOP markets, like in Africa, the need of investments in old technologies such as telephone landlines do not exist or are small. The possibility arises to skip investments on old technology and move directly to more advanced ones. This enforces the introduction of disruptive technologies such as mobile phones.

According to Christensen (2008) disruptive innovation describes a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors. Such innovations will appear as cheaper, simpler and even with inferior quality if compared to existing products, but some marginal or new segment will value it (e.g. the netbook or mini laptop). A link with the blowback concept is recognizable (Brown and Hagel, 2005) as both start in a bottom market and move to an upper market.

Instead of the normal pace of development leapfrogging progress can be made (Kandachar, 2008b). The concept of disruptive innovation will first attract early adaptors in the BOP, while the rest will follow later on and offers ground for gaining knowledge useful inside the BOP and elsewhere too (Moore, 2008).

Hart and Christensen argue that the Base of the Pyramid could be an ideal place to meet unmet needs of the BOP people and to incubate disruptive innovations, creating new markets and one day perhaps even disrupting mainstream markets higher up the pyramid (Hart and Christensen, 2002, Hart, 2007b).

The IT research and advisory company Gartner (2006) estimates that by 2015, IT engineered for developing economies will drive 20% of disruptive IT innovation worldwide. Certain areas will likely be transformed by the innovative techniques being created, like power consumption and delivery, input techniques and pay-per-use operation models. Innovation is expected in both (lower) power consumption and power generation (e.g. human or solar powered or augmented battery power) as this is clearly needed in the BOP regions where often access to electricity is a challenge. Literacy levels are lower in BOP communities, and this stimulates the need for particularly natural human communication (e.g. speech recognition and handwritten input techniques) or changes in operation model like assistance in certain task by mediators (e.g. reading and sending the text messages etc.), creating new kind of jobs or services in the value chain. Incorporation of pay-per-use and shared access possibilities in the product or service is also to e expected (c.f. Boyer, 2003).

Most sustainable technologies are disruptive; but not all disruptive technologies are sustainable (Hart, 2007a). The notion that BOP strategy and thus (product and service) innovation should include sustainability, particularly clean technology, is gaining more (academic and business) interest (Cornell, 2009).

Figure 16 illustrates this convergence between clean technologies and BOP strategies. Hart argues that underserved markets, where the infrastructure has not been built out, offer an ideal testing ground for companies to develop "disruptive" clean technologies (Hart, 2008, 3P, 2009).On his list of emerging and disruptive technologies that could succeed in emerging markets are innovations like renewable energy, distributed power generation, wireless technologies.

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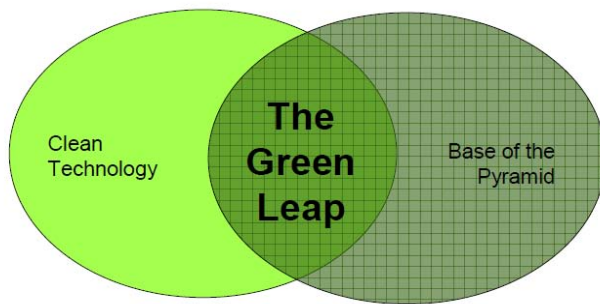
Figure 16: The great convergence, adapted from (Hart, 2008)

The convergence approach is identified in the Sustainable Value Framework (Hart and Milstein, 2003) and effectively results from the combination of the (at least) two upper quadrants as shown in the following graph.
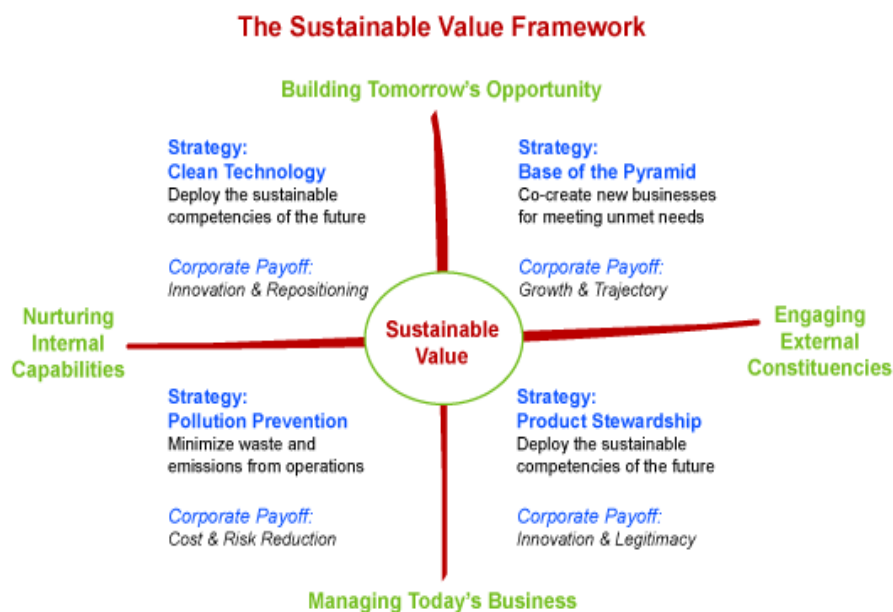
Figure 17: Sustainable Value Framework adapted from Hart and Milstein, 2003.

The framework shows how "the global challenges associated with sustainability - viewed through the appropriate business lens - can help identify strategies and practices that contribute to a more sustainable world while simultaneously driving shareholder value" (Hart and Milstein, 2003). Hart and Milstein define this "win-win" approach as the creation of "sustainable value" by the company.

Referring to the innovation blowback, although emerging markets like the BOP and mature markets in developed countries have different drivers for innovation, they sometimes lead to the same kind of innovation that can be used in both markets (Prentice, 2007). For example, emerging markets require power efficient or human-powered products, as there is no or little power. These products also happen to be "green" and can be used in developed markets to address environmental consciousness issues.

Sustainability is getting more attention as (natural) resources become scarce and this topic has gained public interest in particularly top of the pyramid markets where companies are more often asked to justify their operations in the corporate social responsibility reports. The prospect is that disruptive clean technologies will have a positive impact on the BOP. Sustainability is one of the aspects that has been examined in the analysis of the case studies.

This section of the literature review has shown the importance of products and services developed for the BOP. The next section deals with partnerships.

3.C.   Review of literature on partnerships in BOP projects

The third unit of analysis of this thesis research (see Figure 2), namely partnership, is dealt with in this section of the literature review.

According to the UN (2008b) partnerships are defined as "voluntary and collaborative relationships between various parties, both state and non-state, in which all participants agree to work together to achieve a common purpose or undertake a specific task and to share risks and responsibilities, resources and benefits."

In order to better understand customer needs and to succeed in market and development initiatives and in engaging with the BOP partnerships are crucial (London and Hart, 2004, Prahalad, 2005, Seelos and Mair, 2007, Weiser et al., 2006, van Tulder, 2008a, Reficco and Márquez, 2009). The success of these partnerships is dependent on the health of the relationship between partners according to researchers such as Das and Teng (2001) , Kramer et al. (2007), Seelos and Mair (2007) and Simanis et al. (2008c).

Prahalad and Hart (2002) argue that by forming alliances to expand in BOP markets, MNCs gain insight into developing countries' culture and local knowledge. At the same time, MNCs improve their own credibility. According to them three kinds of important relationships could occur: Alliances with local firms and cooperatives, alliances with local and international NGOs and alliances with governments.

London and Hart (2004), for instance, conducted an exploratory analysis, covering in total 24 cases across the Americas, Africa and Asia and 4 additional cases of MNCs which were extremely active in BOP markets across the world. The findings show that successful ventures include (proactively) developing relationships with non-traditional partners, both profit as well as non-profit organizations. The results also show the importance of 'social embeddedness', which refers to the ability to create competitive advantage based on a deep understanding of, and integration with the local environment; cf. (Klein, 2008) in section 3.A

Jenkins (2007) identifies the importance of collaborative action in achieving systemic impact and scale by the business and development communities. The findings show that collaboration allows parties to

share knowledge and information, pools scarce or diverse assets and resources, access new sources of innovation, create economies of scale and enhance the legitimacy of the parties' own individual activities.

Das and Teng (2001) on the other hand regard trust is an important factor of successful partnerships. They argue that fostering trust is the main challenge of non-commercial stakeholder partnerships in low-income markets because it leads to effective cooperation.

Gastler (2004) summarized the benefits of a partnership between NGOs and the companies. For NGOs it offers scale and funding, whilst NGOs offer the benefits of local expertise, guidance, innovation and credibility or trust to companies. The latter is agreed upon by Lehman et al. (2005), who argue that some of the best risk mitigation strategies, particularly with respect to public relations, involve partnerships with NGOs.

Building on the findings of their study using three cases, two from Bangladesh and one from India, Seelos and Mair (2007) recommend the monitoring of the dynamics of the environment and/or the development of the partner's overall model and strategic objectives. They argue that this helps to recognize and address emerging threats to the sustainability of the alliance.

Research by Weiser et al. (2006) shows that the development of partnerships and alliances with businesses, nonprofit organizations and governmental agencies is often critical to success in these BOP markets. Their recommendations include institutionalizing the partnership and knowing when to end the partnership.

Chesbrough (2006) concludes in his research that NGOs make an attractive partner for technology companies who wish to expand their businesses. NGOs are valuable for co-designing a sound business model, and establishing its sustainability. Furthermore, NGOs are playing a critical role in educating the local market.

More than 9 cases in the field of ICT companies were examined by Kramer et al. (2007) . Their findings show that collaboration helps ICT companies address two fundamental challenges to inclusive business models. The first is establishing and strengthening the value proposition. The second challenge is business model innovation and implementation. ICT companies have enormous potential to leverage their collaborative capabilities to expand economic opportunity more widely in developing countries.

As mentioned in section 3.A Seelos (2008) recommends setting up a dedicated organizational unit for the collaboration with the partners when engaging with the BOP.The intermediary organization acts as a culture buffer between the profit company and the often non-profit partner and furthermore facilitates the communication (Jochim, 2008).

Finding the right local partner might be difficult for companies. The presence of a third party intermediary is extremely useful at identifying and bringing together potential partners (Hosman and Fife, 2007, Hosman and Fife, 2008).

In the field of cooperation the UNDP (2008) study concludes that effective approaches are leveraging the strengths of the poor, engaging with the poor to increase the labour and management pool as well as expand local knowledge, and combining capabilities and resources with other organizations (both profit and non-profit).

The BOP protocol produced by Simanis et al. (2008b) advises to initiate direct, personal relationships facilitated by non-governmental organizations (NGOs). "Second generation BOP strategy requires an embedded process of co-invention and business co-creation that brings corporations into close, personal business partnership with BOP communities" according to Simanis et al. (2008a). Successful cooperation with BOP communities is identified as a key ingredient for project success.

The choice of a local partner by the multinational company can be varied. The following typology of partnerships is identified (Hamaoui, 2004, Prasad Pant and Hambly Odame, 2006, Alter, 2007, GKP, 2008):

Table 12: Typology of partnerships.
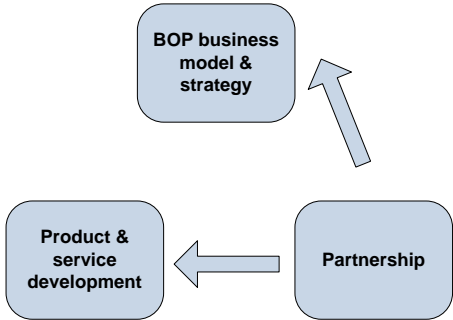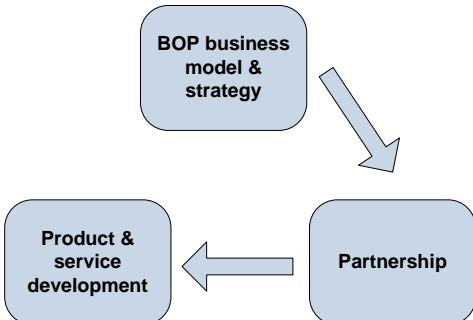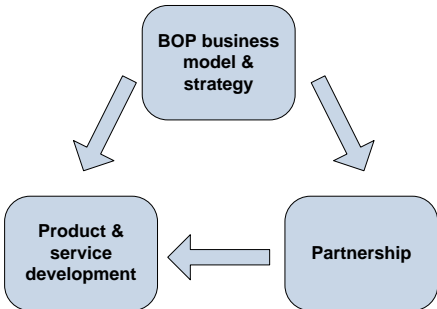
Typology of Partnerships	
Public- for-profit Private Partnership (PPP)	Partnership between a company and a local government or civil society entity.
Private-Private for-profit partnership	A partnership of a company with a local company or entrepreneur.
Private-social partnership	A partnership of a company with a social enterprise. A social enterprise is any business venture created for a social purpose–mitigating/reducing a social problem or a market failure–and to generate social value while operating with the financial discipline, innovation and determination of a private sector business.
Private-Nonprofit	The private-nonprofit partnership is a mutually beneficial business partnership or joint venture between a for-profit company and a nonprofit organization.
Tri-partite	A tripartite partnership of the public, non-profit private and for-profit private sectors (e.g. NGO, local entrepreneur or government).
Multi-stakeholder or cross sector collaboration:	Partnerships that could engage two or more parties from various sectors of society such as: businesses, governments, Nongovernmental organizations (NGO), civil society.
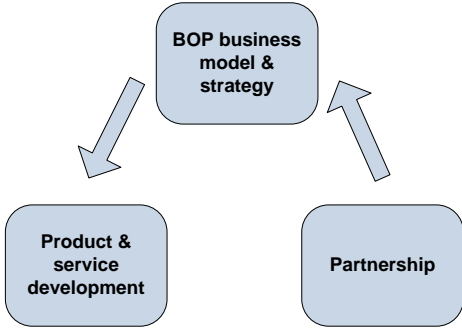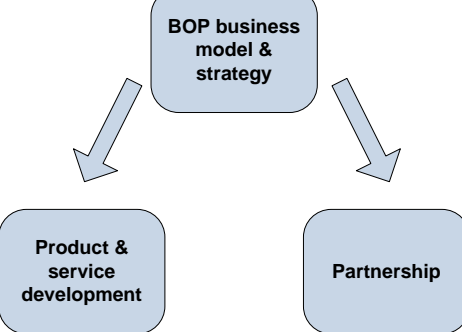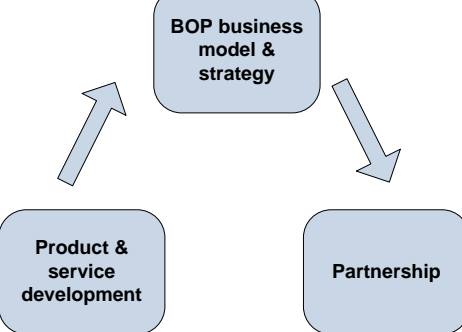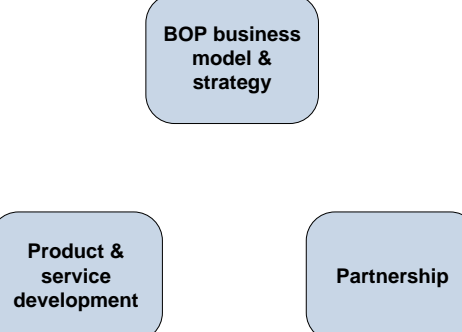
This typology ranging from partnerships with a private or a non-profit to a governmental entity has been applied in the analysis of the case studies.

3.D.   Review of literature on relation between business model & strategy, partnership and product & service development

In light of this thesis research the literature reveals certain observations and assumptions made by researchers in this field in relation to the (causal) relation between BOP business model/strategy, partnership and product & service development. These relations lead to alignment of before mentioned factors and suggest being required for success in the BOP venture. As a prelude towards an own working hypothesis the literature inventory reveals the following picture.

Table 13: Overview of configurations of the three main research subjects as found in the literature.

Observed configuration	Elaboration	Examples from literature research
"Together" 	The company embarks on a journey to explore potential engagement with the BOP. The business-model prototype is refined and co-created with partners and the BOP-community itself. Products and services are developed in cooperation and often co-produced and co-delivered with the partner(s) and the BOP community. Thus partnership steers alignment.	(Simanis et al., 2005, Kramer et al., 2007, Simanis et al., 2008b)
"Together in line with top" 	The company has laid out a strategy to engage with the BOP. From this strategy follows which channel (e.g. partnership) is utilized. Together with the partner the product and services aimed at the BOP are developed. The BOP business model steers that alignment between the three factors, via the partnership..	(Lenstra and Wälzholz, 2008, SadreGhazi and Duysters, 2008)
"Top-down & together" 	The company designs its strategy around collaboration with non-profit partners like NGOs (hybrid business models). The strategy of the company and jointly with its partners products and services for the BOP are developed. The alignment follows two routes, one form business model to products & service development and the other via the partnerships.	(Kandachar and Halme, 2007)

"Together via top" **BOP business model & strategy** **Product & service development** **Partnership**	Establishing the right partnership is key. Often a non-profit organization (e.g. NGO) is invaluable in design the right (sustainable) business model and finding a suitable distribution channel. With the right business model in hand, the product and services are well match for the BOP community. Partnerships steer, via the BOP business model & strategy, the alignment of the three factors,	(Chesbrough et al., 2006, Seelos, 2008)
"Top-down" **BOP business model & strategy** **Product & service development** **Partnership**	The company defines a strategy tailor-made for engaging the BOP and pursues collaboration with sometimes unconventional partners. Furthermore the strategy dictates the product and service development. The company needs to adapt its products and prices to the specific needs of the BOP. The BOP business model directly steers partnerships and products & service development.	(Prahalad and Hart, 2002, WEF, 2009, Karamchandani et al., 2009)
"Products steer business & partnerships" **BOP business model & strategy** **Product & service development** **Partnership**	The company explores the potential to engage with the BOP, starting a learning process, and first assesses its product portfolio. Possibly adaptations are needed to fulfill the demands of the BOP. As a next step the business model is designed and potential partnerships are mapped. Finally suitable partnerships are sought do deliver to and engage with the BOP. Product & service development steers via the business model the choice of partnerships.	(DI, 2007)
"Loose configuration" **BOP business model & strategy** **Product & service development** **Partnership**	There are researchers who mention the importance of these areas, but do not suggest any causal relationship. Partnerships can create strategic advantages, but it's not mentioned that they shape a strategy. The creation of inclusive business models is key. Furthermore products and services need to be adapted to the needs of the BOP. The three factors are needed but no causal dependence for alignment is mentioned.	(Prahalad and Hammond, 2002, WBCSD, 2004, Weiser et al., 2006, Jenkins, 2007, Mendoza and Thelen, 2008)

The configurations are designated a label like "Together", "Loose configuration" et cetera to identify their typical characteristics as explained in the "elaboration" column of the table. A myriad of configurations and interrelations appear. However, the literature does not unanimously point at one particular direction. Often there seems to be a unidirectional arrow between for example BOP strategy and partnership. In the next section this assumption is questioned and a working hypothesis is proposed with a bidirectional relationship between any combination of factors as pictured here before.

3.E. Findings literature review & initial hypothesis

- An **evolution of BOP 1.0 towards BOP 2.0 strategies**, where "selling to the poor" has been replaced by sustainable business approaches, sometimes even involving triple bottom line strategies (attention to economic, social and environmental benefits).

- The role the BOP-community takes next to the consumer-role is sometimes of a **co-designer, co-creator or a co-entrepreneur.**

- For assessing the **quality of the BOP business model & strategy** the framework of Klein is useful (see page 34).

- Key for engaging with BOP communities is the right, often unconventional, **partnership**. MNCs in general have to look beyond traditional partnerships and cooperate with both profit and non-profit partners on the ground and one step further involving the BOP-community as a partner. A typology of various forms of partnerships is given (see Table 12 on page 45).

- **BOP-contextual product and service development** is essential. It's not about delivering existing products and services – sometimes adjusting packaging with smaller sizes - , it's about rewriting the added value delivered to the BOP-community, which have to be regarded as critical (as well as price & quality conscious!) consumers. The **4A-framework** (Affordability Acceptability, Availability and Awareness) is an invaluable tool for assessing products and services designed for the BOP (see page 39), whilst the **12 Innovation Principles** of Prahalad remain useful in the design process. A tendency toward **disruptive and sustainable innovation** for the BOP is observed.

- **There seems to be an indication for interdependence of BOP business model & strategy, product & service development and partnerships**. Partnership influences product and services design and delivery and vice versa. Even so business model influences product/service development and vice versa. Business model influences product & service development and vice versa. Thus product/service development and business model development and partnerships are mutually dependent.

Based upon the BOP literature the following initial hypothesis is proposed. The BOP literature study and research indicate that for a successful project/venture, neither BOP- strategy, nor partnerships, nor product & service development can be synthesized independently from the rest. There should be alignment and interaction between the three. This picture does not mean that there is always influence in both directions of the arrows as the bidirectional arrows suggest, but it want to signify all the possible ways the three before mentioned factors can interact and influence each other. Bottom line is that the three factors are aligned for a successful BOP-venture.
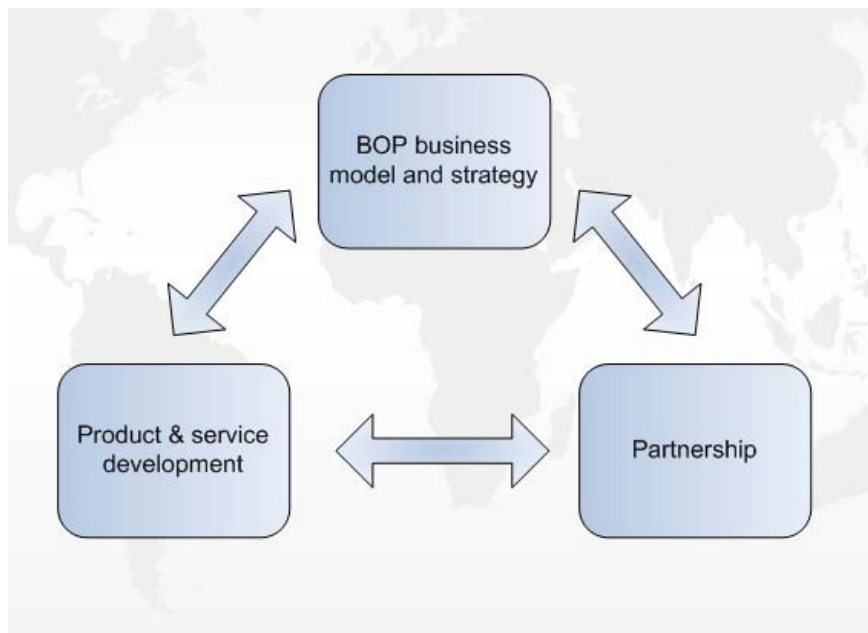
Figure 18: Hypothesis on interdependence of BOP business model & strategy, product & service development and partnership.

Difference in product capacity may affect the distribution strategy such as the distribution channels and partnerships. Furthermore, a change in product needs to be taken into account in the development of the business model and vice versa. To facilitate co-evolution between product and business model, those involved in the development of either of the two should be engaged in the development of both (Klein, 2008, Simanis et al., 2008b) .

4. Research methodology

In this chapter I will go further into detail to explain the research subject and the chosen method for research. For navigational purpose the picture on the right indicates the place in the research process.
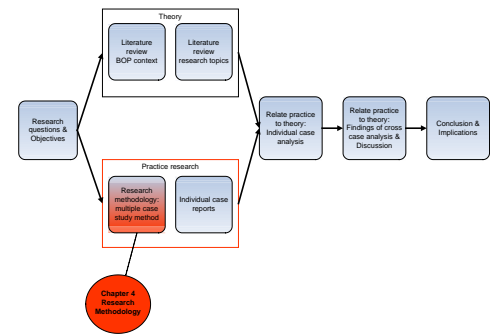
4.A.   Introduction

The research title is: "BOP & ICT MNCs or the Base of the Pyramid approach reflected on the strategy of multinational ICT corporations". The two-fold research question as stated in Chapter 1 is repeated here.

> - How can multinational ICT companies (ICT MNC) gain benefit from entering the Base of the Pyramid (BOP) market in a commercial successful and sustainable way?
>
> - And what could be the opportunities in the BOP market for multinational ICT companies?

The next section sheds light on the used research method.

4.B.   Justifying chosen research method: case studies

As a research strategy, the case study[15] is used in many situations to contribute knowledge of group, organizational, social, political, and related phenomena. It has been a common research strategy in social and political science, but has found usage in business and economics where for instance the structure of a given industry is investigated. As Yin states beautifully "…the case study method allows investigators to retain the holistic and meaningful characteristics of real-life events…" (Yin, 2003).

The question for my research has been addressed in the previous section 'Research question and objectives'. The case study is most likely to be appropriate for "how", "why" and to some extent "what" questions. Each individual case study consists of a "whole" study, in which facts are gathered from various sources and conclusions drawn on those facts. For this research the use of multiple case studies is preferred in order to be able to generalize and raise solid evidence.

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[15] A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin, 2003)

Yin and Saunders et al. (2003, 2007) distinguish between four case study strategies based upon two dimensions. For this thesis research the choice was multiple case study research with so called embedded cases wherein 'BOP business model & strategy', 'Partnership' and 'Products & services' were the units of analysis.

Table 14: Four possible case study strategies with encircled the chosen strategy for this research (Yin, 2003).
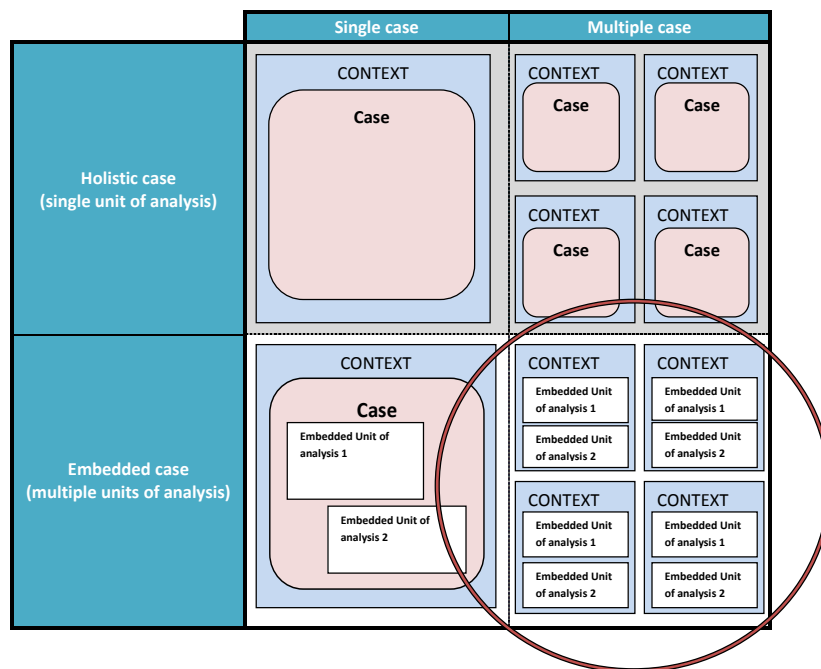
Case studies can be single or multiple-case designs, where a multiple design must follow a replication rather than sampling logic. This is not to be confused with sampling logic where a selection is made out of a population, for inclusion in the study. This type of sample selection is improper in a case study. Each individual case study consists of a "whole" study, in which facts are gathered from various sources and conclusions drawn on those facts. The multiple case study methodology has the following stages:

1. Define and design the case study,

2. Conduct the case study: prepare, collect & analyze individual cases,

3. Analyze cross case wise and develop the conclusions, recommendations and implications

The multiple case study research was basically carried out according to the following framework.
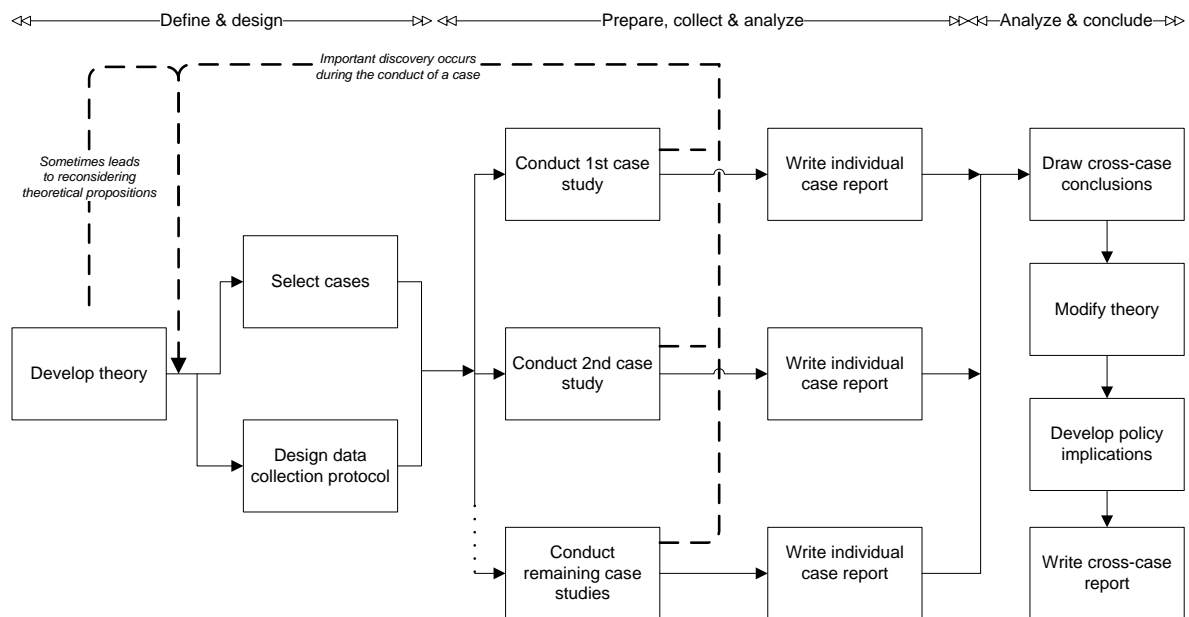
Figure 19: Multiple case study method (Yin, 2003)

4.C.   *Sources of evidence and data collection*

The targeted organizations consisted of ICT MNCs active in BOP projects. In order to obtain a consistent group of participating organizations and projects they were selected on the basis that they were operating into and within Africa.

The second selection criterion was that the MNC was involved in a project aimed at the BOP market and that was not only CSR-oriented. The third criterion was that it should be an ICT related project; in practice that meant that MNC should be an ICT MNC.

In order to get access to these organizations some conferences and seminars were attended to get in touch with representatives of the target group. Two of the respondents were approached after being introduced via acquaintances, i.e. "snowball sampling" (Heckathorn, 2002).

The result was 5 separate case studies involving a variety of organizations and partners that could participate in the investigation. Within each case study a variety of sources were used for data collection.

Yin (2003) identified at least six sources of evidence in case studies:
- Documents
- Archival records
- Interviews
- Direct observation
- Participant-observation
- Physical artifacts

A combination of different sources can provide more reliable data, and for the purpose of the research reported in this paper the focus has been on the first three mentioned. The first two sources provided secondary data, whilst the interviews served as sources for primary data.

The kind of documents that were used as sources for secondary data included existing case reports, administrative documents, and multimedia online resources. In the interest of triangulation the documents served to confirm the evidence from other sources. Archival documents included service records, organizational records, lists of names, survey data, and other such records. Desktop research provided background material and furthermore provided means of crosschecking information.

Interviews are one of the most important sources of case study information (Yin, 2003). They may propose solutions or provide insight into events. They may also confirm evidence obtained from other sources (Tellis, 1997). Semi-structured interviews were used for the purpose of this study and key respondents were asked to comment about certain events and issues. All the respondents gave permission for recording the interview and mentioning their name. These included 5 interviews with senior members of ICT MNCs used for the case studies. The interviewees were either directly active in the described projects or were seeing to its outcome. Additionally one academic was interviewed for gathering background information on product and service development for the BOP, (i.e. Kandachar, 2008).

As Yin (2003) recommends, a case study protocol was used, which included an overview of the project, question list and guidelines for the report (appendices A, B, Table 17 and section 4.F).

Table 15 lists the projects, a short description of the project, the participating multinational ICT companies (IT MNC) as well as the local partner involved with this project. In addition the sources of primary data that were used in each project are listed in the last column.

Table 15: Participating companies and their projects.

Case number	Project	Description	IT MNCs	Local partners	Primary Data
I	M-Pesa	Mobile payments & banking	Vodafone (Safaricom in Kenya)	microfinance organization Faulu-Kenya	Interview with sr. manager of company involved (Six, 2008).
II	Village Phone in Uganda	Rural shared telephone facility	Grameen & Nokia	Nine microfinance institutions (MFIs) and a cellular provider, MTN Uganda.	Some information was provided during the interview of the NSN sr. manager.
III	Village Connection	Rural local phone network in the village	Nokia-Siemens (NSN)	Local entrepreneurs	Interview with sr. manager of company involved (Granath, 2008b).
IV	World ahead	Sustainable technology for users in developing countries.	Intel	Local government/ civil society	Interview with sr. manager of company involved (Ginman, 2008).
V	Unlimited Potential	Various ICT activities aimed at emerging markets.	Microsoft	NGOs, local authorities, community.	Interview with manager of company involved (Bossicard, 2007a).

4.D.   Data analysis

For analyzing case study evidence Yin (2003) suggests three strategies for general use: one is to rely on theoretical propositions of the study, and then to analyze the evidence based on those propositions. A second is to use rival explanations by setting up a framework based on these rival explanations. The third technique is to develop a case description, which would be a descriptive framework around which the case study is organized.

For the purpose of this research multiple cases were described and cross-analyzed, effectively following, in part, the suggestions by Yin (2003) of a more specific analysis technique called cross-case synthesis.

For the business model & strategy unit of analysis a combination of a theoretical proposition and the development of a case description was used.

However for this research, particularly for the partnership unit of analysis, word tables, as suggested by Yin (2003), were not used, but rather the basic coding techniques of grounded theory as suggested by Glaser and Straus (1967) and Glaser (1978). The reason is that the use of constant comparative analysis, for instance, lends itself much more towards the identification of categories. It has to be noted however that the categories suggested here was not created only from data collected in the field, but was also guided by propositions in existing literature. Constant comparative analysis can be explained, rather simplistically, as a process of looking for patterns in data and conceptualising them. In practical terms one has to compare incident with incident (and incidents with concepts) in the data, by looking for patterns indicating similarities and differences between incidents. Similar incidents are coded into a category, and the category is given a conceptual name (Glaser, 1992). In this research the resulting categorisation therefore enjoys a close link with data that was collected in the field and is therefore 'grounded' in data.

For the products and services unit of analysis the case description technique was used.

4.E.   Quality of the case study research design

To assess the quality of the case study research design, the literature provides some useful guidelines that were implemented in the research (cf. Yin, 2003). Four tests that are commonly used are to assess if the study has construct validity, internal validity, external validity and reliability. Yin (2003) argues that these tests should be applied throughout the case study process: during design, data collection, data analysis and reporting, in order to ensure the quality of the case study research.

The following table shows these tests and identifies in which phase they occur and what actions were taken in this research.

Table 16: Quality control: case study tactics for four design tests and actions taken in this research (Yin, 2003)

Tests	Case study tactic	Phase of research in which tactic occurs	Action taken in this research
Construct validity	Use multiple sources of evidence	Data collection	Use of interviews, documentary evidence, , conferences
	Establish chain of evidence	Data collection	Interview data both recorded and noted; multiple evidence sources entered into bibliography database
	Have key informants review draft case study report	Composition	Key informants reviewed draft case study reports and one conference paper based on case studies reviewed by key informants before publication.
Internal validity	Do pattern-matching	Data analysis	Patterns identified across cases.
	Do explanation-building	Data analysis	Some causal links identified
External validity	Use replication logic in multiple-case studies	Research design	Multiple cases investigated using replication logic
Reliability	Use case study protocol	Data collection	Same data collection procedure followed for each case; consistent set of initial questions used in each interview
	Develop case study database	Data collection	Interview transcripts files, articles, reports, books, notes and links to online sources entered into bibliography database.

4.F. Case data and individual case analysis reports

All case study reports were written following the structure as shown in Table 17. Column one describes the name of the section, column two describes the core concept to be addressed in each section and column three describes what de purpose of that concept. The choice for this structure is based upon the need of showing a clear relation between research questions, the report findings and the analysis. Furthermore the convenience of a fluent story line determined the case report. Every case report has three main sections related to the three main units of analysis, namely Business & strategy, Partnership and Products & Services.

The unit Business & Strategy consists of seven items. The description of these items is summarized in the table. I elaborate four of them. Potential describes the opportunities that may arise and also reflects the ways the venture can scale out. Delivery to BOP consumers describes the eventual segment of the BOP that is targeted. BOP strategy describes the strategy the company has laid out in general for engaging the BOP. The item "Benefits/Lessons learned" describes what has been identified and evaluated form the case by stakeholders like the company.

Table 17: Structure of case study reports (the case study report just follows this structure but is not presented literally as a table).

CASE STUDY REPORT STRUCTURE		
Section	**Case report item**	**Description**
Introduction	introduction	Brief introduction to the case
Business & Strategy	Who	The Multinational ICT company and the name of the venture described in the case report.
	Where	The geographical region where the venture is taking place.
	When	When did the company start the venture?
	Potential	The rationale for the business. case.
	Delivery to BOP consumers	How is the delivery of the product or service realized? The specific target BOP-audience for the service or product.
	BOP strategy	Strategy chosen to engage BOP people.
	Benefits / Lessons learned	Outcome of any initial evaluation by stakeholder(s).
Products & Services	Products & services description	What is the product or service delivered to the BOP people.
	Product & service development	How is it developed?
Partnership	Cooperation	With whom and what kind of cooperation?

At the end of each case study there will be a case analysis, presented with a structure as shown in Table 18. Similar to the construct of the case report, the case analysis is built around the three main units of analysis. Bearing in mind the research questions and the objectives of the research, a set analysis categories has been derived to facilitate analysis. Regarding the main unit of analysis "Business & Strategy", the first five of the analysis categories originate from Klein's framework for assessing business model qualities (see page 34).

Their description is shown in Table 18. The value chain scheme is a graphic representation of the initial product development till the final delivery to the BOP consumer. It's a simple but effective way for showing at what stages involvement of the BOP community (either as co-developer, co-producer, distributor etc. and lastly as consumer) occurs. The category "BOP 1.0 or BOP 2.0" analyzes the BOP strategy of the case. The category "Relation business model & strategy, partnership and products & services" shows the relation between the three main units of analysis and provides an analysis upon this.

Table 18: Structure of case report analysis.

CASE REPORT ANALYSIS STRUCTURE	
Case analysis category	*Description*

Main unit of Analysis ▶

Business & Strategy		
Business model qualities	**Value proposition**	The sum total of benefits and costs, thus value, that result from engaging in business with that company.
	Local capacity building	It refers to the extent to which the company contributes to the local capacity of communities.
	Embeddedness	The extent to which the business is an integrated part of the lives of those at the BOP.
	Learning by the firm through native capability	Inclusion of learning in the business model
	Scalability	The potential scale and scope of the business model.
Value chain scheme		A graphic representation of the value chain from IT MNC to BOP consumer.
BOP 1.0 or BOP 2.0		BOP 1.0 (Selling to the Poor) versus BOP 2.0 (Co-venturing)
Relation business model & strategy, partnership and products & services		Graphic representation of the relationship between these three main units of analysis.
Sustainability; Triple P aspects		Graphic representation of the sustainability of the company's BOP venture (people, planet, profit)

Main unit of Analysis ▶

Products & Services		
4A-Framework	**Availability**	The extent to which customers are able to readily acquire and use a product or service.
	Affordability	The degree to which a company's products or services are affordable to BOP consumers.
	Acceptability	The extent to which consumers and others in the value chain are willing to consume, distribute or sell a product or service.
	Awareness	The degree to which customers are knowledgeable about product or services.
Product & service development		Development process.

Main unit of Analysis ▶

Partnership	
Cooperation	Analysis aspects of the cooperation of the IT MNC with local partners.
Typology	Classification of partnership.

The category "Sustainability; Triple P aspects" shows a graphic representation of the sustainability of the company's BOP venture (in terms of people, planet, profit) and analyzes the sustainability of the venture. The main unit of analysis "Products & services" consists of five analysis categories, from which the first four are related to the 4A-framework which has been used for assessing products and services designed for the BOP (see page 39). The fifth category is related to the development process of products and services.

The third main unit of analysis "Partnerships" consists of two analysis categories, labeled typology and cooperation. The classifications for partnerships used for the typology are summarized on page 45. The analysis category "Cooperation" reveals aspects in that are not covered by the typology, and actually revealed useful information for assessing issues in cooperation.

5. Case studies: individual case reports and case analyses

Table 19 shows list the cases that were examined. The case study name includes the name of the multinational ICT company that was researched.

Table 19: List of cases reviewed for the thesis research.

Number	Case study project name
I	Vodafone mobile payment service M-PESA
II	Nokia Grameen MTN Village Phone
III	Nokia Siemens Village Connection
IV	Intel World Ahead (Classmate PC)
V	Microsoft Unlimited Potential (Telecenter)

As mentioned before in section 4.F, each case report is subsequently followed by the case analysis. The structure of both the case report and case analysis is explained in section 4.F.
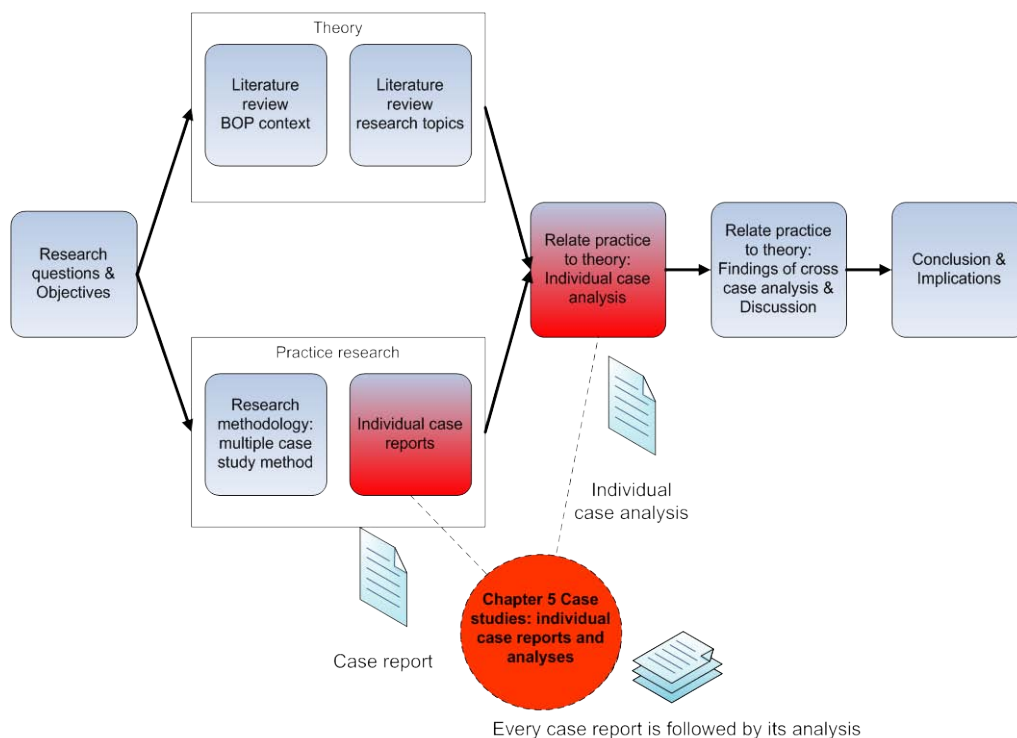
Figure 20: Chapter 5 consists of the case reports consecutively proceeded by the individual case analysis.

In chapter 0 the findings of all cases are combined in a cross-case analysis.

I. Case Study Vodafone mobile payment service M-PESA

Introduction

Vodafone through its local affiliate Safaricom set up M-PESA as an innovative money transfer solution that enables customers to send money to any mobile customer in Kenya via a simple phone transaction. It targets the unbanked people.

"Regularly used by hundreds of thousands of Kenyans, you often hear it described as the 'Kenyan Debit Card'.... For the tens of millions of Kenyans without bank accounts, M-PESA represents both a revolution and a revelation." (Banks, 2008).

A. Business & Strategy

Who

The M-PESA mobile payment service was launched (in February 2007) by Vodafone's affiliate in Kenya, Safaricom, following a successful trial of around 500 people.

Where

M-PESA has been rolled out in the whole of Kenya. It has been spread to Tanzania as well. Nowadays trials are underway in Afghanistan (Vodafone, 2008). Vodafone customers in the UK will be the first to use the service to send money to Kenya on a trial basis and there are plans to launch commercially with a focus on Eastern European and Asian markets, such as Poland and India, in the future (Vodafone, 2007b).

When

In 2005 Vodafone's Kenyan affiliate, Safaricom, started a pilot project. This turned out to be highly successful. The commercial version of M-PESA was launched in early 2007 by Kenya's largest mobile network operator, Safaricom (part of the Vodafone Group).

Potential

M-PESA has a Pay As You Go charging model. The business is based upon high volumes of low value transactions. The idea is to empower the unbanked and M-PESA was born as an innovative payment service for the unbanked (Lonie, 2007).

Why and how does a telecom company like Vodafone start a banking project like this? It's not part of Vodafone's core business; it was not developed in a core market (Kenya is a relatively small market in Vodafone's terms); and it has little to do with the voice or data products that drive Vodafone's revenue streams. This is well explained in (Hughes and Lonie, 2007c).

For Vodafone, it became clear that the M-PESA system formed the basis of a low-cost international remittance service. Vodafone is already piloting the product in new markets and will soon allow person-to-person transfers across international borders. Vodafone has also created a central team to coordinate the growth of this business (Hughes and Lonie, 2007a). Vodafone announced a joint venture with Citibank in February 2007 to extend the M-PESA scheme worldwide (Vodafone, 2007c). It is hoped that the scheme will tap into the world-wide remittances market. Globally, international remittances are a $300 billion business, fuelled by migrant workers sending money home. Many of the busiest remittance trails, such as Germany to Turkey and Europe to India, are in territories where Vodafone has a presence.

In commercial use, the program plans to target the users of microfinance services in Kenya. It will also seek to become the platform of choice for the $500 million in remittances that are received annually in the country. M-PESA's potential partners include banks, SMEs[16], agricultural companies and other businesses where moving to a cashless system adds value (Vodafone, 2007a). M-PESA has been particularly successful in Kenya due to circumstances like M-PESA is becoming a tool for the maintenance of urban-rural relations by sending money to relatives. Urban workers continue to maintain strong ties with the rural area, even after spending a substantial amount of time in the city (Morawczynski, 2008, Morawczynski, 2009a). Furthermore M-PESA proved to be of competitive quality compared with the other options for domestic money transfer, like money transfer through bus and matatu (shared taxi) companies or the post office service PostaPay (Mas and Morawczynski, 2009).

Apart from innovations in technology the mobile micro-finance project is encouraging co-operation between organizations that normally do not act together and instituting robust management systems available to micro-finance institutions (and which might in the future be required by financial regulators (DFID, 2007).

Pilot testing confirmed several important benefits to users (Kramer and Paul, 2007):

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[16] Small and medium enterprises

- **Time-saving and convenience:** The system has reduced the time it takes to repay their Faulu (micro credit) loans, as the transaction, complete with confirmation, is immediate. Clients have also saved time and money by reducing their visits to banks, and have received the added convenience of effectively longer 'banking hours'.

- **Safety and security:** The M-PESA system reduces the requirement to carry significant amounts of cash, thus reducing the potential for loss. M-PESA was developed to bank the un-banked.

- **Reduction of default rates:** As transactions can be completed during a longer business day, and at more convenient locations, the system has encouraged – and enabled – more prompt and regular loan repayment, an outcome with clear benefits to the banking institutions.

According to a report from UNDP M-PESA has several opportunities for scaling up (UNDP, 2007a):

Opportunities for Scaling Up

- Recruitment of other financial institutions, thus widening range of M-PESA users

- Extending network coverage to the remote areas, attracting more Safaricom subscribers

- Partnerships with mobile phone manufacturers to offer cheap phones with longer battery life, which is favorable for phone owners in remote areas that have poor infrastructure

- Developing other uses for MPESA, thus attracting more Safaricom subscribers and also increasing service usage

- Recruitment of businesses- widening the number of businesses that can be paid via MPESA

- Replication in other developing countries

- Recruitment of other phone service providers

A study conduct in 2007 showed a high feasibility of the M-PESA project and a high social economic benefit and a high disruptive impact of mobile banking systems like M-PESA (Lehr, 2007).

Delivery to BOP consumers

M-PESA targets unbanked, prepaid mobile subscribers, enabling them to transfer money securely using their mobile phones. The M-PESA service relies on M-PESA agents. An M-PESA agent provides services to M-PESA customers including the buying and selling of M-PESA electronic money (e-Money), and the recruitment of new M-PESA customers (Safaricom, 2008). There are over 1600 M-PESA Agents operating countrywide in Kenya.

M-PESA agents are:

- Safaricom dealers, operating one or more outlets around Kenya or

- Other retailers with a substantial distribution network like petrol stations/distributors.

The agent's key tasks are:

- Register an M-PESA customer

- Deposit cash into a M-PESA account

- Process cash withdrawals for a registered M-PESA customer

- Process cash withdrawals for a relative or friend of the customer, who is not a registered

As well as person-to-person money transfers, M-PESA is being used for everything from school fees to buying goods and services. Some commercial organizations are also using the service to pay salaries to casual and remote field workers such as truck drivers. Individuals who are nervous about carrying cash are using it to move funds securely and quickly (Nokia, 2008c).

The M-PESA agents use mobile phones to deliver the services. Instead, each agent is given a mobile phone with a different M-PESA menu than consumers, customized to their needs. The low-end phones used cost about $40 each and required no maintenance at all (Hughes and Lonie, 2007c).

Safaricom plans to further expand its subscriber base, most of whom are expected to be the rural poor. In order to effectively serve this new market with the M-PESA system, Safaricom intends to implement the following (UNDP, 2007b):

- Expand network infrastructure in rural areas with increases in base stations

- Expand offerings of cheaper, flexible tariffs: Safaricom is working on a pricing strategy that will take into account the low-income levels in rural areas

- Partner with Motorola to offer cheap phones with longer battery life as part of new tariff packages for rural customers who often have limited access to electricity

BOP strategy

M-PESA is meant to provide the poor with efficient, reliable and affordable banking services and to simultaneously stimulate business operations that provide the poor with a means of livelihood and employment. The M-PESA model is replicable by any mobile service provider for any MFI or banking service provider in the low-end of the market, as well as in any developing country where such businesses exist. A variety of mobile banking initiates have sprung up. M-PESA is considered a non-bank led model (Table 20).

Table 20: Classification of emerging m-banking models (Porteous, 2006)

Model →	1	2	3	4
Model name	'Pure' bank driven	Joint venture	Non-bank led	Non-bank driven
(a) Who holds the account/ deposit?	Bank	Bank	Bank	Telco/ Non Bank
(b) Whose brand is dominant?	Bank	Joint—non-bank or telco	Usually non-bank or telco dominant	Telco/Non Bank
(c) Where can cash be accessed ?	Bank	Bank	Bank + alternative agent network	Telco network + other
(d) Who carries the payment instruction?	Any telco (sometimes with 3rd party payment gateway)	Usually specific to one telco	May be one or any	Specific to offering telco
Current Examples	Many additive models e.g. FNB	MTN Mobile Money, Smart	M-PESA, Wizzit	Globe; Celpay

Benefits

Within the first month M-PESA started, Safaricom had registered over 20,000 M-PESA customers, well ahead of the targeted business plan. This rapid growth is a clear sign that M-PESA fills a gap in the market. The service has more than one million customers today. The average registration rate was 40,000 per week (Morawczynski, 2007).

The M-PESA service is very successful since its launch. One reason Vodafone has experienced rapid growth in Kenya is that the formal banking sector reaches just 19 percent of the country's 36 million people, the report said. An additional 8 percent of Kenyans have access to financial services only through savings cooperatives and microfinance institutions (Nicholson, 2007).

The service is aimed at mobile customers who do not have a bank account, often because they do not have sufficient income to justify the high cost of banking in Kenya or because they live in areas where access to financial services is limited. Of the 80% of Kenyan adults without bank accounts, many are self-employed business people who need the ability to transfer money.

The M-PESA service is in fact available to anyone. The customer has the following benefits (Lonie, 2007):

- No need for a bank account.

- No joining fee.

- No monthly charges.

- No minimum balance.

- For money transfers a small fee is paid.

The M-PESA customer needs to have a mobile telephone, a special SIM card freely provided by Safaricom en for the initial registration one has to show an identity card.

M-PESA even provides the service to send money to non-customers who can reclaim cash money at any M-PESA agent when showing a code they received via SMS. This capability enabled early adopters to use the system even when there were not much customers on M-PESA and helped eventually to expand the customer-base (Mas and Morawczynski, 2009).

People with bank accounts can also use the service to send money to their families living elsewhere in the country who do not have bank accounts, avoiding more expensive and insecure local money transfer services.

Other outcomes are:

- Customers of micro-finance institutions in remote rural areas benefit directly from the access to financial services and products without costly and time-consuming travel. These customers are often entrepreneurs, existing small businesses or farmers. Access to financial services is improving the general level of productivity for all members of the community.

- Financial institutions benefit by extending their services to customers they could not reach using conventional marketing techniques.

- Co-operation between different commercial sectors in the development of this project is helping break down barriers to micro-finance institutions in East Africa.

Figure 21: Advertisement for M-PESA (source: Safaricom website)

Lessons learned

This experience has reinforced the insight that there is no substitute for spending a significant amount of time at the start of a project on the ground assessing customer's needs well ahead of designing the functional specification of any technology-based solution. One learned to keep it simple. When it came to moving from pilot to live system, a significant amount of the complexity in the product was stripped, allowing Safaricom to go to market with a very simple consumer proposition.

A partnership approach was at the centre of the project. All parties had to be prepared to embrace the consequences of change and this is not easy for naturally conservative organizations that are not accustomed to working together. For this and all the other challenges, getting senior sponsorship along with a committed project team was critical (Hughes and Lonie, 2007a).

The M-PESA pilot phase provided some interesting insights (Lonie, 2006, Morawczynski, 2009b).

Key Benefits
- Security – no need to carry cash / safe way to send money home

- Convenience – no need to travel to the bank and queue

- Efficiency – can bank money, pay loans etc without leaving their businesses

- Simplicity – fast & easy to use

Issues
- Training – for those people unfamiliar with mobile phones.

- Training – for those people unfamiliar with banking habits; make customers familiar with the various features of m-banking system through marketing campaigns.

- Web access – connectivity can be poor (for the MFI[17])

- Make processes of the system compatible to that of the MFI; there is a need to create interface between the systems of the telco[18] and MFI.

- Cash float problems (liquidity management); meaning that enough cash money is available at M-PESA checkpoints in rural areas, where money is withdrawn than deposited. Already entrepreneurs have observed this issue and created an opportunity out of this by offering cash management services to the M-PESA agents like delivering cash money, like company PEP Intermedius in Kenya (Pickens, 2009).

Furthermore a survey shows the following reasons for usage of M-PESA (Morawczynski, 2007, Pickens, 2009):

- Send money to relatives in rural Kenya (urban-to-rural remittances).

- Purchase mobile phone credit

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[17] Micro Finance Institution

[18] 'Telco' is a generic term for telephone companies.

- Store money

- Entrepreneurial activities (pay suppliers, receive money from customers); the typical M-PESA agent handles 86 transactions per day.

- Emergency matters (e.g. paying for medicine or a doctor)

By January 2009, M-PESA had 5.5 million users out of Safaricom's 13 million subscribers representing a third of Kenya's 36 million population.
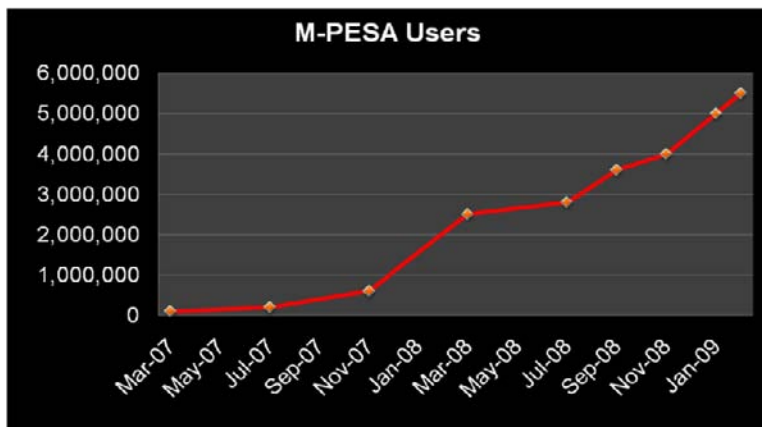
Figure 22: growth of M-PESA users in Kenya (Morawczynski, 2009b)

The reason for the rapid growth of M-PESA users in recent years is twofold (Morawczynski, 2009b, Mas and Morawczynski, 2009). First of all, male migrant works working in Nairobi send money to their wives and family in rural villages who need money to buy food and other essential things. According to the survey, many of the rural people depend upon these remittances for a great part of their income, often more than fifty percent. M-PESA proves to be more time and cost efficient than other ways of delivering the money to the family in the villages. These migrants are what innovation researchers call 'early adopters' of a technology (cf. Moore, 2008). They are usually better educated and earn higher incomes than those staying behind in the village. Because the migrants are the senders, they can choose the way they transfer the money to the village. They then influence the recipients in the rural area who are usually female, less educated and poorer to also use M-PESA. This segment is referred to as the 'technology laggards'. They are usually the last, and often the least likely, to adopt an innovation. The second reason was the political unrest in Kenya during the recent elections, which had a negative effect on the trust people had in their own national banks. M-PESA became more trusted as it was owned by a non-Kenyan.

B. Products & services

Product & service description

M-PESA provides an affordable, fast, convenient and safe way to transfer money by SMS anywhere in Kenya. 'Pesa' means 'money' in Swahili and the prefix 'M-' refers to the use of a mobile phone to facilitate banking transactions, a practice which has become known as m-banking and m-payments.

M-PESA enables customers to move money within Kenya by sending instructions via SMS text message to a central server. Customers can deposit and withdraw cash at local M-PESA agents, including retail outlets such as airtime dealers, petrol stations, and supermarkets. They can transfer money to other mobile users via SMS and also buy prepaid airtime credit (Bueno, 2008, Vodafone, 2008).

Vodafone developed a mobile phone based solution for transferring money in geographically remote areas of Kenya and Tanzania that lie beyond the reach of fixed line telecommunications (DFID, 2007) .

- Allowing access to financial services in remote areas without traditional telecommunications

- Providing opportunities for financial institutions to extend their activities into new areas

- Encouraging co-operation between micro-finance institutions, banks and mobile network operators

- Providing customers with a quick and easy method of accessing funds using mobile phones and airtime dealer networks in place of bank cards and ATMs

The customer does not need to have a bank account, but registers with Safaricom for an M-PESA account.

Customers turn cash into e-money at Safaricom dealers, and then follow simple instructions on their phones to make payments through their M-PESA accounts; the system provides money transfers as banks do in the developed world. The account is secured, PIN-protected, and supported with a 24/7 service provided by Safaricom and Vodafone Group (Hughes and Lonie, 2007a).
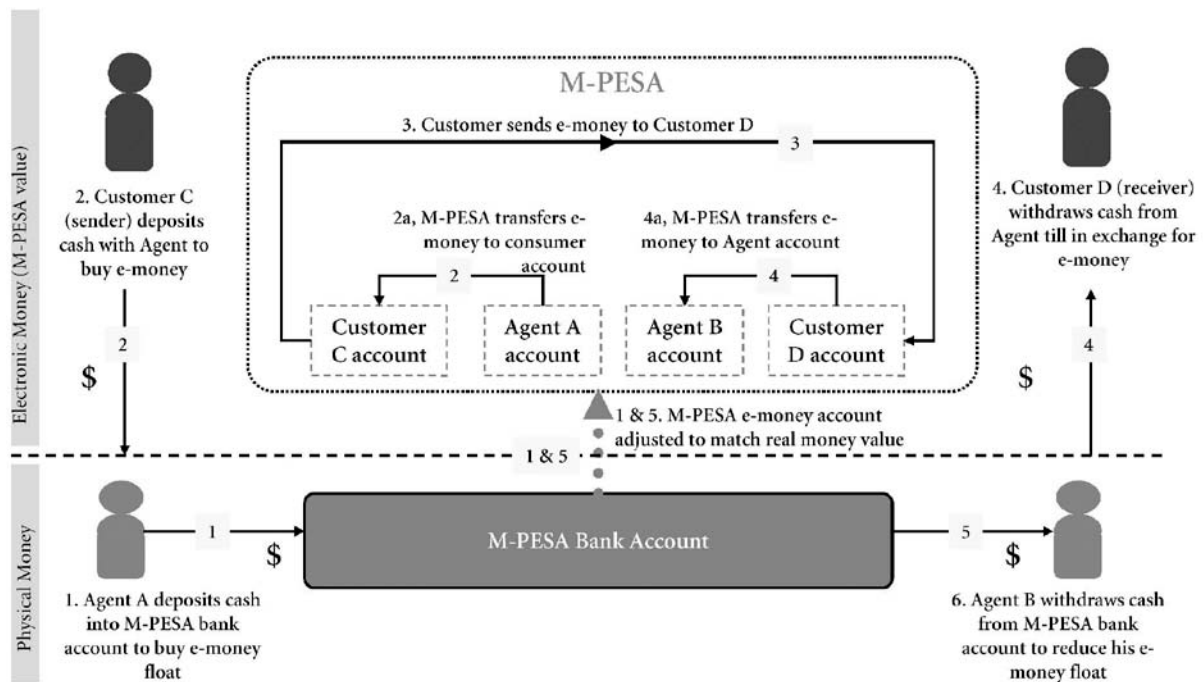
Figure 23: Overview of the M-PESA service (Hughes and Lonie, 2007a).

The basic principle of operation is the following: money deposited into the external bank account is mirrored in the M-PESA account. M-PESA assigns ownership of the value to different customers and M-PESA move value between customers in response to sms instructions (Lonie, 2006). The M-Pesa system supports money transfers, cash withdrawal and deposits at retail outlets, and disbursement and payment of loans.

How does it work? As an example the cash withdrawal is shown on a mobile telephone display. The menu is available in different languages like English or Swahili. The cash is then given by an M-PESA agent who will record the cash delivery.
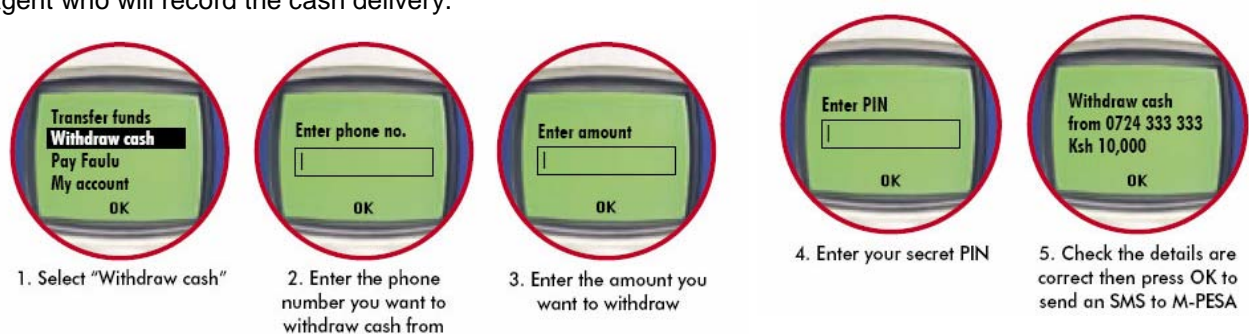
Figure 24: M-PESA Cash Withdrawal (Lonie, 2006)

Another example is how to transfer money. In the M-PESA menu of the mobile phone, one selects "send money" & enter. Afterwards the following is procedure is followed.

1. Customer enters recipient's phone number
2. Customer enters how much he or she wants to send

3. Customer enters his or her secret PIN

Both the customer and the recipient receive an SMS confirmation of the transfer.

Figure 25: Sending M-PESA value: example of sms confirmation for sender and recipient (Lonie, 2007).

Safaricom already sells airtime in small units costing US$0.68, and airtime is already transferable among consumers. Both of these features have proved very popular among low-income consumers, and this is expected to further promote M-PESA among the poor for the benefit of everyone involved (UNDP, 2007b).

Product & service development

In 2005, Vodafone's Kenyan affiliate, Safaricom, was awarded match funding by the UK's Department for International Development (DFID) to develop services for extending the provision of micro-finance to the poor in East Africa. Approximately half of the funding came from DFID's Financial Deepening Challenge Fund and the other half from Vodafone (DFID, 2007).

Starting M-PESA was a challenge on itself. According to Hughes and Lonie (2007) Vodafone is a relatively young, technology-based service organization that is keen to proactively manage its impact on society. But, how could firms raise executive-level interest and get funding to develop products that will be non core and long term but do have some sort of sustainable development theme? Within Vodafone there was this idea that access to finance facilitates entrepreneurial activity. In turn this creates wealth through economic activity, job creation, and trade.

However, private sector organizations such as Vodafone are bound to use their shareholders' capital to achieve the best returns. Many organizations use internal competition to allocate funds to their projects, and this competition is based on potential returns on investment. As a result, any initiatives that relate to the development agenda usually get cancelled out. A suggestion could be to position such projects in the Research & Development (R&D) department. This would work in many sectors where new products take a long time to reach market, but many technology-based companies like Vodafone tend to keep R&D focused on the technology rather than the marketplace (Hughes and Lonie, 2007b).

Then for M-PESA came the opportunity. What if a firm could use somebody else's capital to overcome the internal competition and a proposition could be shaped that would address a market of potential future value for the company? A public–private partnership opportunity arose. The U.K. government's

DFID established the Financial Deepening Challenge Fund (FDCF), using a challenge fund to circumvent the constraints of new product development processes. The money was awarded on a matched basis (50 percent of total costs) and a competitive bid process. Vodafone's contribution could be in the form of people, budgeted at an agreed rate.

As a multinational company Vodafone provides the national branches much autonomy for independent operations (Hughes and Lonie, 2007c, Six, 2008). But Safaricom lacked the necessary expertise on financial matters. For setting up M-PESA Vodafone and its national branch Safaricom faced formidable financial, social, cultural, political, technological, and regulatory hurdles. A public-sector challenge grant of DFID helped subsidize the investment risk. Both backing of higher management of Vodafone and both expertise of local partners the operation proved to be key ingredients for successful development of M-Pesa (Hughes and Lonie, 2007c).

A dedicated project manager was assigned who could lead all aspects of the development, integrating with the relevant departments of Safaricom from IT, Operations, Customer Care and the senior management team. A pilot partnership was created between Vodafone –its local affiliate Safaricom- (the network operators), a microfinance institute (MFI), and a commercial bank.

The proposition started around the design and test of a platform that would allow a customer to receive and repay a small loan using his or her handset. The customer could make payments as conveniently and simply as they do when they buy an airtime top-up, so a central feature of the proposition was to use the distribution network of Safaricom airtime resellers (or agents in M-PESA terms) to facilitate this process. This service should also bring business efficiencies for the MFI and allow it to grow its business more quickly and to more remote locations than is possible using traditional paper processes. The software needed for M-PESA was not of the shelf material. In fact to allow a proper functioning of all the needed requirements one decided to develop the software themselves instead of adjusting software aimed at a Western market bank. A full and detailed description of setting up M-PESA service is found in (Hughes and Lonie, 2007c)

Initially M-PESA was set up with the intention of streamlining microfinance operations by allowing loans dispersal and repayment by cell phones. Vodafone's intention was to reduce the cost of loan disbursal and recovery, but they found that customers were using M-PESA for person-to-person transfers (Nicholson, 2007).

Actually the M-PESA system didn't match fine with Faulu's manual (microfinance) operations, one of the partners of the project. This MFI used a paper-based system with manual processes and it needed to replicate manual processes electronically like group repayment structure via mobile phone. This hasn't (yet) become a part of the system (Morawczynski, 2007).

A further potential spin-off of this project is the extension to other markets. M-PESA proved to have potential in the global remittance market, i.e. global money transfer. Vodafone and Citigroup announced the launch of a mobile-based international money transfer service targeting the global

remittance market worldwide. Michael Joseph, CEO of Safaricom in Kenya said: "Safaricom and Vodafone's M-PESA mobile money transfer service is an example of Africa leading the world in the advancement of mobile technology and its uses.[…] This opportunity with Vodafone and Citigroup to extend the offering to support international remittances can benefit not only Kenyans, but also the greater population of migrant workers across the world" (Vodafone, 2007b).

Migrant remittance is an important source of income in many developing countries. The UN estimates the total annual worldwide value of USD 318 billion in 2007, from which USD 240 billion in developing countries, while the African remittance market is valued on more than USD 39 billion (Ratha et al., 2007).

C. Partnership

M-PESA was an original idea of Vodafone. Vodafone initiated discussions among the partners with the overall aim of extending social benefits to mobile phone subscribers. The view was that each could bring to the project a different set of competencies, which would improve access to finance for the unbanked population. Network operators bring connectivity and a huge reach through the airtime reseller distribution network; a microfinance organization understands the market need for microloans and other financial services but is typically not a regulated bank; and a commercial bank brings the discipline and compliance aspects of storing and managing customers' funds.

M-PESA was created by the partnership of Vodafone (Safaricom), Faulu-Kenya (local micro finance institute), and CBA (Commercial Bank of Africa, a local bank). Safaricom Kenya provided the local mobile telephone network, Vodafone and UK's Department for International Development (DFID) funded the pilot project. CBA was providing local banking services and the interface to the regulatory system. Faulu Kenya providing local expertise and the micro-finance clients who pilot tested M-PESA. As middlemen for M-PESA to the customers the vast dealer network of Safaricom plus local retailers is being used.
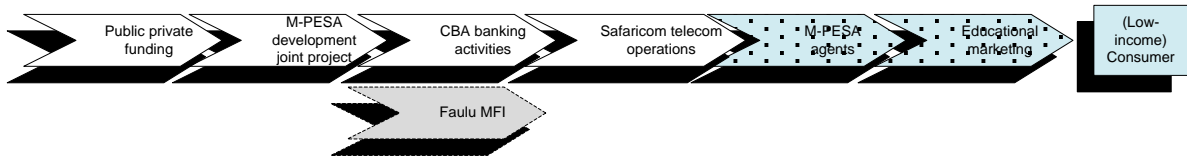
Faulu Kenya is a micro-finance organization operating in most parts of Kenya. Faulu has a client base of 100,000 low-income people who borrow sums of money ranging from US$300 to $20,000. The great majority of Faulu clients borrow sums at the lower end of this scale. Faulu Kenya was selected for the pilot based on its nationwide coverage, accessibility to the low-income earners and its capacity to integrate the new technology with existing operations (UNDP, 2007a).
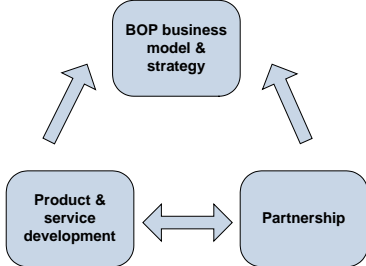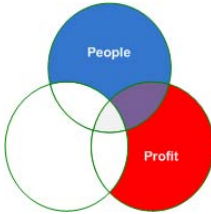
The Commercial Bank of Africa is the largest privately owned Kenyan bank whose primary focus is corporate and institutional banking.

Case report analysis Vodafone mobile payment service M-PESA

Case report analysis Vodacom mobile payment service M-PESA		
Business & Strategy		
Business model qualities	Value proposition	• **Banking for the unbanked**; the business is based upon high volumes of low value transactions. • **Locally responsive strategy**. A multinational or "locally responsive" strategy, in contrast with a global strategy, is based on a greater degree of local autonomy and discretion over businesses, product mix, and operating methods in individual countries (Sharma and Hart, 2006, Gouillart, 2008) .
	Local capacity building	• Distribution via **M-PESA agents** on the ground. • Capability to stimulate **local entrepreneurial activity**.
	Embeddedness	• Some of the M-PESA agents are part of the BOP community. So there is **partly embeddedness**.
	Learning by the firm through native capability	• Local knowledge from **MFI, local M-PESA** resellers (agents). • **Usage different from initial design**. **Adjustments were made** to the service and complexity was stripped out.
	Scalability	• **Opportunities** for scaling up. • Potential even **outside BOP** markets (see product and service development).

Value chain scheme

The blue colour depicts the participation of BOP people. The dashed patter indicates a partly representation of BOP people. Some of the M-PESA agents are belonging to the BOP community. The MFI (Faulu) participation has not been fully implemented yet

BOP 1.0 or BOP 2.0	**BOP 1.0** innovation strategy. That means the selling of a service is the focal point of the strategy. However **some elements of a BOP 2.0 strategy** are also found, like co-entrepreneurship as M-PESA agents act as retailer.

Relation business model & strategy, partnership and products & services	A product or service is adapted or developed to the needs of the BOP, M-PESA (m-payments). This results in stipulating the right partner (Faulu-MFI and CBA) and consequently the BOP strategy (M-PESA agents and educational marketing). The system integration with the back office system of Faulu hasn't been implemented yet and this had consequences in the operations, where the focus came more on the interaction with M-PESA agents. The M-PESA scheme is introduced in the global remittance market and has influenced the corporate strategy and business model.	
Sustainability; Triple P aspects	*People & Profit.* The logic of the M-PESA model can be described as follows: access to financial services facilitates entrepreneurialism, which in turn increases economic activity, which creates wealth.	

Products & Services		
4-A framework	**Availability**	The M-PESA service is in fact available to **anyone**. It is available for the **unbanked people**, which are significantly the BOP people.
	Acceptability	The distribution model with **M-PESA agents** on the ground provides a low profile entry point for the customer.
	Affordability	The system had no joining fee or monthly charges or a minimum balance. M-PESA has a **Pay As You Go** charging model. The business is based upon high volumes of low value transactions. Benefits for the users are: time-saving and convenience, safety and security and reduction of default rates.
	Awareness	This issue was identified during the pilot of the service. Training is needed for those people unfamiliar with mobile phones and training is needed for those people unfamiliar with banking habits. Safaricom made customers familiar with the various features of m-banking system through **marketing campaigns** and also used the local M-PESA agents for this task.

Product & service development	It is arguable whether the service design followed purely the strategy of embedded innovation. The M-PESA was indeed developed by a project team who stayed on the ground assessing the needs of the targeted customers of the BOP. Joint **funding** by DFID and Vodafone (Public–Private Partnership) stimulated the development of M-PESA.
	Initially M-PESA was set up with the intention for usage for payments of microfinance loans, but it turned out that customers were using M-PESA for **person-to-person transfers** (the actual usage of implemented systems is **different from the intended usage**). Analysis of this usage lets to adjusting the system and tweaking it to deliver better service for that actual usage (Hughes and Lonie, 2007b). The intended integration with the MFI's back-office was dropped and so the key players in partnership changed. As mentioned in the case report a significant amount of the complexity in the product was stripped in order to go to market with a very simple consumer proposition. Spending much **time on the ground** at the start of the project to assess customer's needs before designing the functional specifications for any technological solution proved to be invaluable.
	M-PESA proves to be a source of **innovation blowback** as the concept is introduced to the global remittance market. The innovation initially designed for a developing market has potential in a different often developed market. See section 3.B and (Brown and Hagel, 2005).
Partnership	
Cooperation	• A **partnership** approach was at the centre of the project. • **Integrating** with micro finance institution Faulu's back office information management **systems** proved to be an obstacle. • As stated before the **actual usage was different from the intended usage** • For setting up the M-PESA service a **dedicated** project team was founded which operated successfully. • Safaricom as a national branch of Vodafone has a **significant degree of autonomy** to operate and with both **backing of higher management** of Vodafone and both **expertise of local partners** the operation could become a success.
Typology of partnership	M-PESA started as a public-private sector initiative by the funding of DFID. But the initiative developed further into a merely **"private social private" partnership**. There is a multinational (Vodafone plc and its local affiliate Safaricom) working together with a microfinance institution (social partner) and a commercial local bank (private company).

II. Case study Nokia Grameen MTN Village Phone

Introduction

The Village Phone program, created by the Grameen Foundation, enables grassroots entrepreneurs to take out loans to purchase mobile phones. They then rent out airtime to local villagers, thereby boosting their incomes and providing a much needed service. Nokia and Grameen Foundation USA have jointly developed a solution based on Nokia's most affordable phones and an external antenna to serve rural communities in Uganda and Rwanda (Nokia, 2005). MTN Uganda is now owner of the Village Phones, and is part of the MTN Group, a multinational telecommunications group operating in 21 countries in Africa, Asia and the Middle East.

A. Business & Strategy

Who

Originally the idea of Village Phone was set up in Bangladesh by (for profit company) Grameen Telecom in cooperation with Grameen Bank. Thanks to Grameen Telecom, micro entrepreneurs operate over 220,000 of these as a business, bringing phone service to at least that many rural villages in Bangladesh. This idea is being replicated to other countries by the nonprofit organization Grameen Foundation Grameen Foundation Grameen Foundation[19]. The foundation released the Village Phone Replication Manual, a step-by-step guide on establishing Village Phone programs (Grameen-Foundation, 2008b). Along with MTN, Grameen Foundation USA and local micro-finance organizations in Uganda and Rwanda Nokia is exploring how to extend cellular connectivity via the Village Phone project (Chipchase and Tulusan, 2006a).

Where

The Village Phone project initially started in Bangladesh but has been extended to countries like Rwanda, Cameroon and Uganda (GrameenPhone, 2006).

The equipment used in Village Phone will operate in either an urban or rural market. However, Grameen Phone strongly encourages a focus on rural markets. In urban areas, there is usually significant competition for public telecommunication services, making the business more challenging for the microfinance client. In rural areas, especially those where a signal can only be received using

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[19] Professor Yunus, the 2006 Nobel Peace prize winner, is a founding and current member of Grameen Foundation's board of directors.

the external antenna in the Village Phone Equipment Kit, the business model will be much more favorable and sustainable.

When

In 2003, Grameen Foundation and MTN Uganda established a joint venture company, MTN Village Phone, to bring the Village Phone program to Uganda. Spearheaded by the Grameen Technology Center, this was the first successful replication of the program that was first pioneered in Bangladesh by Grameen Telecom and Grameen Bank. Its initial goal was to establish 5,000 new Village Phone Operator businesses in five years. In just three years, MTN Village Phone surpassed that goal, establishing over 6,700 new businesses and growing at a rate of more than 150 Village Phone Operator businesses per month (CTO, 2008). In September 2006, Grameen Foundation sold its stake in MTN Village Phone to MTN Uganda. The company is now completely locally-owned and managed.

Potential

Grameen Foundation states that Village Phone brings affordable telecommunication access to the rural poor in a way that is both sustainable and profitable (Grameen-Foundation, 2008c). Through for-profit and non-profit partnerships, Village Phone links the telecommunications sector with the microfinance sector to enable microfinance clients to borrow the money needed to establish a Village Phone business in their rural communities. These grassroots entrepreneurs, Village Phone Operators, then rent the use of the phone on a per-call basis providing both affordable telecommunications access in their community while earning enough to repay their loan and raise their level of income (Grameen-Foundation, 2008a). As of December 2007, there are over ten thousand Village Phone Operator businesses against a target of over six thousand showing the success of the concept (Mureithi, 2008).

According to policy and research center CGAP there is still need for shared phones, such as Village Phone, although more and more people have access and can afford a personal mobile phone. More than half of the world's population continues to live and work in rural areas with little or no access, and in these places the model is still very much in demand (CGAP, 2007).

Rural areas present an unlocked potential

- Close to 3 billion people live in rural areas

- In Africa about 70% and in Asia 60% of the population live in villages (UN, 2004)

- Often there is no communications service available

There are others who dispute the potential of Village Phone (shared phone projects) claiming that the TCO for possessing and using an own mobile phone are significantly decreasing in the target markets where Village Phone is offered (Anderson, 2006a, Anderson and Kupp, 2008). However there still needs to be connectivity to a GSM base station in order to have a mobile phone function properly and

here the Village Phone shows advantage having an external antenna boosting its range (see Figure 27). Furthermore consumers of low-income segments are price conscious and even prefer to use a Village Phone rather than their own mobile when the rates are attractive. Others like the convenience as Village Phone entrepreneurs store the numbers their customers dial in a personalized address book and lessen the burden for non-literate people (Chipchase and Tulusan, 2006b).

Grameen Foundation is has developed together with MTN and Google and local content providers the AppLab project, officially launched, June 2009 (Grameen-Foundation, 2009). AppLab[20] is developing locally relevant mobile applications tailored to the needs of the poor (Burrel and Matovu, 2008). For example, through a simple text message a farmer can receive tips on treating crop diseases, learn local market prices, or get advice on preventing malaria. One of the aims of Applab is "developing opportunities for micro-entrepreneurs to enhance their existing shared phone businesses and build new businesses collecting and disseminating information, serving as information hubs for their communities" (Applab, 2009). This will provide additional revenue to the Village Phone operators (Taylor, 2009).

Delivery to BOP consumers

Grassroots entrepreneurs, or Village Phone Operators, operate their businesses in rural villages where no telecommunications services previously existed and where the MTN network can only be accessed with a booster antenna; they rent the use of the phone to their community on a per-call basis. MTN targets women and youth in particular as operators (Unicef, 2007). A project review showed that 55% of its operators were men, and 45% were women (IFC, 2007). The Village Phone Operators were provided with a micro finance loan of approximately USD 230 and the average loan pay-back period is twelve months (Knight-John et al., 2005b).
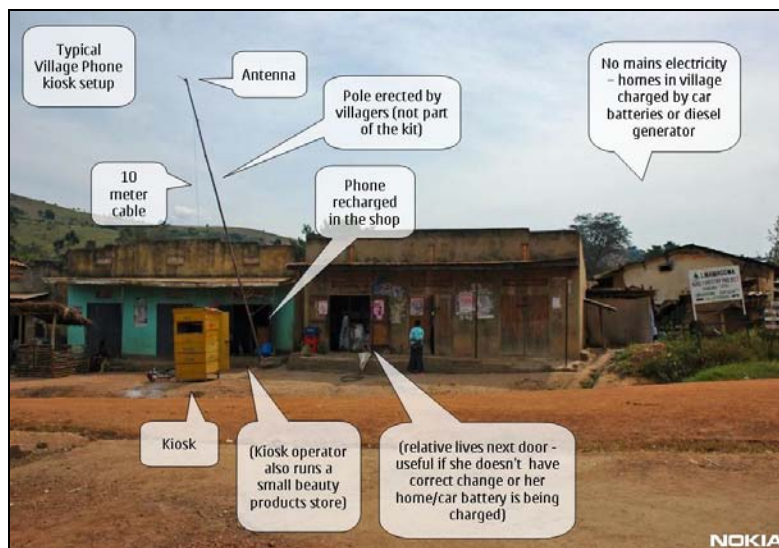
Figure 26: Typical *Village Phone setup, Uganda (Chipchase and Tulusan, 2006a). Photo by Jan Chipchase.*

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[20] The Applab services in Uganda can be accessed by existing Village Phone Operators (VPOs) who extend service to people without mobile phones as well as by people who have their own phones.

The Village Phone Operators provide affordable rates while earning enough to repay their loans and earn profits (USAID, 2008). It is estimated that in 2008 in Uganda over 10 million poor inhabitants are served who previously had no access to telephony (Singhal et al., 2005).

BOP strategy

With the success of the Village Phone project in Bangladesh, Grameen decided to replicate the program in a new region, and specifically one that did not have a single dominant organization like Grameen handling all parts of the program. As a single provider of credit, telecommunications, and even energy, Grameen considered itself a rarity in the microfinance world and believed therefore that the development of a venture in a region with a more "typical" microfinance structure would lead to a more replicable model. Uganda fit that criterion, there are at least nine microfinance institutions (MFIs) serving the local market, as well as an external cellular provider, MTN Uganda (cf. Annex 3, Knight-John et al., 2005).

The Village Phone scheme pioneered by Grameen in Bangladesh has been successfully implemented in Uganda and Rwanda by South Africa's MTN, and in the Philippines by Globe Telecom (Sullivan, 2007)..

Benefits

The impact of Village Phone in Uganda's rural communities has been significant. On average, the Village Phone Operators (VPOs) sell five times more airtime than that used by a typical urban customer on his personal mobile phone – a strong signal of the power of "shared access". The VPOs themselves have been able to educate their children, access private healthcare and grow their businesses. Some have even expanded into other businesses which help to create more jobs within their communities (Grameen-Foundation, 2008b).

With proceeds from the business, the Village Phone Operator contributes to their loan repayment and also purchases additional prepaid airtime cards. The microfinance institution earns money from the loan and also a percentage of the revenue from airtime sales. The Telecommunications Provider earns money through volume sales of airtime, and the Village Phone Company earns enough money to continue to promote and expand the program (Keogh and Wood, 2005).

Nokia conducted a study toward the benefits of shared phone concepts like Village Phone. It showed that not all rural areas have coverage for mobile phones. Only devices such as the Village Phone kit which have the capability of sending and receiving because of their larger antenna are useable. The Village Phone may be the most accessible and sometimes the only phone in the village (Chipchase and Tulusan, 2006b).

Partner	Essential Service Provided	How they "win"
Telecommunications Company	Communications infrastructure coverage to needed rural areas	New revenue generated from airtime sales from a previously inaccessible market
Microfinance Institution	Provide loans to Village Phone operators so they can purchase equipment to start a Village Phone business	Income from loans and airtime sales and a new product to market to clients
Village Phone Operator	Affordable telecommunications to members of their community	Profitable business which earns a steady income
Community members	Customer base for Village Phone Operators	Access to affordable telecommunications
Village Phone company	Crafts and manages relationships, facilitates support, manages overall program	Long-term success of program, sustainable (profitable) operation

Table 21: The Village Phone program provides benefits to all partners from the program (Keogh and Wood, 2005).

But sometime these Village Phone kits are used in areas with a normal mobile phone signal coverage (no need for a large antenna to send and receive the signal). The Nokia research has shown that there is a group of people who do not need to have their own phone and are prepared to use a shared phone such as the village Phone concept. Their motive is primarily cost-driven. It is cheaper for them. Furthermore, other motives were identified: the phone is used occasionally and sole ownership would be a costly burden, technological illiteracy (the process of using a shared phone such as the Village Phone delegates part of the task to someone else).

Phone sharing and the usage by many such as the Village Phone often in an area with no or weak mobile phone signal coverage has implications on the design of the devices (Chipchase and Tulusan, 2006b).

Village Phone turnover consists not only of calls and SMS messages, but also of sending and receiving money. The businessperson on the receiving end takes the number and pays out cash. Since so much communication happens at the Village Phone location, it can also become a village meeting point where people gather (Nokia, 2006a). A study of Grameen Foundation & USAID reveals that the Village Phone village phone programs in Bangladesh, Uganda and Rwanda can increase women's empowerment and welfare in Uganda while they work as Village Phone Operators (Grameen-Foundation, 2005).

Some other benefits that are reported are (USAID, 2008, Burrel and Matovu, 2008):

- On average, Village Phone Operators sell five times more airtime than that used by a typical urban customer using a personal mobile phone.
- Farmers use the village phone to receive market information to better negotiate prices for the goods they produce.
- A primary use of the mobile phone was to reduce money spent on transportation and other transaction costs of trade.

Lessons learned

According to Keogh and Wood a strong partnership between telecommunications providers, microcredit institutions, the Village Phone company and operators is indispensable for the success of Village Phone. They report: "By crafting a 'win-win' situation for all participants, productive and sustainable operation of the partnership is ensured." (Keogh and Wood, 2005).

There is a wide range of business management capacity amongst the Village Phone Operators on the ground. Some of the operators have strong business management skills (e.g. cash flow management, marketing) while other operators lack these essential skills; this makes it hard to manage (Tetelman et al., 2004).

B. Products & services

Products & services description

Village Phone is a shared access model which links the telecommunications sector with the microfinance sector to enable microfinance clients to borrow the money needed to establish a Village Phone business in their rural communities. These grassroots entrepreneurs, Village Phone Operators, then rent the use of the phone on a per-call basis providing both affordable telephone access in their community while earning enough to repay their loan and raise their level of income (Grameen-Foundation, 2008c, CGAP, 2007). The Village Phone extends regular base station cellular coverage from around 15 kilometers to around 30 kilometers through the use of a village phone kit.
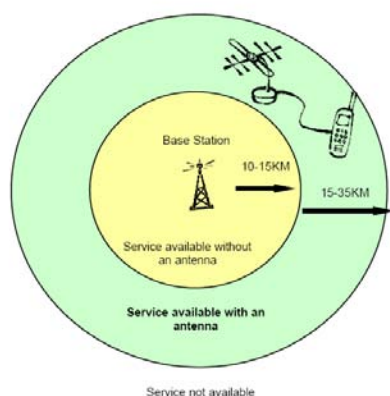
Figure 27: Range extended by external antenna

Grameen Foundation asked Nokia to help design phones that could be shared and would work in poor, rural areas. This Business Kit includes a Nokia mobile phone, a SIM card preloaded with prepaid airtime, a booster antenna, a recharging solution (e.g. a car battery or solar power panel) and custom-designed cables to connect all the components and marketing materials.

Figure 28: Equipment of the Village Phone kit (Grameen-Foundation, 2008a).

Microfinance clients can purchase this kit through their microfinance institution, taking out a loan which will be repaid with proceeds from the business. A microfinance loan of approximately US $200 allows the Village Phone operator to purchase a mobile phone kit. The loan is usually for a period of up to nine months, at an interest rate of not more than four percent.

In a number of cases it provides the first convenient, reliable and affordable connectivity to the outside world for many rural communities as well as providing a stable income for the local entrepreneur that takes out the loan.

Village Phone operators are typically able to repay their loan within six months, from the revenue of operating the Village Phone. The extra income earned from their business can, for example, secure their children's education or pay for a house for their family.

Grameen Foundation has partnered with Nokia to enhance the existing program by making a "Village Phone Business Kit" available for purchase in emerging markets. This Business Kit includes a Nokia mobile phone, a booster antenna, a recharging solution and custom-designed cables to connect all the components. Microfinance clients can purchase this kit through their microfinance institution, taking out a loan which will be repaid with proceeds from the business. The client then becomes a Village Phone Operator and rents the use of the phone on a per-call basis to people in their community earning revenues from the first call onwards.

Product & service development

The Village Phone concept is developed by Iqbal Quadir and supported by the Grameen Bank in Bangladesh (the one set up by Nobel laureate Muhammad Yunus). Village Phone in Bangladesh is praised for high revenues generated by the shared-access business model as well for its development-centered IT strategy, delivering benefits, including enhanced productivity and social welfare and new sources of rural income (Cohen, 2001).

It has since been replicated in Uganda and Rwanda. The concept uses microfinance as an innovative tool to create entrepreneurship. It also aims to boost network connections in areas with infrastructural limitations.

Village Phone is designed for villages that don't currently have cellular coverage In these places the cost of making a call can involve a 10 to 20 km journey (Chipchase and Tulusan, 2006a). The mobile phone used is an adapted Nokia 1100 phone (Unicef, 2007).

Nokia uses exploratory design research in an almost anthropological approach to study user behavior in order to get fresh ideas for new products and applications (Chipchase, 2006a, Younghee and Chipchase, 2006, Katz and Manara, 2008). These researchers do not focus on short term profit goals. This actually helped Nokia to increase its market share in the BOP (Katz and Manara, 2008). For shared use Nokia developed special mobile phones like the 1209 series with features like multiple PIN-protected address books in one mobile telephone (Sharma, 2008, Nokia, 2008d). Research on non-literacy as a barrier to mobile phone communication was also carried out and led to improvements in the mobile phone, the business model ecosystem as well as the infrastructure (Nokia, 2009).

Some of Village Phone ventures use desktop-style phones, which many owners prefer because of their ruggedness and the fact that they are less likely to go walkabout. Culturally, bigger is also generally seen as better, a view somewhat at odds with how we feel about mobile devices in the Western world (Banks, 2008).

Nokia and Grameen Foundation have jointly developed a solution based on Nokia's most affordable phones and an external antenna to serve rural communities in Uganda and Rwanda, the two countries where Grameen Foundation's Village Phone currently operates. This "Village Phone Equipment Kit" has been made available for purchase in other developing countries (Nokia, 2005).

Grameen Foundation provides documentation and training for setting up Village Phones, a Village Phone replication manual, a step-by-step guide for replicating this programme in other regions (Keogh and Wood, 2005).

C. Partnership

Cooperation

Nokia, together with the Grameen Foundation, have joined forces to provide rural areas with access to affordable telecommunication services, thus boosting economic development in rural communities (Nokia, 2006b). Grameen Foundation has partnered with Nokia to make a "Village Phone Equipment Kit" available for purchase in developing countries.

Typical business strategy for Village Phone involves the collaboration of a local telecom provider and one or more microfinance institutions. The shape this collaboration will get can be (Grameen-Foundation, 2008a):
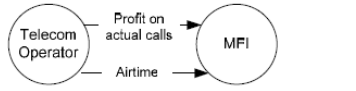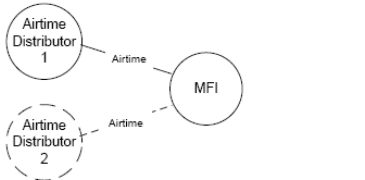
1. Village Phone Company: The local telecom company together with one or more micro finance institutions (MFI) sets up a company which manages all the operations for the Village Phone scheme. This Village Phone company runs day-today business, helps the local Vilage Phone

Operators, takes care of package deals for airtime, equipment, loans for the operators et cetera.

2. Telecom Partnership: a local telecom company and a micro finance institution (MFI) work together but no separate company is set up. The telecom company provides equipment and airtime to the MFI who in turn distributes this to the Village Phone operators. The MFI has thus also revenue from reselling the airtime and equipment in contrast with the before mentioned model.

3. Airtime Sub-Distributor. There is not an exclusive or direct agreement between one local telecom company and the microfinance institution (MFI). Several airtime resellers provide airtime. The MFI operates as the sub-distributor to the Village Phone Operators.

The following table explains these three models and there benefits and drawbacks according to Grameen Foundation.

Table 22: Different relationships with telecom operators, adapted from (Keogh and Wood, 2005)

Hereafter, Figure 29, the tasks and responsibilities of the various stakeholders of Village Phone are summarized.
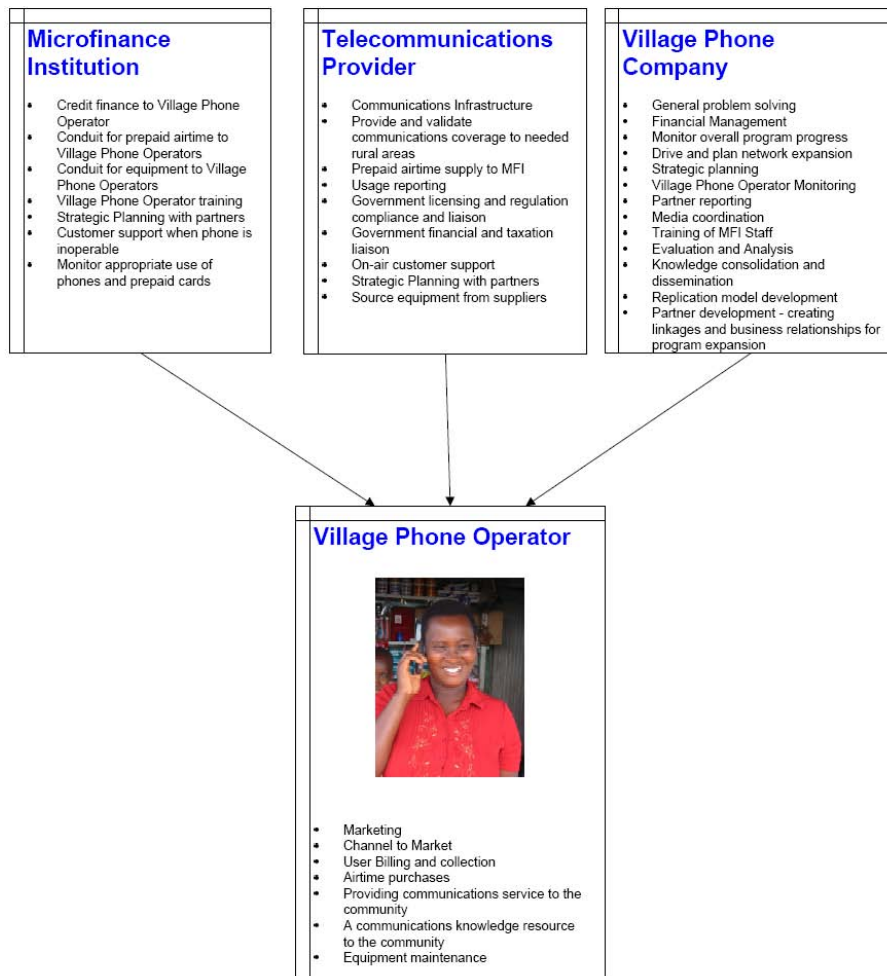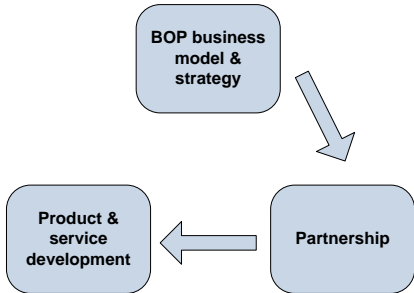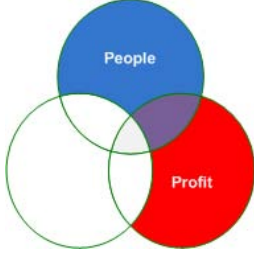
Figure 29: Village Phone Roles and Responsibilities, source (Keogh and Wood, 2005)

As a part of the cooperation, Nokia and Grameen Foundation will conduct a study to further examine the broader impact of the mobile telecommunications on socio-economic development and individual business integration as well as to evaluate microfinance as a sustainable tool to make telecommunications access more affordable (Nokia, 2005).

Case report analysis Nokia Grameen MTN Village Phone

Case report analysis Nokia Grameen MTN Village Phone			
Business & Strategy			
Business model qualities	**Value proposition**	- People living in rural areas start **self-sustaining businesses** while providing **affordable telecommunications** to their communities. - A **micro-finance funding and repayment** model is at the centre of the project.	
	Local capacity building	- Distribution via village entrepreneurs (**Village Phone Operators**) - Capability to stimulate **local entrepreneurial activity**.	
	Embed-dedness	Some of the local entrepreneurs are part of the BOP community. So there is **partly embeddedness.**	
	Learning by the firm through native capability	- Local knowledge from village entrepreneurs (**Village Phone Operators**). - Involvement of **micro finance institutions and local telecom operators** increase local knowledge as well. - Nokia uses **exploratory design research**.	
	Scalability	- Opportunities for **scaling out and adaptable** to local market circumstances. - Venture in a region with a **microfinance structure** would lead to a more replicable model. **Worldwide potential** for rural markets although some market share will be chipped away because of personal possession of mobile phones become more affordable even for low-income consumers like the BOP.	
Value chain scheme			
Identification of growth market in rural areas → Village Phone development → Village Phone kit delivery → MTN telecom operations → Micro Finance Institution provides loan → Village Phone Operator → (Low-income) rural Consumer			
The blue colour depicts the participation of BOP people.			
BOP 1.0 or BOP 2.0	Village Phone has **both BOP 1.0 as well as BOP 2.0 innovation** characteristics. Indeed selling of a service is of importance, but the development and operation involve refinement of the model, initially developed in Bangladesh, for which BOP people act as co-creator and co-entrepreneur. Village Phone is a marriage of high revenue generating shared-access business model and a development-centered IT strategy.		

| **Relation business model & strategy, partnership and products & services** | Village Phone has been co-developed with the BOP community. Base on experiences in Bangladesh Nokia and Grameen joined forces and stipulated the strategy to use in Africa. Part of the strategy was the involvement of an telecom operator and an micro finance institution. From the partnership and with the participation of the BOP community as co-developer and co-entrepreneurs, the Village Phones concept was developed. | |

| **Sustainability; Triple P aspects** | *People & Profit.* The logic of the Village Phone can be described as follows: access to shared mobile services facilitates entrepreneurialism (Village Phone Operators and village dwellers), which in turn increases economic activity, which creates wealth. | |

Products & Services

4-A framework	**Availability**	The Village Phone service is in fact available to **anyone in the rural area** where this is facilitated. It is available for the people living in rural areas, which are significantly the BOP people. In general, urban areas are not the best location for Village Phones. There tends to be a great deal of competition for telecommunication services in urban areas (often building on older fixed wire infrastructure).
	Acceptability	The distribution model with local village entrepreneurs (**Village Phone Operators**) on the ground provides a low profile entry point for the customer. Village Phone Operators (VPOs), operate their businesses in rural villages where no telecommunications services previously existed.
		Research on non-literacy as a barrier to mobile phone communication was also carried out and led to **improvements** in the mobile phone, the business model ecosystem as well as the infrastructure
	Affordability	The system is **affordable** while at the same time **ensuring income** for the local entrepreneur. "Sharing is overwhelmingly driven by cost; people recognize the benefits of sole device ownership but can't afford it" (Chipchase and Tulusan, 2006b). MTN Village Phone provides **special airtime rates** to the Village Phone Operators to enable them to provide affordable telecommunications services to

		people in their village. Members of the community, or passers-by, pay a **small fee** to make a call, or send a text message.
	Awareness	This issue is identified as part of Village Phone project implementation and Grameen Foundation provides **documentation and training** for setting up Village Phones. Training is needed for the village entrepreneurs and **educational marketing** towards the customers is needed.
Product & service development		Recollecting the design processes for the Base of the Pyramid proposed by Kandachar (2008a), this has similarities with the design process exhibited in this case (cf. Figure 15). The product innovation showed a **multidisciplinary approach**. Nokia uses **exploratory design research**. Grameen and MTN collaborate extensively with the BOP entrepreneurs in the product design. Nokia and Grameen Foundation have jointly developed a solution based on Nokia's most affordable phones and an external antenna to serve rural communities.
Partnership		
Cooperation		• The business approach to connecting remote villages is partnering with a local entrepreneur, the Village Phone Operator, who buys the business-in-box Village Phone solution with the borrowed money. • **Variety in maturity** in management skills between local partners makes it hard to manage. • A **strong partnership** between telecommunications providers, microcredit institutions, the Village Phone Company and operators is indispensable for the success of Village Phone.
Typology of partnership		There is a multinational (Nokia) and its local business partner (telco MTN, who actually is a multinational too!) working together with a local village entrepreneur and finance is received by a micro-finance institution. Often the Village Phone activities are housed in a separate venture (Village Phone company). This is a multi-stakeholder situation, essentially containing a private-private-private-social partnership.

III. Case study Nokia Siemens Village Connection

Introduction

The Village Connection is an initiative by Nokia Siemens Network to tap into a potentially vast growth market by providing villages with low-cost communications in partnership with mobile service providers in Africa. Village Connection is not so much a technology as a partnership based business strategy for extending network coverage. Typically a local entrepreneur in a previously unconnected area forms a partnership with a mobile network operator and a micro-finance provider. The local entrepreneur acquires an access point which can support up to 70-80 handsets.

A. Business & Strategy

Who

Vodacom Tanzania began trials of Nokia Siemens Networks (NSN) Village Connection solution to connect rural and suburban communities begin 2008, following a successful pilot by NSN in India (Schwartz, 2008). Vodacom Tanzania is using Village Connection to increase the reach of its own mobile network further. Vodacom currently services 4 million of Tanzania's 6.5 million mobile users (NSN, 2008b). Nokia Siemens Networks (NSN), founded in 2007, is one of the largest telecommunications solutions suppliers in the world. Nokia Siemens Networks was created as the result of a joint venture between Siemens AG's COM division (minus its Enterprise business unit) and Nokia's Network Business Group. In essence it operates as a supplier of equipment and solutions to telecom operators, while Nokia itself focuses more on mobile phone manufacturing and servicing. Although NSN and Nokia are different firms there are joint efforts in product and service development (Unstrung, 2007).

Where

Village Connection in Tanzania is primarily focused on the rural areas. Initially Village Connection has been deployed in commercial pilots in India and now trials in several emerging markets in Africa have started (Skarp et al., 2008). Further expansion is directed toward southern Africa where for instance a

pilot has been initiated in the Dwesa area together with the local community and some South African universities (COFISA, 2008).

When

The Village Connection Project was launched in 2007 and has been commercially available since the beginning of 2008.

Potential

Since more affordable mobile phones are available on the market, people will be able to move from using a shared phone like the Village Phone concept discussed earlier to ownership of their own mobile phone.

The basic driver for this mobile penetration is the total cost of ownership from the consumer point of view (Granath, 2008b). Affordability is linked directly to the Total Cost of Ownership (TCO) for the consumer. TCO includes the service fee, taxes and mobile handset price. High TCO is a major user growth barrier for accessing ICTs through mobile communications. Mobile handsets are getting cheaper and become therefore more affordable for the poor (NSN, 2008a).

Nokia studied the TCO from a low-cost perspective across 80 emerging markets (Nokia, 2008a). The study reveals that high TCO forms a major subscriber growth barrier for accessing ICT through mobile phones in most emerging markets. According to this study a TCO of less than 5 USD per month would enable the majority of people in emerging markets, and thus foremost Base of the Pyramid people, to access and use mobile services. Nokia research of consumer TCO across 80 emerging market countries found that only four countries[21] have achieved the limit of 5 USD (see Figure 30).
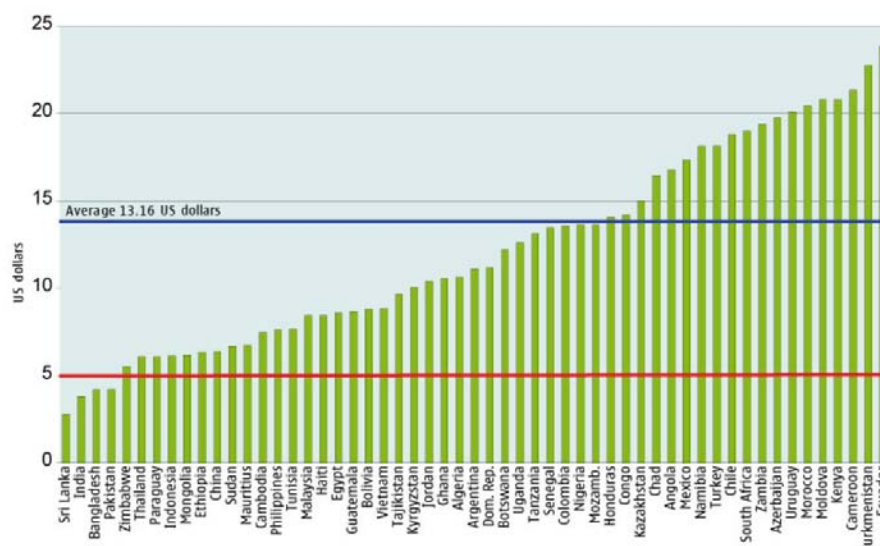
Figure 30 Monthly TCO for a mobile phone per country (Lakaniemi, 2008)

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[21] Only four out of the 80 countries studied have achieved this: Sri Lanka, India, Bangladesh and Pakistan

A major part of achieving lower consumer TCO is the deployment of a mix of innovative technology and novel business models to minimize the telecom company's operational and capital expenditure (OPEX and CAPEX). Nokia Siemens Networks claims that the Village Connection solution allows for lower OPEX and CAPEX for the telecom company (Granath, 2007a).

Income statistics from new growth markets reveal that rural income levels are significantly lower than in urban areas (WRI, 2007b). Rural subscribers present an unlocked potential.

Characteristics of a potential village subscriber are (Granath, 2007b):

- Income less than USD 3 per day
- Irregular income, money is not saved
- Brand-conscious

Many remote villages remain unconnected. According to Nokia Siemens successful business models will address both the Total Cost of Ownership and cash barrier aspects, the two key aspects of affordability (Granath, 2007b). Nokia Siemens claims that Networks Village Connection is an innovative solution that enables operators to extend their reach to remote villages, while maintaining profitable business and enable growth into low income segments (see Figure 31).
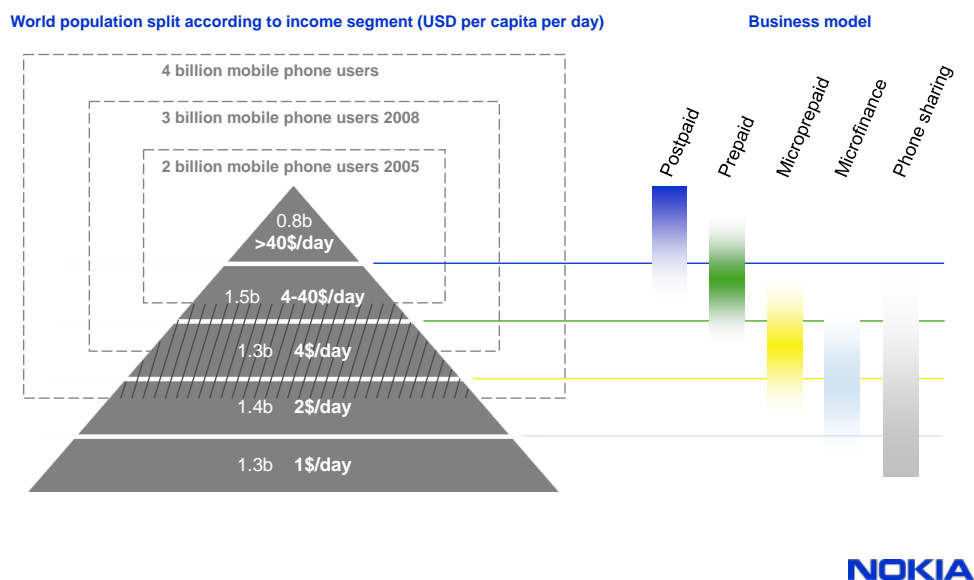
Figure 31: Nokia: new business models enable growth into low income segments (Granath, 2007b)

The Nokia Siemens Village Connection project is designed to target the rural village populations in emerging markets. In Africa, it is estimated that 70% of the population live in villages, and currently, most of these cannot afford the services or handsets available (UN, 2004, NSN, 2007).

The rationale for the project is based on predictions that of the one billion new subscribers expected worldwide by 2010, 80% of these are likely to be from lower-income populations such as rural villages in emerging market countries. These rural populations are only able to pay approximately a third of the cost of mobile services as the majority of current users already pay (Baumgarten, 2007). Therefore the key to further development for this market segment is **low-cost delivery methods.**

Nokia Siemens Networks (NSN) defined three keys areas that must be targeted to allow successful implementation of a low-cost solution like Village Connection. It requires **innovative technologies** to deliver low-cost solutions, **novel business models** for rural areas and the synthesis of a new **value network**[22] to make the solution feasible (Romanos, 2007). Village Connection will be one of the company's key strategies for expanding coverage in developing and emerging markets.

The strategic vision of Nokia is that by 2015 there will be more than 5 billion people witch access to mobile communication networks. The biggest growth will arise in emerging markets like rural areas populated with low-income people. The Village Connection scheme could provide affordable connection for this group, some two billion people living in approximately 2 million villages. According to Skarp et al. (2008) the global market size for Village Connection like solutions is estimated to be 30 billion USD if this solution would be deployed at all those villages. Even if in practice only a fraction of this will be reached the revenue would be significant. The Village Connection business model is not in the least meant to put the NSN in a position that would enable it reap benefits from this (Ouma, 2008).

Delivery to BOP consumers

Typically a local entrepreneur in a previously unconnected area forms a partnership with a mobile network operator and a micro-finance provider.

The business approach to connecting remote villages is partnering with a local entrepreneur familiar with potential customers and who can run the local operations.

BOP strategy

Nokia Siemens Networks (NSN) has identified an opportunity in new growth markets, reaching for the Base of the Pyramid people in rural areas. Concepts like Village Connection (or extended with Internet kiosk) fits within this strategy (Kola-Nyström, 2008).

The Village Connection project offers a relative easy model to build rural connectivity village by village, enabling an innovative franchise-based business model between a telecom operator (i.e. local telecom company) and village entrepreneurs.

The project itself is one that is designed to profit all parties involved. The network helps provide affordable telecommunications services in rural communities, supporting banking operations and

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[22] The collection of upstream suppliers, downstream channels to market, and ancillary providers that support a common business model within an industry (Christensen, 2008).

easing access to market and other information, thus contributing to rural economic development (UN, 2008a).

A typical set up of the business model for Village Connection looks like this.

INFRASTRUCTURE | **OFFER** | **CUSTOMER**

Partner Network
- Mobile Operator
- Universities
- Meraka
- COFISA
- NSN
- Suppliers

Key Resources
- Reliable ICT Infra
- Human Resources
- Sales Shop
- Support Network
- Distribution Network

Key Activities
- Purchase of SIM & pre-paid vouchers
- Community Marketing
- Sales
- Subscriber mngt and monitoring

Value Proposition
- Low cost local calling (Village Connection)
- Phone charging
- Public phone service
- Sales of airtime vouchers

Customer Relationship
- Personal service at a shop

Distribution Channel
- Village Connection Shop
- Shops in neighboring villages

Target Customer
- Community members
- Small businesses and institutions within Dwesa

FINANCE

Cost Structure
- HR (salaries)
- Stock (SIM, Pre-paid)
- Marketing
- Technology
- Operator Fee
- Professional Services
- Operational Costs (rent, electricity, etc)

Revenue Streams
- Monthly subscriptions
- Pre-paid mark-up
- Charge for phone charging and public phone usage

Figure 32: Building blocks of the Village Connection service bundle in Dwesa area (South Africa), derived from (Eliasz and von Staden, 2008) based upon the business model ontology of Osterwalder (2004).

Lessons learned

Understanding the underlying social structures is the key to innovation and development of relevant solutions for the new growth markets. According to Nyström (2008) Village Connection is an example of an innovation which taps into the underlying social structures.

The Village Connection concept has certain risk factors such as the uncertainty that telecom operators will keep participating when distribution, installation and maintenance of the equipment or training of village entrepreneurs will become too expensive of complicated. Furthermore the dependence on power supply has to be addressed. Already the solution provides some solutions for that like solar panels (Skarp et al., 2008).

Furthermore the Village Connection project provides information which can positively influence the product portfolio. By learning how to use less energy or tap into renewable energy resources, the operations of telecommunication networks can be made more environmentally at simultaneously business friendly (Skarp et al., 2008).

Nokia is addressing the challenge of non-literacy among mobile phone users. An indirect implication could be that in emerging markets, like the BOP, phones would not be solely text-based. Other means of interaction could be by voice instead of text or by the use of symbols. This knowledge could also be used in developed countries, e.g. among elder people or those with poor eyesight (Lalji and Good, 2008, Mikkola and Vainio, 2005).

B. Products & Services

Products & services description

The Village Connection project extends GSM networks past the current coverage to (rural) areas that are thinly populated what would tend to higher costs incurred through coverage than urban areas, by setting up mini-networks in villages. Village Connection is a network coverage solution within which both private usage and shared usage are possible (Granath, 2008a).

NSN designed low-cost micro-base stations for rural areas, called Base Transceiver Station (BTS). These BTS network bases require a PC, a GSM transmitter, power, and radio frequency. This base station is housed at the tower's top and it doesn't require air conditioning, which saves power costs. The signal covers each village, up to a 4 km radius, in order to serve the main area of habitation and agricultural fields. While the coverage area is relatively small, the goal of the project is to bring significant network functionality to the village. The whole system is designed to be easy to manage and supports around 80 subscribers. Diesel generators are typically used as back-up power supplies to support the often unreliable power grid in remote rural areas. Other options for power supply such as solar panels are also available (NSN, 2007).

GSM Access Point in a village
- GSM handsets used
- Cost-effective "mini" network: village internal calls are connected locally
- Enables easy local operation and subscriber management
- IP connectivity for long-distance calls

Figure 33: Village Connection solution of Nokia Siemens (Pinto, 2007), consisting of BTS[23], power and PC unit.

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[23] BTS stands for Base Transceiver Station.

The model works through a BTS center (thus the GSM Access Point) in a village and GSM handsets are used by clients making calls from the BTS center or just somewhere within the reach of the BTS. The model is cost effective in that it utilizes a mini network which enables village internal calls to be connected locally (Kola-Nyström, 2008).

It also optimizes switching and transmission capacity for calls within and between villages and ensures cost-effective IP transport between villages and Access Centers. The model further has even regional Access centers that switch traffic between villages and connect to GSM and other networks. This enables local operation and subscriber management and the franchise model makes operating the village networks easier.

The price of calling can be based on a flat-rate arrangement and has been modeled to be sustainable at very low spending levels, for both the telecom operator and the entrepreneur. Experience suggests that at least 100 families would need to be in a coverage area to make the investment worthwhile (Mureithi, 2008). The Village Connection subscriber - for whom affordability is key, can choose between various call plans ranging from local-calls-only to Village Connection domain connectivity and roaming – with post and prepaid options (Tadesse, 2007).

Product & service development

During the project's development, Nokia Siemens Network undertook a number of pilot projects, which are each a scale down of network functionality to the village level. There are currently 10 different projects in different stages of implementation or trialling around the world, the first of which is an initiative to extend rural connectivity in Tanzania with Vodacom Tanzania (Binbrek and Miller, 2008).

NSN finds that minimal technological skills are required to learn the technologies, and that the entrepreneurial skills evident in the villages are of greater importance. NSN also has developed a business model tool for operators. According to NSN successful business models will address both the total cost of ownership and cash barrier aspects, the two key aspects of affordability. In their view this is the case with Village Connection (Ferre, 2008).

Village Connection has won the 'Excellence in Innovation' Award at the 2nd TEMA National Telecom Awards (NSN, 2008c). N.K. Goyal, Chairman Emeritus of Telecom Equipment Manufacturers Association of India (TEMA) said the following: "Two key factors that made Village Connection stand out in the Innovation category. The first is the system support for local subscriber management in the villages, enabling a franchise-based business model. The second is its solution architecture that eliminates the traditional network hierarchies for traffic between neighboring villages, minimizing the capital and operational expenditure for operators".

In the view of the company Nokia Siemens the development strategy of the Village Connection will include internet services as a next step (NSN, 2008a). Local entrepreneurs, who support the telecom operator and manage Village Connection networks for mobile services, can also provide services based on internet access.
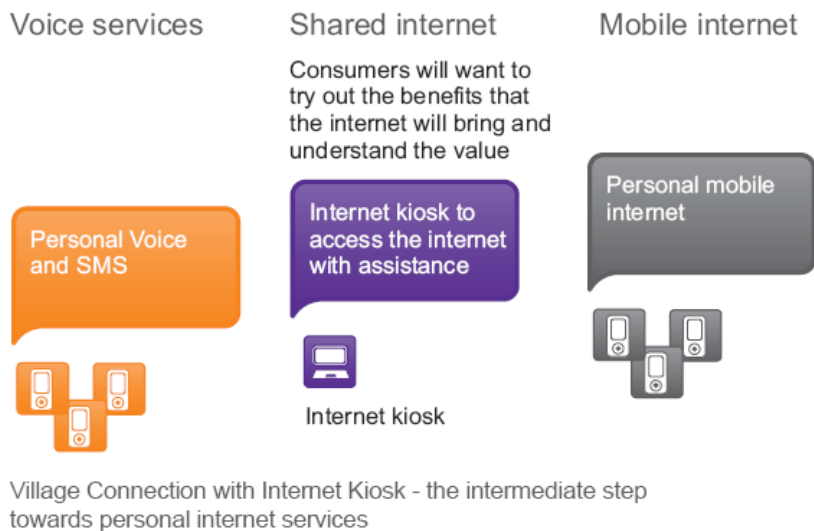
Figure 34: Village Connection with Internet Kiosk as a next of concept development (NSN, 2008a).

C. Partnership

Franchising business model

The business approach to connecting remote villages is partnering with a local entrepreneur familiar with potential customers and who can run the local operations. In this model the entire village customer acquisition and care process remains local, reducing overall sales and marketing efforts and costs to the telecom operator company. The Village Connection network design enables local technical operations to be left with the local entrepreneur.
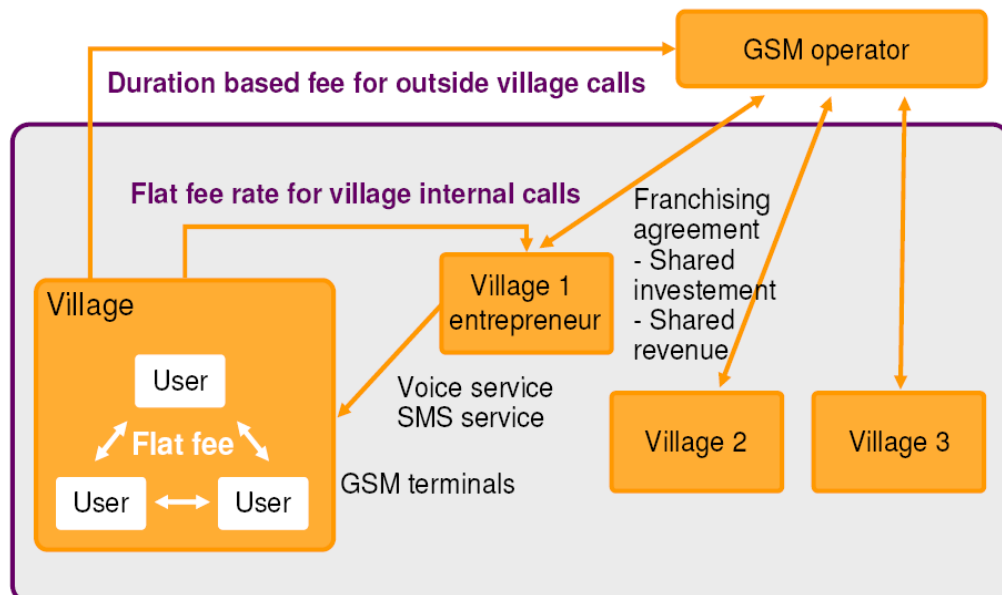
Figure 35: Village Connection - Franchise business model (Granath, 2007a)

The autonomous Village Connection site design enables a franchising-like business model, in which site operation and subscriber acquisition and care in the village are performed by a franchised partner, the local entrepreneur. This reduces their total costs significantly and allows for affordable connectivity to the rural villagers and business opportunities for local entrepreneurs. The local entrepreneur's main income is local calls, while the operator's revenue base comes from calls to and from the village.

The village is connected either via landlines (IP-based connection) or wireless (radio frequency or WiMAX[24]) with access centers which on their turn are regionally interconnected and also connected to a central hub. So the access centers manage the traffic (e.g. telephone calls) between neighbouring villages. The calls within a village are fully routed via the village entrepreneur's equipment and therefore a flat fee rate for these internal calls can be applied (NSN, 2007). Their tasks and responsibilities are briefly summarized in Table 23.

Table 23: Responsibilities and tasks in Village Connection franchise business model (Granath, 2007a)

Responsibilities and tasks in Village Connection franchise business model	
Village Entrepreneur	**Telecom Operator**
Customer care for village subscribers • Subscriber acquisition • Subscriber provisioning • SIM card distribution • Sale/lease of phones • Customer care Operation & Maintenance • Village equipment ownership and operational responsibility within the village • Maintenance of the village-based equipment	• License ownership • Branding • Frequency and operational rights for village areas franchised out • Supplier relationship • Village operator care • Initial training

Table 24 sums up the benefits for the stakeholders of Village Connection. Local telecom operators are yet quite hesitant to make bold moves into full scale franchising models. So far the setups have been closer to "employment" relationship rather than "business partner" ones (Granath, 2008a). Actually the Village Connection system is capable for supporting two business models. The first is one where a local entrepreneur can run the network themselves as a franchise. The second is that the operator may employ local people to run the network for them (Romanos, 2007).

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[24] WiMAX stands for Worldwide Interoperability for Microwave Access and is based upon the IEEE 802.16 standard enabling the delivery of wireless broadband services (WiMAX-Forum, 2009).

Table 24: Benefits for stakeholders Village Connection (Granath, 2007a, Skarp et al., 2008, Ferre, 2008).

Franchising brings benefits for all parties involved in Village Connection	
Telecom Operator	• Capturing the rural market potential • Optimize their business model by franchising. Savings enable a profitable business case in rural villages. • Larger subscriber base generates additional traffic
Village entrepreneur (GSM access point host)	• Possibility to become a business owner • Contributor to the village community • Revenue from subscription fee, phone sales, rental or usage.
Villager (end user)	• Connectivity to the outside world • Privacy to place calls from their home • Improved economic efficiency and well-being
Nokia	• Expansion of market to rural communities • New distribution channel for its mobile phones • Social responsibility projects
Nokia Siemens Networks	• Supports existing business • Alternative business model for customers

Nokia Siemens Networks (NSN) suspects that the amount of money for the initial investment for the village entrepreneur and the risk sharing between entrepreneur and telecom operator are influencing the choice for business model. NSN expects that micro finance loans, bank loans or public funding for the village entrepreneur could alleviate the barrier for franchising (Granath, 2008a). The sharing of financial investment, risk and responsibilities between franchisee (i.e. village entrepreneur) and the telecom operator has still to be refined (Binbrek and Miller, 2008). Figure 36 shows which stakeholders are involved in the Village Connection model and in what way earnings are acquired.
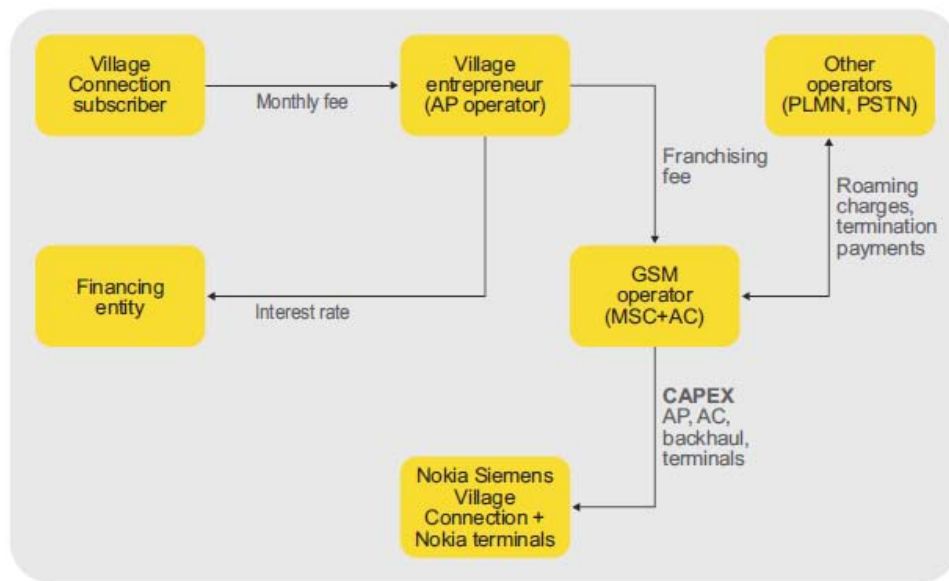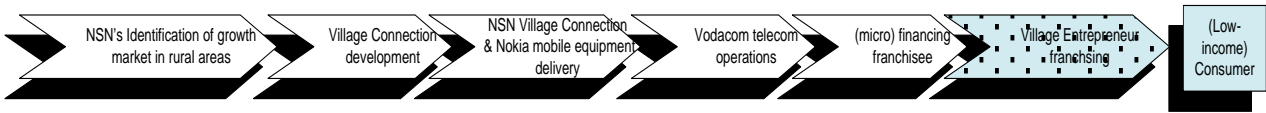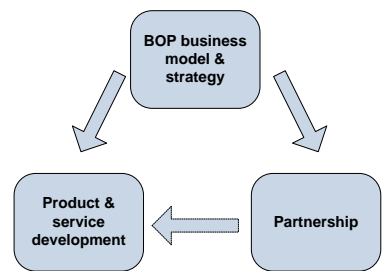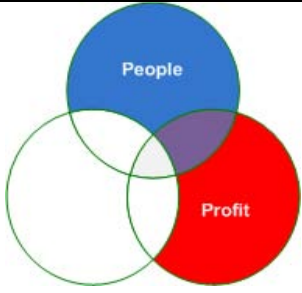
Figure 36: Village Connection value network for illustrative purpose[25], adapted from (NSN, 2007).

Case report analysis Nokia Siemens Village Connection

Case report analysis Nokia Siemens Village Connection		
Business & Strategy		
Business model qualities	**Value proposition**	• NSN Village Connection increases the economic activity and benefits the recipient rural communities by providing **affordable connectivity and access to mobile phones**, as well as Internet connectivity in more developed schemes via an innovative **franchise-based business model**
	Local capacity building	• Distribution via **village entrepreneurs**; capability to stimulate **local entrepreneurial activity**.
	Embeddedness	• Some of the local entrepreneurs are part of the BOP community. So there is **partly embeddedness.**
	Learning by the firm through native capability	• Local knowledge from **village community** has been applied in the development of the concept; **field research** has been conducted. • Furthermore the village entrepreneurs are part in de **educational marketing** and business strategy on the ground.
	Scalability	• Opportunities for **scaling out and adaptable** to local market circumstances. • **Worldwide potential** for rural markets , according to Skarp et al. (2008) a multibillion USD market.

Value chain scheme

The blue colour depicts the participation of BOP people. The dashed patter indicates a partly representation of BOP people. Some of the village entrepreneurs are belonging to the BOP community.

BOP 1.0 or BOP 2.0	**BOP 1.0 and partly BOP 2.0** innovation strategy. That means the selling of a service is the focal point of the strategy but simultaneously some people from the BOP-community are also considered a business partner. Furthermore corporate social responsibility motives are identified.
Relation business model & strategy, partnership and products & services	Village Connection is part of a broad development roadmap as identified in Figure 31 and in a way a logical step compared with Village Phone (see case report II). The development of the products involved research on the ground, in a loosely way this would involve a partnership approach, but in practice the community involvement in the R&D process was just part of the field research.
Sustainability;	*People & Profit.* The logic of the Village

Triple P aspects	Connection can be described as follows: access to mobile services facilitates entrepreneurialism, which in turn increases economic activity, which creates wealth. NSN envisions that by 2015 more than 5 billion people will have mobile connection. This vision is incorporated into NSN's strategy and the Village Connection model is helping to achieve this while simultaneously stimulating the achievement of the UN's Millennium Development goals (MDG[26]), especially regarding effective teledensity[27].	

	Availability	The Village Connection service is in fact available to **anyone in the rural area** where this is facilitated. It is available for the people living in rural areas, which are significantly the BOP people.
4A-framework	Acceptability	The distribution model with **local village entrepreneurs** on the ground provides a low profile entry point for the customer.
	Affordability	The system has a **monthly subscription**, but the aim is to minimize this so it remains affordable while at the same time ensuring income for the local entrepreneur.
	Awareness	This issue was identified during the pilot project. **Training** is needed for the village entrepreneurs and those people unfamiliar with mobile phones. Vodacom used the local village entrepreneurs for the latter task.
Product & service development		From first sight, the design did not seem actually to follow the strategy of embedded innovation. From NSN's vision and strategy it followed a "natural" path towards the product development of Village Connection. However as mentioned in the case report, NSN emphasizes that Village Connection is an example of an innovation which taps into the underlying social structures. Those structures couldn't be noticed without **field research**. This kind of research is custom with Nokia, one of the founding partners of NSN (Younghee and Chipchase, 2006). Village Connection proves to be a source of **innovation blowback** (cf. (Brown and

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[26] See for a brief description http://www.un.org/millenniumgoals/

[27] Fixed lines or mobile subscribers per 100 inhabitants (ITU, 2007a)

	Hagel, 2005) as mobile phones designed by Nokia for the non-literate and used in the Village Connection project might provide new functionalities for devices aimed at other (western) markets.
Partnership	
Cooperation	- The business approach to connecting remote villages is partnering with a local entrepreneur (**franchise-model**); however in some cases the cooperation transforms from a **partnership to employer-employee** relationship. - The partnership exhibits **unequal risk sharing**.
Typology of partnership	There is a multinational (Nokia Siemens) and its local business partner (telco Vodacom) working together with a local village entrepreneur. So three parties are involved, a tripartite situation. This could be labeled a private-private-private partnership.

IV. Case study Intel World Ahead (Classmate PC)

Introduction

This case study covers Intel's World Ahead program.

A. Business & Strategy

Who

Intel company is the main produces of semiconductors worldwide. The company holds about 80% of the market share for microprocessors that go into desktop, notebook computers, and also into computer servers. Intel also produces embedded semiconductors for the industrial equipment and networking gear markets. Intel has broadened its focus on delivering products and services to merging markets such as the Base of the Pyramid.

Where

The World Ahead Program is a worldwide program, but for the sake of this research the focus is on the African continent. Intel has initiatives in several countries, like Nigeria, Uganda and South Africa.

When

The Intel World Ahead program was announced in May 2006 with the aim of enhancing lives by accelerating access to uncompromised technology for everyone, anywhere in the world. From 2006-2011, World Ahead will invest more than $1 billion, focusing on four areas: accessibility (providing access to fully capable, affordable PCs), connectivity (expanding wireless broadband Internet access), content (accelerating the development of localized software, digital content and services) and education. Intel is donating 100,000 PCs to classrooms in developing nations in order to improve teaching and learning (Intel, 2006a). This program as others from Micosoft, Ciscom AMD et cetera, were initiated after UN Secretary-General Kofi Annan challenged the IT companies of Silicon Valley to join forces via public private partnerships and help narrow the digital divide and (Hosman and Fife, 2007).

Potential

Intel focuses on the next billion people, not on the whole BOP market. Intel is not that far yet according to Ginman (2008). Intel realizes that the PC market is primarily aimed at top or middle segments of markets. This is related to the price point of PCs. In order to reach the next one or two billion users the price level has to decrease significantly. The sheer amount of users, though with a smaller individual buying power, is an emerging market where double digit growth is been expected (Ginman, 2008). One of the aims of the World Ahead program is lowering the price level and developing affordable PCs. Intel has developed a complete eco-system for delivering the Classmate service (VitalWave, 2009):

- Intel developed the Atom processor; the energy-efficient chips have enabled netbook makers to scale, making laptops more affordable to hundreds of thousands of emerging-market consumers.
- The development of the Classmate PC reference design machine has been borrowed and tweaked by many early netbook manufacturers.
- Intel's investment in WiMax, a cost-effective network infrastructure that could extend voice and data services far into underserved areas in Africa, Asia and Latin America.

This for-profit effort could cause scaled impact in various BOP markets across the world.

Delivery to BOP consumers

Intel's efforts in the World Ahead Program in the field of education is focused on delivering a solution consisting of low-cost PCs, called Classmate PCs, connectivity (via e.g. WiMax), training of educators and delivery of relevant content. The teachers are targeted as they can teach the students and other teachers (teach-the-trainer method). Over 4 million teachers in over 40 countries were trained through the Intel Teach Program, and Intel is committed to train 9 million more teachers around the world by 2011 (Ginman, 2008).

Intel kick started the strategy by donating 100.000 Classmate PCs, but that's not creating a business. In the long term, when PC costs decrease, Intel is expecting to have created a viable business. One example of Intel's impact and bridging the digital divide is in Nigeria (Intel, 2007a, Intel, 2009a). Digital divide refers to the disparity between technological "have" and "have not" geographic locations or demographic groups (ICTDI, 2009). Intel's Classmate PC won contracts in Nigeria, where the OLPC XO computer had struggled to make progress after initial hopes (BBC, 2008). It is a case of private-public collaboration of Intel with the Nigeria government in the project "Computers for All Nigerians Initiative (CANi)":

- Access: 55,000 Nigerians purchased affordable, highly capable PCs with low-interest loans in first eight months of program. The PCs were delivered with Windows XP and internet connectivity.

- Connections: capital city of Abuja equipped with WiMAX network for reliable, affordable high-speed networking. The Pcs wee deliver

- Four local PC manufacturers are producing PCs for the program and have increased production volumes by approximately 50 percent.

- Education: two classrooms equipped with classmate PCs. Teachers were trained in one-to-one mobile learning environments

- Content and Services: teachers used Intel-developed "skoool[28]" content to enhance the teaching and learning of science and mathematics

BOP strategy

The Intel World Ahead Program has as mission statement: "Connecting the next billion people to uncompromised technology around the world". The term "uncompromised" is meant to suggest that customers should not have to compromise performance or nice features - settle for less - just because they are in an emerging market ; all people should have a choice of technologies - a full range of features, benefits, price points - so that they can choose the ones that best suit their needs and situation (Olson, 2009). The chairman of the Board of Intel Corporation, Craig R. Barrett, is also chairman of UN Global Alliance for ICT and Development.

The focus of the World Ahead program is on the following areas (Ginman, 2008, Intel, 2009a):
- Access: Intel makes PCs more accessible and affordable through innovative PC purchase programs. Providing access to technology best suited for local needs

- Connectivity: Intel works with governments and telcos to connect more people. Broadband wireless is essential for participation in the global economy (e.g. WiMax etc.).

- Education: Intel provides resources that encourage learning. Students develop skills with Intel technology, connectivity, teacher development, new learning methods, and digital content.

- Content and services: Intel-sponsored programs provide localized digital content and services that help improve people's lives.

- Healthcare: Use of digital technologies to deliver higher quality healthcare services, reduce inefficiencies, and enhance medical education.

Intel is donating 100,000 PCs to developing countries worldwide to encourage learning. In the long run this should lead to a viable business for selling these Classmate PCs.

Impact assessment is a an ongoing part of the Word Ahead program (Ginman, 2008, Intel, 2009d). For instance in the case of the Classmate PC: It starts with a Proof of Concept (POC) pilot project; This was aimed at researching students' reactions and susceptibility to one-on-one experiences with the Classmate Personal Computer (CMPC), and how effectively this new technology integrates within existing teaching methods cf. (Intel, 2007b). If the POC gets a positive review and it gets support, then it will be copied to more schools, where teachers are trained assessed. Intel's own researchers

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[28] Skoool is an e-learning environment set up by Intel. For Nigeria the site is www.skooolnigeria.com

like anthropologists evaluate this with an own methodology. Intel can track how many classmate PCs are bought. The metrics and way of measuring in the World Ahead program, is the same for every country.

Lessons learned & Benefits

Ginman (2008) argues that the following aspects are critical success factors of the World Ahead program:

- You have to understand the reality on the ground

- You have to be open what you want to achieve so you get the support of the government you need the government support. E.g. legislation could be a barrier.

- Focus on getting the connectivity in place.

- The senior management or leadership should support this for a long term period. Plenty of patience is needed. Results come not fast. Often companies are driven by quarter results. Intels'chairman is supporting this program.

- Usage of senior experience of own people to get the projects done. Furthermore this accomplishes the buy-in within the company.

- Of course there is self- interest, the opportunity of a growth market and business expansion is a driver for the company.

- Sometime projects fail because one thought that there was government support but after a government change that support vanished. This can change forecast of projects.

Vota et al. (2009) evaluated the performance of the Classmate PC project in comparison with the One Laptop Per Child project (OLPC XO-1) and concluded that although the Classmate PC was not revolutionary like the XO-1, Intel did have a better sales and implementation process through the World Ahead program. Governments could buy small lots of Classmate PCs and roll them out in pilot programs, reducing the initial purchase commitment for OLPC's from millions to tens of thousands. Intel also developed the Classmate to work within existing educational models, unlike OLPC, which designed their computer be used with constructivism29 learning practices, cf. Gulati (2004). In relation to this is the remark of Intel Chief executive Paul Otellini: "Ours is focused on working with teachers, OLPC is focused on Give the kids a laptop, turn them onto the internet and just let them go" (BBC, 2008). Furthermore, Intel provided extensive administrative and training support to Ministries of Education (Intel, 2009a).

Some researchers argue that the OLPC project works as a catalyst for the Classmate PC development. "Competition can push private actors to develop higher-quality laptops with greater

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[29] Formal education has traditionally relied on the objectivist view of knowledge. This view of learning assumes that knowledge can be imparted from teacher to learner through instruction, lecture and practice. In recent times, educators and institutional discourse has begun to challenge the objectivist view. Constructivism, but commonly acknowledge the active role of the learner in interpretation of reality (Gulati, 2004).

usability, while also driving down prices and increasing the number of available alternatives for consumers. As seen in the One Laptop Per Child example, a bold idea can inspire other firms to develop more competitive products. What firms like Intel needed was someone to make the first move" (Aaf et al., 2009).

B. Products & Services

Products & services description

The World Ahead program is a broad program delivering a variety of products and services. As an example the Classmate PC is looked at. The Classmate solution is offered as a complete solution for education, comprised of business models, technological solutions and innovations, and education programs

The Classmate PC (CMPC) is an Intel-powered small, mobile education-oriented PC. The computer runs on Windows or Linux, depending on what the customer prefers, has some learning software, and is equipped with a USB port and a wireless internet connection. It has a water resistant keyboard and provides good shock absorption and can withstand a fall of half a meter. The Classmates can connect between each other and with the teacher's PC. The Classmate product is offered in combination with training teachers to ensure that they can effectively use technology in their classes under the Intel Teach program, providing connectivity for the schools and developing teaching content.

Figure 37: Classmate PC (clamshell version).(Source: Intel World Ahead website.

Across Africa servers projects for delivering the Classmate PC are set up. One example case is situated in Uganda. Intel joined forces with Microsoft Unlimited Potential to deliver Classmate PCs running Microsoft Windows XP and charged via three 65 Watt solar panels that recharge a battery that provides power for all of the equipment in Maendeleo's Mobile Solar Computer Classroom.
As the Classmate PCs consume less power, more computers could be deployed and their ruggedness provided more reliability and durability causing less maintenance (Intel, 2009c).

Figure 38: Maendeleo Foundation uses classmate PCs in Uganda (Intel, 2009c).

The design of devices like the Classmate PC or competitor/comparable purpose machine like the XO computer of the OLPC organization are specifically designed to last in the conditions they are exposed in many BOP areas.

Zhu (2008) examined the costs of different low cost computers targeting at this educational segment in developing countries and concludes that the Intel Classmate PC currently is more expensive – approximately that its direct competitor, the OLPC XO. Price tags for the Classmate PC range from $ 250 to 300 for governments (Lemon, 2008, Zhu, 2008).

Product & service development

Intel has set up a specific business unit called Emerging Markets Platform Group who direct innovations for markets such as Base of the Pyramid (BOP). The innovations are initiated and developed in Platform Definition Centers (PDCs). The development process of the PDCs comprises three factors (Intel, 2009b)

- comprehensive ethnographic and human factors research
- focus on adding innovation throughout the product development and evolution process (classmate PCs, are rugged, affordable, child-friendly netbooks)
- Intel collaborates with vendors worldwide and local technology companies that customize the products and services for their market.

These factors are part of Intel's development process for emerging markets. That process is in fact an adaption of its standard product life cycle process. In 2000, Intel implemented the product life cycle (PLC), which has the same classic characteristics and stages of a traditional funnel model of new product development (Freitas et al., 2008, Intel, 2008).
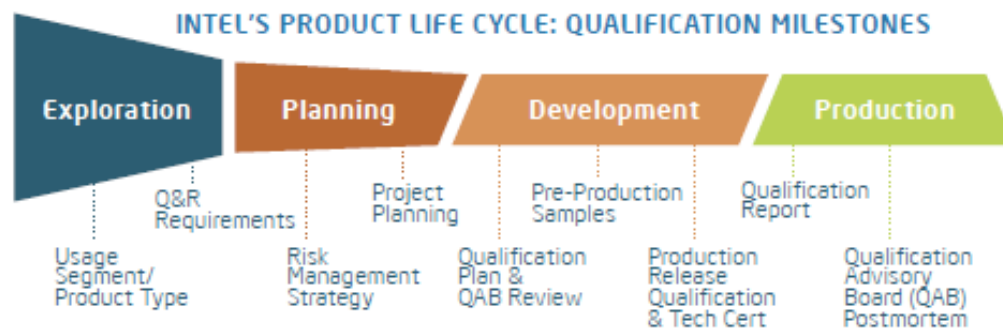
Figure 39: Overview of general product life cycle (PLC) at Intel (Intel, 2008)

The platform development centers adapted the PLC process to meet the needs of emerging market platforms with specific characteristics. In the emerging market platform product life cycle (PLC) an extra stage is introduced. The first stage of the PLC is pre-exploration. Pre-exploration is conducted through ethnographic methods and takes, on average, 6 months to conclusion. This work is conducted by a multidisciplinary team of anthropologist, sociologists, psychologists, engineers and designers who observe from the social standpoint of technology (Freitas et al., 2008).
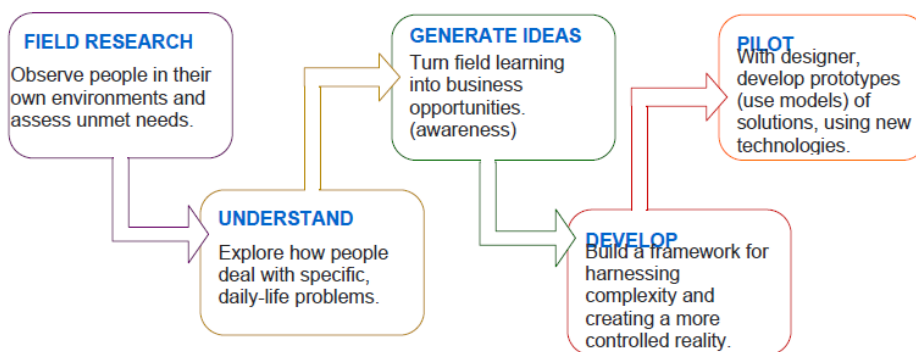
Figure 40: Intel's pre-exploration stage in emerging markets (Freitas et al., 2008)

For example the blueprint for the Classmate PC was designed Platform Definition Centers of Intel in Africa. The blueprint is given to PC manufacturers and they could use the blueprint for the production (Ginman, 2008). Intel produced the Classmate PC, its own educationally focused computer abiding the "4P Computing" requirements of appropriate power, performance, portability, and price, for low-cost laptops for emerging markets and positioned the Classmate PC as a direct competitor to the XO-1 computer of OLPC (Vota et al., 2009). Furthermore the second version of the Classmate PC appears to be more eco-friendly in production and (power) usage.

C. Partnership
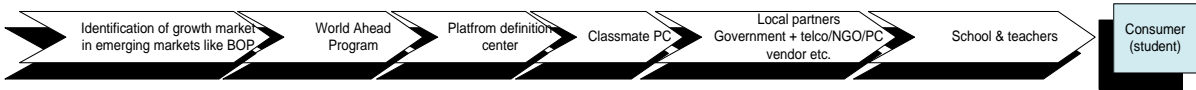
In January 2005, at the World Economic Forum in Davos, Switzerland, Nicholas Negroponte unveiled the idea of One Laptop Per Child (OLPC), a $100 PC that would transform education for the world's disadvantaged school children, thereby helping to bridge not only the digital divide but also the economic divide between the developed and the developing world(Kraemer et al., 2008). Initially Intel joined this initiative of OLPC but later abandoned the project. Differences in strategy caused the
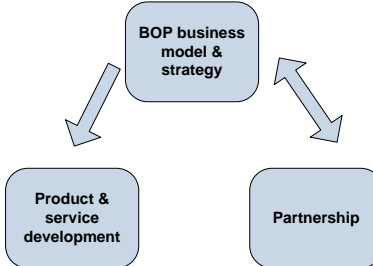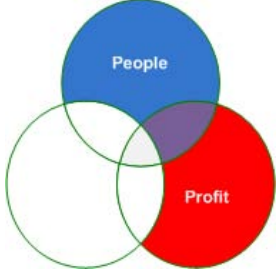
break-up (Krazit, 2008). This OLPC effort triggered a large number of commercial manufacturers to develop their own low-cost PC designs, the most well-known of which are the Intel Classmate PC, and the ASUS Eee PC, which are also now in commercial production (UNCTAD, 2008).

Intel is working together with governments, non-governmental organizations, development organizations, community groups, local PC manufacturers, and other technology companies (e.g. Microsoft or a local telecom company) in the World Ahead program to ensure local requirements such as language and education programs are me. Intel normally sets up these contacts on its own and relies on its own brad network of contacts (Ginman, 2008).

Mostly there is a public-private partnership. Intel tries to encourage government to create an environment where connectivity and low-cost PC solutions can flourish. Intel tries to influence policy makers to open market for connectivity. Quite often there is a monopoly of telephony in a country and persuading the policy makers to open up the market by showing the benefits it brings is seen as a key factor (Ginman, 2008). Furthermore governments sometimes provide incentives to teachers who attend Intel's learning program and establish the additional infrastructure needed (e.g. electricity, classrooms etc.)

Case report analysis Intel World Ahead (Classmate PC)

Case report analysis Intel World Ahead		
Business & Strategy		

Business model qualities	Value proposition	• The Intel World Ahead Program is committed to developing **sustainable technology for the next billion users i**n emerging countries around the world. • The Classmate PC is a **learning device** specially designed for students that also addresses the needs and aspirations of the overall classroom experience.
	Local capacity building	• Sometimes **local companies** are involved in the infrastructure and content building (e.g. PC manufacturing, local telco for WiMax antennas). • Training **the educators** via the Intel Teach Program • The World Ahead program covers a variety of areas ranging from education health to commerce. Depending on the area local capacity is been build.
	Embeddedness	• The World Ahead Program though targeted at the BOP is partly embedded within the BOP. For example the case of the Classmate PC. • It is arguable whether a Classmate project is embedded in the BOP community. On one hand it is embedded in the **local educational structure** (e.g. schools, teachers); on the other hand it is **not directly attached to or embedded in** the BOP community.
	Learning by the firm through native capability	• Intel via its Emerging Markets Platform Group has **incorporated in its product life cycle** the gathering of local knowledge. Especially for emerging markets such as the BOP, in the pre-exploration phase **ethnographic research** methods area applied.
	Scalability	• The World Ahead program is **scalable** in its design and in its execution. Both **replicability** and **expansion** are considered. For example for the Classmate a proof of concept project is initiated and after successful review it is copied to other places.

Value chain scheme

The blue colour depicts the participation of BOP people.

BOP 1.0 or BOP 2.0	It is in essence a **BOP 1.0** innovation strategy. That means that selling of a service is prevalent. In the innovation process local participation is included in pre-exploration phase of the product life cycle. Furthermore corporate social responsibility is identified.

Relation business model & strategy, partnership and products & services	Intel World Ahead has a clear mission statement. Intel acknowledges that this mission can not be reached without partnerships, especially local government. The leveraging power of these partners is needed for implementing the business model and for adapting it to the local situation. Intel as a part of their global strategy has set up Product and development centers (PDCs) focused at these emerging markets across the world. At these centers the products aimed at the BOP market are developed.	
Sustainability; Triple P aspects	*People & Profit* Intel World Ahead Program has as mission statement: "Connecting the next billion people to uncompromised technology around the world". It provides services that help improve people's lives (e.g. healthcare, education). Simultaneously the aim is sustainable business and long term profit.	

Products & Services

<table>
<tr><td rowspan="5">4-A framework</td><td>Availability</td><td>World Ahead has set up Classmate PC projects in several African countries (e.g. Nigeria, Uganda, south Africa etc.) and across the whole world. The projects are often in rural areas. The distribution model is based upon cooperation with local partners (PC vendors, local government etc.).</td></tr>
<tr><td>Acceptability</td><td>The Classmate solution is a complete solution for education, comprised of business models, technological solutions and innovations, and education programs.

Intel developed the Classmate to work within existing educational models. Sometimes teachers receive incentives from the government after attending the Intel teacher training.

Furthermore the products and services of the Classmate project should match to the community's need and through evaluations this is monitored.</td></tr>
<tr><td>Affordability</td><td>Governments can buy the Classmate PCs for a relative affordable prize and often funding is sought for initial deployments (e.g. Microsoft Unlimited |Potential or Intel World Ahead or other). Furthermore the Classmate concept includes internet connectivity and learning content and training of the teachers.</td></tr>
<tr><td>Awareness</td><td>The Classmate project has a teacher training component. These teachers instruct the children, the students and operate themselves as trainers for other teachers.</td></tr>
<tr><td>Product & service</td><td>Intel's business unit called Emerging Markets Platform Group direct innovations for markets such as Base of the Pyramid (BOP). The innovations are initiated and</td></tr>
</table>

development	developed in Platform Definition Centers (PDCs). The designers spend **significant time on the ground** and in the pre-exploration phase of the product life cycle (PLC) **ethnographic methods** are used. The development is a **multidisciplinary approach**.
Partnership	
Cooperation	- Intel with World Ahead is partnering mostly with **governments**. - Other partners are **local PC vendors, telecom companies, NGOs, other IT firms**. - You need to have **patience.** Results come not fast. - Intel **pulled out the partnership with OLPC** because of a different opinion of the strategy to be taken.
Typology of partnership	Mostly, the multinational company (Intel) is working together with the local government in a **public private partnership**. Other partners may be involved creating a multi-stakeholder partnerships.

V.   Case study Microsoft Unlimited Potential (Telecenter)

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Introduction

This case study covers Microsoft. The company has a broad range of activities aimed at emerging markets and particularly the Base of the Pyramid. Particulary one example within the broad range of activities of the Microsoft Unlimited Potential programme will be highlighted: the collaboration with partners to establish telecenters.

A. Business & Strategy

Who

Unlimited Potential (UP) is Microsoft's long-term commitment to provide relevant, accessible and affordable Information & Communication Technology (ICT) to underserved people around the world. Microsoft has some 750,000 partners around the world, which offer potential for collaboration on this initiative (SustainAbility, 2008).   Unlimited Potential is a product group that is incubating new technologies targeting the needs of people in the middle and Base of the economic Pyramid. It consists of sales and technical people in the field who work directly with partners including governments , local entrepreneurs and NGOs on technology trials and incubations, and Microsoft's R&D people across the world (Utzschneider, 2007). Interestingly the Unlimited Potential group is not part of the company's corporate social responsibility department, but rather a for profit division committed to delivering relevant, accessible and affordable software to the BOP, although some of its activities carry a philanthropic aspect (Escalante, 2007).

Telecentre.org is a collaborative initiative that supports and strengthens the telecentre movement. It was founded by the International Development Research Center (IDRC), the Swiss Agency for Development and Cooperation (SDC), and Microsoft (ITAC, 2007). Microsoft launched the Telecentre Knowledge Network in cooperation with the Academy for Educational Development and telecentre.org. Telecentre.org is a global community of people and organizations cooperating together while aiming to increase the social and economic impact of grassroots telecenters (Telecentre.org, 2007).

Where

Microsoft is supporting 29,000 community technology centres in 102 countries through grants of cash and software, a specialised curriculum available in 21 languages, and telecentre.org's global network

(Microsoft, 2007d). The Telecentre.org network has projects all over Africa. The following graph shows some of these activities from 2007.
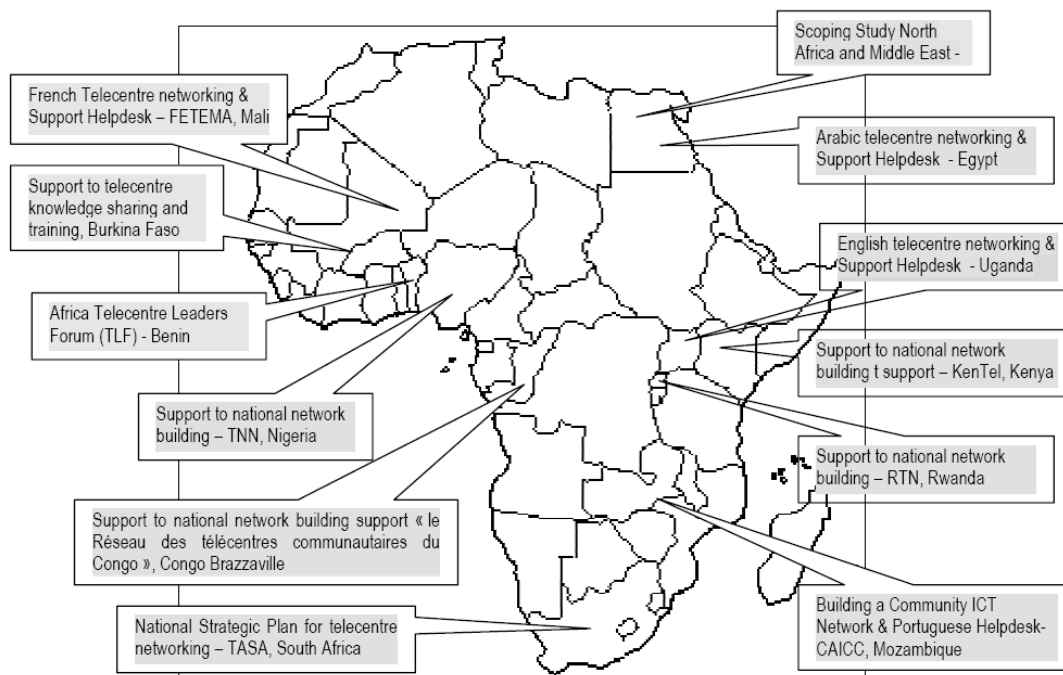
Figure 41: Map of Africa with telecentre.org activities, adapted from (Telecentre.org, 2007)

When

In 2005 in collaboration with the International Development Research Center (IDRC) and the Swiss Agency for Development and Cooperation (SDC), Microsoft helped develop telecentre.org—an initiative designed to strengthen the capacity of community-based telecenters to better serve their local needs (Microsoft, 2007a). IDRC and Microsoft have jointly contributed initial financing to support telecentre.org's operations and its investments in telecentre initiatives (Microsoft, 2005). Microsoft launched Unlimited Potential in 2007, to promote technology that is accessible, affordable and relevant in lower income populations .The telecentre.org initiative is now part of the broad Unlimited Potential programme (Microsoft, 2007b).

Potential

Telecenters exist in almost every country in Africa. They appear under a variety of names, such as information kiosks, community technology centers, infocenters, community-multimedia centres, village knowledge centers, school-based telecenters, et cetera, that reflect their diversity. The usage is as varied as well: community centers , learning centers, social meeting places, learning new skills, accessing information resources (e.g. internet) and online courses, making photocopies, contacting relatives in distant places and as business centers to pay bills or to look up business opportunities and develop marketing materials, etc (Fillip and Foote, 2007).

The model of telecenters offers scaling up potential. Filip and Foote (2007) foresee the potential of interconnectivity of these centers and synergy benefits : "Telecenters can connect and collaborate with each other through a network. They can also organize ways to access shared services, such as technical support or training, services they couldn't afford to create or access on their own. Similarly, organizations with content and services that could be offered to communities can reach out to thousands of telecenters simultaneously using networks."
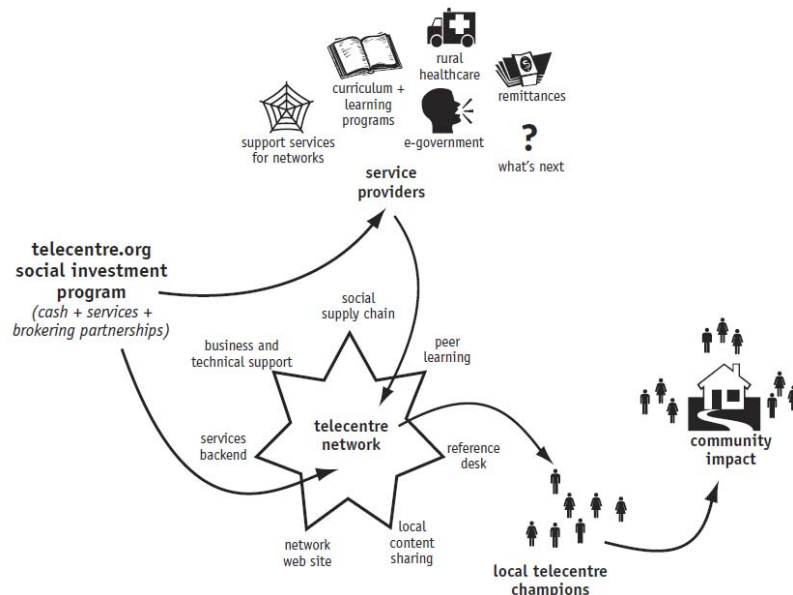
Figure 42: Telecenter Ecosystem (Fillip and Foote, 2007)

Delivery to BOP consumers

Microsoft does not act alone but seeks (local) partnerships as there are differences in regional approaches. It cooperates with NGOs, governments and local entrepreneurs (Bossicard, 2007a, Bossicard, 2007b). The telecenters are run by local partners like NGOs or local entrepreneurs.

BOP strategy

The mission statement of Microsoft Unlimited Potential (UP) is "to enable sustained, social and economic opportunity for those at the middle and Base of the world's economic pyramid, the next 5 billion people." (Microsoft, 2008a). In the short term, Unlimited Potential aims to reach the next 1 billion people by 2015 by exploring solutions in the three before mentioned key interrelated areas (i.e. sustained social and economic). In the short term, Unlimited Potential program believes that education and training solutions can create the greatest possible impact by building a cycle of sustained social and economic development (Law, 2008). In essence Unlimited Potential has mixed philanthropy with business ambitions for new markets and focuses on a sustainable long term approach to this market argues Bossicard (2007a).

Facing additional competition in its mainstream markets, Microsoft looked to emerging markets as a future growth area. However, many of its current products were not ready to serve emerging clients

(SustainAbility, 2008). Therefore a specific group with the company was set up, the Unlimited Potential group.

Unlimited Potential is focused on delivering r*elevant* (e.g. the technology needs to be useful to people within the context of their daily life), a*cccessible* (e.g. it needs to be delivered to where they live) and a*ffordable* (they -- or someone -- can pay for it.) solutions in three interrelated areas that are crucial to developing economic opportunity (Bossicard, 2007b, Utzschneider, 2007):

- **Transforming Education** – getting the basic skills to be competitive:Examplers are Microsoft Student Innovation Suite and Low-cost laptops for education.
- **Fostering Local Innovation** – the ability to create. Examples are the Microsoft Innovation Centers; these centers provide the community with a set of programs and services to expand workforce skills, create jobs, strengthen innovation, and improve competitiveness. Currently, there are 110 worldwide centers and this number is projected to grow to 200 by 2009.
- **Enabling Jobs and Opportunities** – the opportunity to convert knowledge and creativity into sustainable economic opportunity. Examples are Community Technology Skills Program and the refurbished PC programme and the FlexGo pay-as-go PC.

Figure 43: Microsoft Unlimited Potential framework (Microsoft, 2007c)

The Unlimited Potential programme reviews all initiatives regularly to maintain quality and improve the programme. (UW, 2007, Feeny, 2007).

Lessons learned & Benefits

Best practices mostly developed bottom up. The initiatives were initiated by all partners involved, either an NGO, sometimes government, sometimes Microsoft itself according to Bossicard (2007a). Initiatives are checked on sustainability as this is part of the strategy of Unlimited Potential.

Some researchers claim that the Unlimited Potential initiative provides Microsoft benefits too, like competitive advantage in a new market, powered by locally driven innovation outcomes (SustainAbility, 2008). Bossicard (2007a) sketches some of these: gaining knowledge in how to deal surroundings with tackle in limited resources (like the BOP) , the need to attract talents and Unlimited Potential (UP) is part of the overall image of Microsoft, being perceived as a responsible employer and thus fostering employee retention (e.g. employees are working as volunteers in UP projects certain amount of their time and feel satisfied). Furthermore he argues that Microsoft's activities in ICT for development and development of communities need to be counterbalanced by protection of intellectual property.

Some of the practical lessons based on the experiences of telecenter community are collected here (Fillip and Foote, 2007):

- **Build from the ground up.** A telecenter cannot be successful if it does not meet a community's needs and wants.
- **People are key.** In many instances, a telecenter originates from outside the community. Telecenter operators, local champions, can make the project more locally driven and help to encourage community use of the telecenter.
- **Services drive sustainability.** Locally relevant services help make a telecenter sustainable.
- **The model must follow the purpose.** There is no single best model to follow because each situation and community is unique. The key is to match the model to the needs of the community.
- **Appropriate technologies are more easily "appropriated."**
  The technical challenges to telecenter development or scale-up—from a lack of reliable electrical power to finding software with a user-friendly interface—are numerous. Colleagues in similar environments are often the best source of information about equipment choices and other solutions.
- **Networks, qssociations, andpPartnerships are key to capacity building and sustainability.**
  Telecenter operators face many common challenges, but are often isolated. That's why networks—whether virtual, regional, or national are so important. They are both a peer support group and a source of information.
- **The broader environment matters.** External factors can affect telecenter initiatives in many ways. National governments, telecommunications companies, and other private businesses must all be taken into account.

For example, a study in Senegal has shown that the significant social impact of telecenters and that they have enhanced local job opportunities and the acquisition of new skills in Africa (CODESRIA/IDRC, 2003).

However, not everything is so positive. Commercial cybercafés based on western models and non-profit community telecenters offering Internet access have proliferated in developing countries.. The failure rate has been high, especially for telecenters subsidized by governments or international organizations but also for cybercafés, because of a lack of viable business models (Hammond and Prahalad, 2003). A practical lessons as "The Model Must Follow the Purpose" mentioned by Fillip and Foote (2007) is still worth noting.

In respect to the telecenters the findings reveal that there is not a one size fits all solution. As Prahalad (2007) states: "*There is no "correct" way to implement a telecenter, no single "best" business model, and no "perfect" combination of features. Each environment is different, and the local players need to know their audience, determine their objectives, and seize the opportunities that best match local conditions—this is "consumer-centric" design at its best.*"

B. Products & Services

Figure 44 shows an example of a telecenter community building.

Figure 44: This Telecentre offers services like internet and other computer services as well as Library Services. Source telecentre.org

Products & services description

Unlimited Potential has delivered products aimed at the BOP such as affordable software, Pay as you go model of FlexGO[30] PC (removing financial barriers for PC ownership), MultiPoint[31], Classmate PC

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[30] FlexGo helps make it possible to lower the initial cost of a full-featured PC for customers, and allows them to pay for a PC as they use it (Microsoft, 2009c).

[31] Windows MultiPoint: Developed by Microsoft Research India, it provides a multi-user interface to one single computer with one screen, one keyboard and multiple mouse devices. It allows up to 50 students to simultaneously use and learn from educational software specially designed for multiple, colored mouse cursors (Microsoft, 2009a).

(together with Intel) with Starter[32] editions of Windows . These product are also incorporated in the ecosystem of the telecenters (Bossicard, 2007a).

Telecenters may go by many names like village knowledge centers, kiosks, infocenters, community technology centers, or community multimedia centers, but their common focus is to support community, economic, educational, and social development (Microsoft, 2009d). Telecenters existed already before Microsoft and its partners established telecentre.org. The telecentre.org organization acts as an umbrella, network organization inducing the dissemination of knowledge, good practices and synergy by collaboration.

Telecenters offer a range of services. The mix of services to be provided is based on the following set of factors: analysis of needs and demand, capacity of the telecenter operator, organizational model and technology requirements (Fillip and Foote, 2007).

Table 25: A typology of services offered by telecenters: Informational, Transactional, and e-Governance (Fillip and Foote, 2007)

Informational	Transactional	e-Governance
Agriculture	Communication	Downloading and submission of forms
Education (general)	Desktop publishing, printing	Status of pending work
Computer training	Photocopying	Land records
Job listings	Obtaining loans and insurance	Ration cards
Health (general)	Entertainment	Government certificates
Government schemes and procedures	e-Banking/remittances	Licenses/permits
News	e-Commerce transactions	Grievance redress
Market prices	Matrimonial services	Below-poverty-line lists
Weather	Photography	Vehicle registration

Product & service development

The digital divide is expressing differently in every market where Microsoft operates, comments Bossicard (2007a). One has to move away from one size fits all, Bossicard (2007a) argues: "The product and services developed within the Unlimited Potential program should be relevant locally by customizing it for local needs, e.g. being available in local languages. In the beginning of the design this is already taken into consideration."

Microsoft even has a Technology for Emerging Markets Group that seeks to address the needs and aspirations of people who are increasingly able to afford computing technologies and services. Its operations are aligned with Microsoft's Unlimited Potential Group, although the emphasis is on

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[32] Starter editions are adapted to first-time PC users in selected countries. The user interface is in the local language and the operating system has basic features and customized support. The price tag has been lowered (Microsoft, 2009b).

rigorous research and exploratory pilots, rather than product, business, or partner development (Microsoft, 2008b).

Uttzschneider (2007) argues that traditional software industry licensing models and pricing levels may not work in many of these BOP segment and therefore field trials are needed for testing business models and new products and solutions.

As mentioned before, the new business models involve working with local partners. Telecenter service development can be sketched with the following figure. The decision about how to set up a telecenter (bearing in mind the available and appropriate technologies) might be structured as a question about various classes of centers, as is illustrated in the figure hereafter.
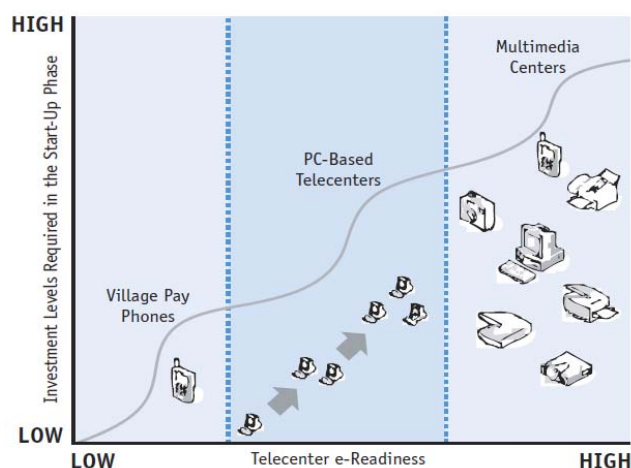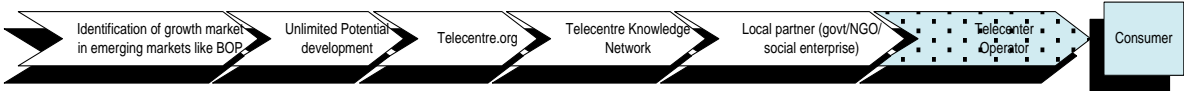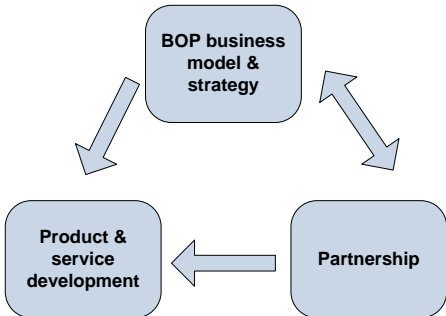
Figure 45: ICT-Based Ventures (Fillip and Foote, 2007)
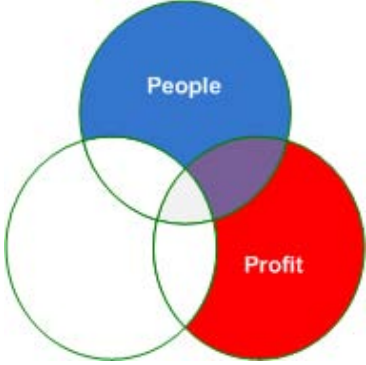
C. Partnership

 To reach the aims as mentioned in the BOP strategy section Microsoft Unlimited Potential combines technology and partnerships with governments, international organizations, nongovernmental organizations (NGOs), educational institutions, technology and service partners (Bossicard, 2007b, Microsoft, 2009b). In almost every case where a new business model is developed involvement of local partners (profit and nonprofit) is required (Utzschneider, 2007).

In partnership with telecentre.org, Microsoft has built the Telecentre Knowledge Network community site. This network is used for disseminating knowledge in the telecentre community across the world and learning from each other's experiences (Fillip and Foote, 2007, Microsoft, 2009b).

Case report analysis Microsoft Unlimited Potential (Telecenter)

Case report analysis Microsoft Unlimited Potential (Telecenter)

Business & Strategy

<table>
<tr>
<td rowspan="5">Business model qualities</td>
<td>Value proposition</td>
<td>

Microsoft with Unlimited Potential is aiming at helping all people benefit from information and communications technology (ICT) that is accessible, affordable, and relevant to their needs.The case examined here is the usage of telecenters.
Telecenters offer community interconnectivity in order to support community, economic, educational, and social development.

</td>
</tr>
<tr>
<td>Local capacity building</td>
<td>

Telecenter: distribution via telecenter operators; telecenters stimulate local entrepreneurial activity.
Unlimited Potential in general enables jobs and business opportunities by activities like Community Technology Skills Program:

</td>
</tr>
<tr>
<td>Embed-dedness</td>
<td>

Some of the local entrepreneurs are part of the BOP community. So there is partly embeddedness.

</td>
</tr>
<tr>
<td>Learning by the firm through native capability</td>
<td>

Telecenters: Local knowledge from telecenter operators.
In general Unlimited Potential relies on local knowledge from its local partner network.
Unlimited Potential performs research on the ground

</td>
</tr>
<tr>
<td>Scalability</td>
<td>

Telecenters have opportunities for scaling out and is adaptable to local market circumstances.
The Unlimited Potential in general is build upon this condition as initiatives are assessed and replicated elsewhere.

</td>
</tr>
</table>

Value chain scheme

Identification of growth market in emerging markets like BOP → Unlimited Potential development → Telecentre.org → Telecentre Knowledge Network → Local partner (govt/NGO/ social enterprise) → Telecenter Operator → Consumer

The blue colour depicts the participation of BOP people. The dashed patter indicates a partly representation of BOP people. Some of the village entrepreneurs are belonging to the BOP community.

BOP 1.0 or BOP 2.0	It is a synthesis **of BOP 1.0 and BOP 2.0 innovation** strategies. That means both selling of a service as well as co-creation and co-entrepreneurship are part of the strategy. Furthermore corporate social responsibility and employee retention motives are identified.
Relation business model & strategy, partnership and products & services	Unlimited Potential has a clear mission statement. Microsoft acknowledges that this mission can not be reached without partnerships with a variety of stakeholders. The knowledge of these partners is input for the creation of business models that work in BOP markets and for products and services targeted at the BOP community.

		Furthermore Microsoft itself as a part of their global strategy has set up R&D centers focused at these emerging markets across the world. This is that case in the telecenter network.
Sustainability; Triple P aspects		*Mostly People & Profit and in some fields Planet (e.g. PC refurbishing).* The mission of Microsoft Unlimited Potential is to enable sustained social and economic opportunity for the next five billion people. This is incorporated into Microsoft's strategy and the Unlimited Potential programme is helping to achieve this while simultaneously stimulating the achievement of the UN's Millennium Development goals (MDG[33]).

Products & Services

4A-framework	Availability	Telecenters are available in a multitude of countries in Africa (and across the whole world) and are dispersed often in **rural areas as well in urban regions**
	Acceptability	The distribution model with **local telecenter operators** on the ground provides a n acceptable and recognizable entry point for the customer. Furthermore the products and services of the telecenter should match to the community's need.
	Affordability	The aim is to minimize the price so it remains **affordable** while at the same time **ensuring income** for the local entrepreneur.
	Awareness	This issue was identified during the pilot project. **Training** is needed for the telecenter operators and those people unfamiliar with PCs and other equipment available at the telecenter. The telecenter operators provide **computer training**.
Product & service development		Unlimited Potential as **research centers** across the world and performs **research on the ground** in cooperation with local partners and the local community. It follows **mostly** the strategy of **embedded innovation**, as it tries to include the BOP community in co-creation in some projects.

Partnership

---

[33] See for a brief description http://www.un.org/millenniumgoals/

Cooperation	• Microsoft with Unlimited Potential is **partnering with governments, the IT community, local entrepreneurs and nongovernmental organizations. (NGOs), educators and academics**. • "If MS helps to grow ICT development and the local ecosystem then it needs to be to be counterbalanced by **protection of intellectual property**."
Typology of partnership	The multinational company (Microsoft) is working together with a local partner that may be an NGO, local government or a local entrepreneur or combinations of them. So it varies from **public-private partnerships to private-private partnerships to multi-stakeholder partnerships**.

6. Findings of cross case analysis

This chapter includes the cross-case analysis of all the examined case studies. For navigational purpose the picture on the right indicates the place of this chapter in the research process.

The individual case analysis reports are taken together and were analyzed together, resulting in the summary of findings in this chapter as prescribed in the multiple case study method; see Figure 19 on page 52.
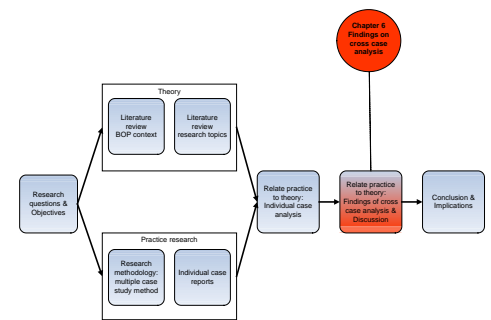
Three main units of analysis are reviewed, namely "BOP business model & strategy"," products & service development" and "partnerships". These units are separately discussed in sections A, B and C of this chapter. At every section particular attention is paid to distinct similarities in, and key differences between the examined cases.

6.A. Findings BOP Business model & strategy

The main unit of analysis "BOP business model & strategy" for the examined case studies was reviewed along a range of aspects. This has been subdivided in three parts for closer examination. The first five aspects of this unit represent the BOP business model qualities as described by Klein (2008) whose framework was adopted for the analysis. The findings of the studied cases based upon this framework are reported in section 6.A.1. The second part covering the findings of the value chain schemes is reported in section 6.A.2. The general aspects of the unit of analysis "BOP business model & strategy" are reported in section 6.A.3 and cover 'BOP 1.0 or BOP 2.0 strategy', 'Relationship between Relation business model & strategy, partnership and products & services' and 'Sustainability; Triple P aspects'.

6.A.1. BOP Business model qualities

Table 26 shows a summary of the findings from the researched cases derived from the individual case analysis reports around the five dimensions of business model qualities which are often observed in successful BOP business models. The source page mentioned in the table refers to the page in this thesis where the original finding is mentioned. The five dimensions of the business model qualities (see page 34 in chapter 3.A) are explained briefly hereafter while summarizing the findings.

The value proposition is about the value that results from engaging with the company; it referes both to the value proposition to the BOP as consumers as well as to the BOP as co-creator or co-entrepreneur. From the cases we have determined that when it comes for the value proposition, in all cases this proposition includes an ICT for development aspect, either in economic or in socio-cultural development and it includes connectivity as well.

Local capacity building refers to the degree the company contributes to the local capacity of BOP communities. From the findings we observe that the local community is often included in the capacity building and entrepreneurial activity is being stimulated.

The embeddedness of the company in local communities relates to the degree the company is integrated within the BOP community. None of the cases reach fully embeddedness but reach partly embeddedness. The partly embeddedness has in most cases been reached because of the involvement of BOP entrepreneurs in the value chain. Full embeddedness would imply that the business model is indigenous and builds upon the local customs and conditions.

Table 26: Findings for business model qualities in the researched case studies.

	Business Model Qualities				
	Vodafone M-PESA	**Nokia MTN Village Phone**	**NSN Village Connection**	**Intel World Ahead Classmate PC**	**Microsoft Unlimited Potential**
Source page	Page 73	Page 86	Page 100	Page 111	Page 122
Value proposition	Banking for the unbanked. Locally responsive strategy.	Affordable village telecommunications. Micro-finance funding and repayment for the Village Phone Operator.	Affordable connectivity and access to mobile phones Franchise-based business model.	Sustainable technology. Classmate PC as learning device and connectivity.	ICT that is accessible, affordable, and relevant to community's needs. Telecenters of community interconnectivity.
Local capacity building	M-PESA agents. Local entrepreneurial activity.	Village Phone Operators. Local entrepreneurial activity	Village entrepreneurs .	Local companies Training educators.	Telecenter operators. Local entrepreneurial activity. Community Technology Skills Program
Embeddedness	Partly embeddedness.	Partly embeddedness.	Partly embeddedness.	Embedded in local educational structure. Partly embedded.	Partly embeddedness.
Learning by the firm through native capability	MFI, local M-PESA resellers. Usage different from initial design; adjustments were made. Time on the ground	MFI, Village Phone Operators, telcos. Exploratory design research.	Village community. Educational marketing. Field research	Incorporated in its product life cycle (PLC). Ethnographic research.	Telecenter operators. Research on the ground.
Scalability	Opportunities, also outside BOP.	Scaling out and adaptable in an environment with a microfinance structure. Worldwide potential.	Scaling out and adaptable . Worldwide potential.	Scalable, replicability and expansion.	Scaling out and adaptable and replicable.

Learning through native capabilities portrays the degree of learning by the company through native capability and therefore its ability to improve over time. In all cases it is observed that the multinational ICT companies learn from local partners or from the local BOP community, either via field research, ethnographic research, or via the community's involvement in the business development.

Scalability of the business model outlines the potential scale and scope of the business model. The findings show that all concepts described in the cases are designed to be scalable, both in magnitude as well as geographical spread.

After these similarities between the cases we look at the key differences.

One of the differences between the examined cases is the observation that telecom companies obviously have focused on initiatives with the mobile phone. The traditional computer oriented companies have solutions with PCs (Classmate PC and the telecenter concept). Telecenters do sometimes have (mobile) telephones services.

Another difference is that in the Vodafone M-PESA case opportunities were identified for the service in other than BOP markets, i.e. western markets (innovation blowback).

6.A.2. Value chain schemes

When we look at the so called value chain schemes (Table 27), the following observations are made. One of the similarities between all cases is that all studied companies start with awareness and identification of looming opportunities in the emerging market of the Base of the Pyramid. Another similarity is that all studied companies have set up dedicated programs for development of products and services for the Base of the Pyramid and seek partnerships. Furthermore, quite often local entrepreneurs who are part of the BOP community are engaged in the value chain.

When you look at the value chain schemes, one can note there is input from BOP people in the concept or program development (in Table 27 the second arrow from the left represents the concept or program development in the value chain scheme for each case), but as these people are not integrated in the value chain at that part it is not shown there. Only their input in field research etc. is used. Therefore that part in the value chain scheme is not colored blue for indicating BOP involvement in the value chain.

Regarding the differences between the cases, Intel does not involve directly BOP entrepreneurs in the Classmate PC project of the World Ahead program

Table 27: Overview of value chain schemes of the examined cases.

Value chain schemes		
The blue color depicts the participation of BOP people. The dotted pattern indicates a partly representation of BOP people. A dashed-line arrow means the implementation has not succeeded yet. The source page number is mentioned in the second column.		
Vodafone M-PESA	p73	Public private funding → M-PESA development joint project → CBA banking activities → Safaricom telecom operations → M-PESA agents → Educational marketing → (Low-income) Consumer; Faulu MFI
Nokia MTN Village-phone	p86	Identification of growth market in rural areas → Village Phone development → Village Phone kit delivery → MTN telecom operations → Micro Finance Institution provides loan → Village Phone Operator → (Low-income) rural Consumer
NSN Village Connection	p100	NSN's Identification of growth market in rural areas → Village Connection development → NSN Village Connection & Nokia mobile equipment delivery → Vodacom telecom operations → (micro) financing franchisee → Village Entrepreneur franchising → (Low-income) Consumer
Intel World Ahead (Classmate PC)	p111	Identification of growth market in emerging markets like BOP → World Ahead Program → Platfrom definition center → Classmate PC → Local partners Government + telco/NGO/PC vendor etc. → School & teachers → Consumer (student)
Microsoft Unlimited Potential (Telecenter)	p122	Identification of growth market in emerging markets like BOP → Unlimited Potential development → Telecentre.org → Telecentre Knowledge Network → Local partner (govt/NGO/ social enterprise) → Telecenter Operator → Consumer

6.A.3. General aspects of BOP business model & strategy

In Table 28 the findings of the general aspects of BOP business model & strategy cover three aspects. First, it shows whether the case exemplifies a BOP 1.0 or BOP 2.0 strategy. BOP 1.0 focuses on the BOP as consumers ("selling to the poor"), while BOP 2.0 strategy focuses on the BOP as business partner. See also Table 9 for further elaboration of these two kinds of BOP strategy. Second, the relation between business model & strategy, partnership and products & services in all cases is shown. This will be later tested against the hypothesis as stated in chapter 3.E. Third, the sustainability aspect of all cases is shown.

When we look at Table 28, the following observations are made. All cases showed a BOP 1.0 innovation aspect where "selling to the poor" is a relevant factor. Although in general all cases exhibit a BOP 1.0 strategy ("selling to the poor"), four cases showed co-design aspects and co-entrepreneurship of a BOP 2.0 strategy. This was the case in Vodafone M-PESA, Nokia MTN Village Phone, Nokia Siemens Village Connection and Microsoft Unlimited Potential. So the picture is a mix of aspects of both, BOP 1.0 and BOP 2.0, strategies.

Furthermore, all cases show interaction between BOP business model & strategy, partnerships and products & services. In most cases the partnerships affects the products and services (development) but not vice versa. The "average" interaction scheme of the examined cases between BOP business model & strategy, partnerships and products & services is shown in the figure below. In most cases the business model & strategy (classically) directs the products & services developed. Also the partnerships attributes to their development. The partnership is directed through the BOP business model & strategy, remarkably the partnership in its term influences the BOP business model & strategy. All these interactions result in alignment of BOP business model & strategy with the partnerships and with the product & services development.
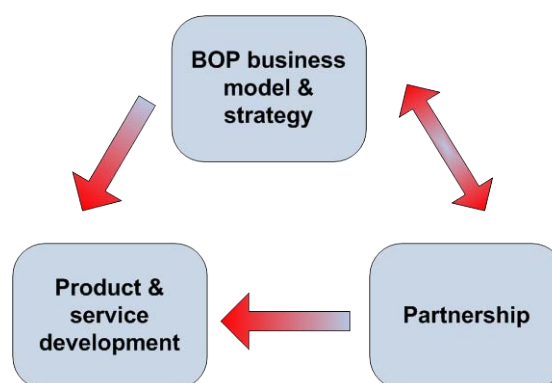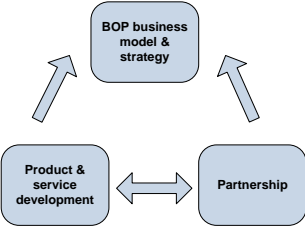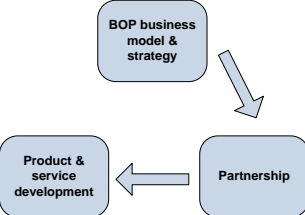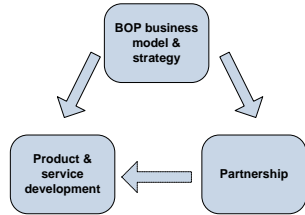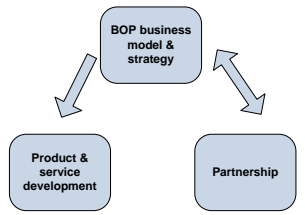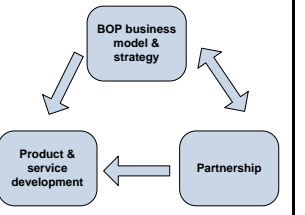
Figure 46: Average interdependence derived from the case studies

All cases showed mainly sustainability in 'people' and 'profit'. The "planet "aspect is identifiable in some cases like eco-friendly product design, but a recycling policy or overall saving limited resources scheme has not been observed as an integral part of the programs in the case studies.

The table shows an overview of the findings of the general aspects regarding the business model & strategy from the case analysis reports. The source page refers to the page in this thesis where the original finding is mentioned.

Table 28: Findings in the general aspects of BOP business model & strategy of the examined cases.

	General aspects				
	Vodafone M-PESA	**Nokia MTN Village Phone**	**NSN Village Connection**	**Intel World Ahead Classmate PC**	**Microsoft Unlimited Potential**
Source page	Page 73	Page 86	Page 100	Page 111	Page 122
BOP 1.0 or BOP 2.0 strategy	BOP 1.0 and some elements of a BOP 2.0 strategy.	Both BOP 1.0 as well as BOP 2.0 innovation.	BOP 1.0 and BOP 2.0 innovation.	BOP 1.0	BOP 1.0 and BOP 2.0 innovation.
Relation business model & strategy, partnership and products & services					
Sustainability; Triple P aspects	All the cases exhibited the same sustainability situation. Focus on "people" and "profit" aspects, i.e. social and economic development. Hardly any progress is made in the "planet" area, although in one case the IT MNC reports to have produced an eco-friendly design of its product (Intel Classmate PC) and in another the usage of solar panels as power source was possible (NSN Village Connection).				
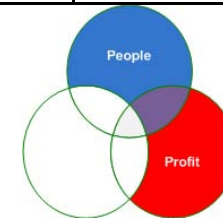
6.B.   Findings ICT product & service development for the BOP

The next table shows an overview of the findings related to BOP products and services from the examined cases.

Table 29: Findings of BOP products & services in the examined cases.

	Products & services				
	Vodafone **M-PESA**	**Nokia MTN** **Village Phone**	**NSN** **Village Connection**	**Intel** **World Ahead Classmate PC**	**Microsoft Unlimited Potential - telecenters**
Source page	Page 74	Page 87	Page **Error! Bookmark not defined.**	Page 112	Page 123
Availability	Particularly unbanked people, actually anyone.	Anyone in the rural area	Anyone in the rural area	Often in rural areas	Rural areas as well in urban regions
Acceptability	M-PESA agents as low-profile entrance point.	Village Phone Operators as low-profile entrance point. Research on non-literacy lead to product improvements.	Local village entrepreneurs as low-profile entrance point.	Complete solution for education Works within existing educational models Incentives for teachers. Evaluations lead to improvements.	Local telecenter operators. Services should match community's needs.
Affordability	Pay as you go.	Special rates for the Operators, consumers pay a small fee.	Monthly subscription but pricing kept low.	Relative affordable prize Funding for initial deployment.	Affordable while ensuring income.
Awareness	Educational marketing via M-PESA agents	Documentation and training of Operators. Educational marketing via Operators.	Training of the village entrepreneurs. Educational marketing via village entrepreneurs.	Teacher training. Teachers instruct the children. Teachers train other teachers.	Training for telecenter operator. Computer training.
Product & service development	Initial PPP[34] funding Actual usage is different from the intended usage Spending time on the ground proved to be invaluable. Innovation	Research centers. Multidisciplinary approach Exploratory design research.	Research centers. Field research. Innovation blowback.	Product development centers. Multidisciplinary approach. Significant time on the ground. Ethnographic research methods.	Research centers Research on the ground. Mostly embedded innovation.

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[34] Public private partnership

	blowback.				

For the products and services perspective all cases were analyzed using the 4A-framework (availability, acceptability, affordability, awareness). This 4A-framework is explained in Table 11 on page 39. Furthermore the process of products and service development was analyzed.

The findings show some features all cases have in common. Regarding availability, often the products and services are delivered in rural areas. To enhance acceptability, in all cases we see that as an entrance point the local entrepreneur is used. Furthermore in the case of Intel Classmate PC, acceptability is assured by matching existing local teaching models. In all cases the findings show that regarding affordability, the pricing has been kept low, as pay for the amount you use (pay-as-you-go, prepaid cards etc.) is introduced. Awareness relates to the degree to which customers are knowledgeable about product or services. Regarding awareness, educational marketing and training of the BOP customers is part of the program in all the case studies.

Key for product and service development was spending time on the ground and conducting field research and usage ethnographic research methods.

Differences in the examined cases are revealed in the type of products or services offered. Vodafone with M-PESA enters the world of mobile banking and offers innovation blowback potential (cf. Brown, 2005). Intel with its Classmate PC seeks a particular segment, namely education. The Nokia MTN Village Phone and the Microsoft telentre.org concepts are built around shared usage; usage is differentiated from ownership (cf. Chipchase and Tulusan, 2006b).

With Intel Classmate PC and NSN Village Connection shared usage is also possible, depending on the project outline. Vodafone M-PESA can be shared in the sense that an M-PESA agent acts as assistant for payments to somebody without an account or performs the transaction with his phone (e.g. for people who cannot do it themselves). In all other situations people themselves can perform the M-PESA payment with their own mobile phone. So a mix of shared and single usage exists in these cases.

6.C.   Findings on Partnerships

The next table shows an overview of the findings from the examined cases related to partnerships.

Table 30: Findings in the examined case studies in relation to partnerships.

Partnerships					
	Vodafone **M-PESA**	**Nokia MTN** **Village Phone**	**NSN** **Village Connection**	**Intel** **World Ahead Classmate PC**	**Microsoft Unlimited Potential - telecenters**
Source page	Page 75	Page 88	Page 102	Page 113	Partner 123
Cooperation	Partnership approach with dedicated project team. Significant degree of autonomy for Safaricom. Backing of higher management. Expertise of local partners. Integrating systems was an obstacle. Actual usage was different from the intended usage.	Microfinance and repayment model Strong partnership Setting up of a separate unit: Village Phone Company. Variety in maturity in management skills between local partners.	A franchising model Sometime transformation of partnership to employer-employee relationship. Unequal risk sharing.	Mostly government partnering. Need to have patience, results come not fast Pulled out the partnership with OLPC (different opinion of the strategy)	Variety of partners.; here NGO telecentre.org Protection of intellectual property
Typology	Private-social-private partnership.	private-private-private-social partnership (multi stakeholder)	private-private-private partnership	Mostly public private partnership, sometimes multi-stakeholder.	Varies from public-private partnerships to private-private partnerships to multi-stakeholder partnerships.

The findings show that in almost all cases unconventional partnerships are required. That means partnerships are non-traditional and involve NGOs, local government and local entrepreneurs and companies. The partnerships are intended for building future markets as well as "doing good while doing well" with corporate social responsibility motives playing around.

M-PESA was set up using a dedicated project team. The Village Phone operations are directed from a separate unit. NSN Village Connections seeks partnerships in franchise models between telecom

company and village operator. Intel Classmate PC has a preference to partner with governmental institutions. Microsoft Unlimited Potential has a variety of partnerships in its ecosystem.

A difference encountered in the partnerships is that Intel particularly stated that it relies on its relations with local government and specifically government agencies involved (Education ministries etc.) and from there creates other partnerships needed while others do have government partnerships but didn't mention this to be core part of their policy.

Furthermore a variety of issues in partnerships are mentioned in the case studies:

- System integration

- Differences in management skill levels of local partner

- Risk sharing differences

- Differences in strategy (e.g. Intel-OLPC)

- Protection of intellectual property.

We will come back to these issues in the discussion chapter. It is worth mentioning that these issues proved to be fertile ground for creating original scientific work.

7. Discussion

This chapter consists of three sections discussing the findings of the cross case analysis that was presented in the previous chapter. Again, the three main units of analysis are reviewed, namely "BOP business model & strategy"," products & service development" and "partnerships". These units are separately discussed in sections A, B and C of this chapter. For navigational purpose the picture on the right indicates the place of this chapter in the research process.
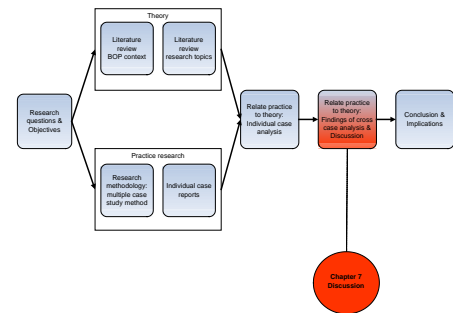
7.A.   Discussion of findings BOP business model & strategy

The findings of business model qualities (see section 6.A.1) in the examined cases are discussed hereafter.

The value creation in most cases has been localized by the use of local BOP-entrepreneurs, thereby adjusting the value proposition to local conditions and needs (Klein, 2008) This is clearly the case with the added value of the M-PESA agents who support people with their remittance service and provide assurance to illiterate people that they too can benefit from the service (see case study I, page 60 ff.). Furthermore the cases of Vodafone M-Pesa, Nokia Grameen MTN Village Phone and Nokia Siemens Village Connection (cases I, II and III) agree with the common behavior observed with multinational telecom companies who are developing innovative approaches to serving the BOP market include the identification of opportunities in the gaps in local infrastructure and missing services like phone connectivity and banking services for the poor (cf. Anderson and Kupp, 2008). Nokia is now piloting in India with content delivery. Nokia Life Tools is a range of services which includes agriculture, education and entertainment services designed especially for the consumers in small towns and rural areas of the emerging markets (Nokia, 2008b). It is interesting to see if this service will be included in the value proposition of Village Phone or Village Connection in Africa.

As shown with the findings all cases contribute to ICT for development. Noteworthy is the observation that telecenters are a part of Microsoft's Unlimited Potential activities (see case study V, page 114 ff.), while Heeks (2008) argues that telecenters failed to deliver in the early days of the ICT4D 1.0 era that lasted till early 2000s. Since then telecenters have evolved and more attentions is put in sustainability, evaluation and impact assessment of these projects (c.f. telecentre.org), and sometimes this is dubbed telecenters 2.0 (APDIP, 2007).

The local community is often included in the capacity building and entrepreneurial activity is being stimulated. This suggests that the activities form the case studies are positively linked to poverty alleviation by increasing local economic activity and creating employment opportunities which results in greater spending power (cf. Lenstra and Wälholz, 2008). This positive link is illustrated in Figure 11, page 23). The findings are also in accordance with the recommendations of Jenkins (2007) who

argues that one of the key strategies for companies to expand economic opportunity is creating inclusive business models by involving the poor as employees, retailers, distributors, entrepreneurs etc. (see footnote on page 27). In the cases is apparent that capacity building is also enforced by training local entrepreneurs and other partners (Anderson and Kupp, 2008).

As Klein (2008) states full embeddedness would imply that the business model is indigenous and builds upon the local customs and conditions, or as Hart (2007b) argues: "New business models must not be disruptive to the cultures and lifestyles of local people". However that is not fully the situation observed in the cases. Adjustments are made on a local level (by local entrepreneurs) so it suits the local environment, but the business model was initially developed by the multinational company and tweaked through collaboration with local partners (this is in agreement with the remarks about the value creation a few paragraphs before). Besides in most cases the local partners (BOP-distributor, retailer etc.) are part of the BOP-community. Therefore the cases resemble situations of partly embeddedness.

Learning form local partners and in particular the BOP-community is one way to tap into new knowledge sources and thus making use of local intelligence (WBCSD, 2004, Boyer, 2003). This has been identified in all cases. Multinational companies learn capabilities, practices and innovations that they might transfer to their higher-income markets (Prahalad, 2005, Hart and Christensen, 2002). This seems to be the case in the Vodafone M-PESA case study (Vodafone, 2007c).

All cases show a business model with the capacity to scale-out, as suggested by researchers like Touesnard (2008) and SadreGhazi and Duysters (2008) and in line with one of the twelve innovation principles of Prahalad (2005) as mentioned on page 37.

The value chain schemes prove to be a relative easy way of presenting the information on stakeholder involvement in the value chain (see section 6.A.2 on page 127). As observed in none of the cases full embeddedness was reached and this is shown in the value chain schemes as the participation of the BOP community mainly focuses downstream in the direct contact with the BOP-consumer.

Chapter 6.A.3 shows the findings of the general aspects around BOP business model & strategy. It reports about the BOP strategy, the interdependence aspects and sustainability. Recollecting the difference in BOP 1.0 and BOP 2.0 strategy, it basically can be summarized as "selling to the poor" versus "business co-venturing" (see Table 9, page 32). All cases exhibit BOP 1.0 aspects, but this black & white distinction is ambiguous in four cases as reported in the findings (i.e. Vodafone M-PESA, Nokia MTN Village Phone, Nokia Siemens Village Connection and Microsoft Unlimited Potential). In those cases, one could speak of a *hybrid BOP strategy* resulting in a situation somewhere between a BOP 1.0 and BOP 2.0 strategy. As Hart (2007a) states BOP 1.0 strategies show the viability of serving lower income people such as the BOP, while earning money. However the companies do take into account the perspective of the BOP people. In some cases the relationship with the BOP-community is a direct one, in other cases an intermediary partner (e.g. NGO, local entrepreneur, local non-profit organization etc.) is involved.

The findings (see chapter 6.A.3) show in all cases interaction between BOP business model & strategy, partnerships and products & services. The average configuration of these interactions is now compared with the hypothesized configuration (Figure 47). From the literature a range of configurations was retrieved (see chapter 3.D) and this lead to a hypothesis as stated in chapter 3.E where the bidirectional arrows do not mean that bidirectional interaction is always expected, but that both directions of the arrow are a possibility of interaction and alignment. In a way it represents the degrees of freedom of interaction between the three factors BOP business model & strategy, partnerships and products & services.
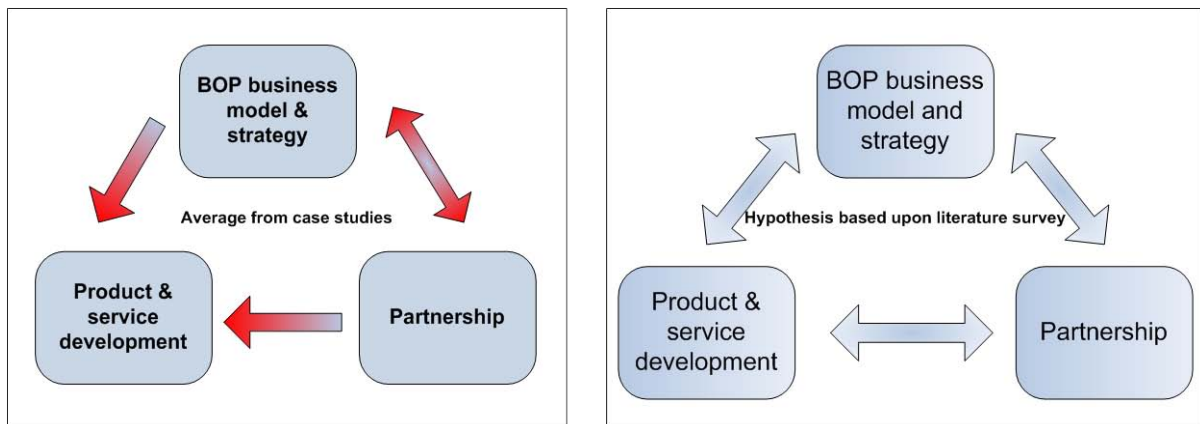
Figure 47: Average interdependence derived from the case studies compared with the hypothesis.

Starting from the average picture, caution should be used when interpreting this result. The average picture is not the "reality" of the case studies, except for the case concerning Microsoft Unlimited Potential (telecenters); see Table 28. Furthermore an average of only 5 cases provides an arbitrary result.

Therefore the average picture only suggests that in this small sample of cases a certain preference is appearing in the direction of the interaction arrow between BOP business model & strategy, partnerships and products & services. A larger sample could however alter this picture. Furthermore the sample consists of multinational ICT companies, whereas the configurations found in the literature (see chapter 3.D) are based upon publications about research on BOP ventures in various market segments, ranging from fast moving consumer goods to ICT which could not be separated in the specific market segments.

Besides, the findings show only what this sample of multinational ICT companies have undertaken; it doesn't show whether other ways have been tried, meaning that for example one could have started with a partnership with the BOP community and together defined a business model and developed solutions (products and services), but the actual outcome of the product and service development might cause changes in the business model and the partners with whom to cooperate with. This example shows the following sequence 1) partnership → BOP business model; 2) partnership → product & service development; 3) product & service development → BOP business model; 4) product

& service development → partnership. The arrows indicate the direction of influence in this notation. Such a case actually can occur, for instance in the case of Vodafone M-PESA the adjusted product influenced the partnership and even the BOP business model & strategy.

The sample size, the fact that a variety of configurations occurs, makes it admissible to present the findings in a slightly different way, such that both hypothesis and the average result of the findings are shown (Figure 48). The red color in the arrows indicate the result of the findings, but as this result cannot be called significantly conclusive enough, the initial assumption of the hypothesis that actually any configuration of influence between the three factors is possible and that the only key prerequisite is that they should be aligned for success in a BOP venture is still possible as a general outcome. The findings do not reject this significantly. The findings only show that in this small sample a certain preference is observed.
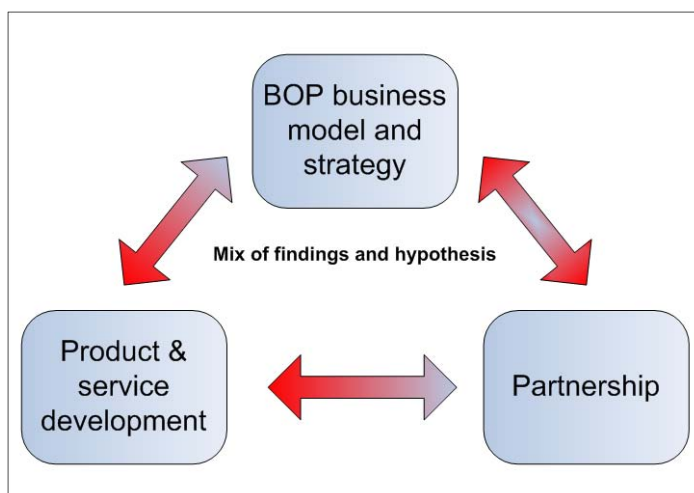
Figure 48: Mix of findings and hypothesis, where the red color indicates the direction of preference based upon the findings.

We will come back to this in the implications of this thesis research.

The findings about sustainability aspects have shown that the focus lies on "people" and "profit", which can be translated to social and economic development in the BOP community (and profit for the company as well). The findings do not suggest that the companies only pursue profit in the BOP as some critics argue (c.f. Karnani, 2007). Poverty alleviation has been reported in the cases land suggest the positive link between BOP activities and poverty alleviation (Lenstra and Wälzholz, 2008). Furthermore irresponsible selling (see page 29) as one of point of focus in the criticism of Karnani (2006b) has not been revealed by the findings. The success of for instance M-PESA (case study I) shows the need for banking services for the unbanked. Furthermore the popularity of shared access models like Nokia Grameen MTN Village Phone (case study II) does offer connectivity to the BOP-consumer when needed for a reasonable prize without the financial burden of structurally paying for a mobile phone. If a BOP-consumer can afford the own possession of a phone and finds the need for that, the scheme of an example like NSN Village Connection (case study III) proves to be affordable.

Remarkably, not much effort in the "planet"-aspect of sustainability has been observed, although academics like Hart (2008) envision a fruitful convergence of cleaner technologies and BOP strategy. Of course this material is also new to companies outside BOP markets, and terms like "Green IT" just came info fashion, but the growing scarcity of natural resources and the size of the BOP market could induce a faster pace toward the adoption of cleaner technologies and recycling of material in the BOP markets. The Vodafone M-PESA mobile payments service for instance is of course build on top of existing mobile phone services (case study I). So in that sense it is harder to proof that it is paying attention to "planet" aspects of sustainability on its own. However, in the researched material no indication was found to suggest activities in that aspect.

Furthermore, it is interesting what will happen with disposed mobile phones and computers in this BOP markets. Refurbishment will certainly occur and already informal repair shops sprung up in these emerging markets (Chipchase, 2006b). The positive side is the decrease of total cost of ownership for BOP-consumers (affordable repairs etc.) and an increase in the lifetime of products lowering their environmental impact (though this could be offset by other factors such as inefficiency of using old batteries). Furthermore on the dark site looms the concern of growing e-waste[35]. Unless a solution for this is incorporated in the BOP-business model and products and service design. Some companies have set up voluntary take back equipment of their own or in cooperation with different service providers (Nordbrand, 2009). In Greenpeace's ranking of March 2009 Nokia received the highest score on take-back by offering to take back old products in 124 countries around the world, including Africa, while companies like Microsoft and Nintendo received the lowest scores on this issue (Greenpeace, 2009). I expect that this aspect will gain terrain as off-grid power sources like solar or wind energy both touch the ecological as the economic viability side of sustainable business.

The stance remains that the "planet "aspect is identifiable in some cases like eco-friendly product design, but a recycling policy or overall saving limited resources scheme has not been observed as an integral part of the programs in the case studies.

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[35] E-waste or electronic waste is a term used to cover almost all types of electrical and electronic equipment that has or could enter the waste stream (UN-StEP, 2009).

7.B.   Discussion on findings on ICT product & service development

The findings on ICT product & service development were examined by using the 4A-framework (see Table 11 on page 39).

In all cases the described product or service was often offered in rural areas. This is in agreement with the fact that most of the BOP population can be found there (see chapter 2.A). Obviously the offering was also available in urban areas for services such as M-PESA as it is much used for remittance between migrant workers in the city to their family in the villages (see page 67).

This case is also an example of the concept of innovation blowback (cf. Brown, 2005). Innovation from low-income (BOP) markets has applicability in higher income segments and developed countries. Innovation blowback is one of the possible promises of the BOP and therefore MNCs should be present in the BOP according to Kandachar (2008b).

Regarding the affordability, in all cases one of the Principles of Innovation as proclaimed by Prahalad (2005), namely "focus on (quantum jumps) in price performance" has been targeted. Looking at the outcome of for instance M-PESA (case I) or Village Phone (case II) their growth is directly related to their price performance.

The price-offering and ease of use of services in all cases stimulated the acceptability highly. Furthermore the offerings were aligned with the local situation (one earns daily a small amount of money or one wants to make just one call that week etc.).

Awareness was reached by educating customers in product usage by local BOP-entrepreneurs (cf. Prahalad, 2005) who simultaneously proved to be valuable for effectively distributing to the product or service BOP community. This is the case in all cases, except Intel Classmate PC where the role of the BOP-entrepreneur is substituted by teachers in local schools, who train other teachers and educate the pupils to use the Classmate PC.

From the findings one can analyze that multi-disciplinary research and spending time on the ground has become invaluable. This sort of on-the-ground intelligence-gathering is central to what's known as human-centered design (Kandachar, 2008a). Several companies, including Intel, Nokia and Microsoft, employ trained anthropologists to study potential customers (Corbett, 2008).

As mentioned in the previous section (7.A) the business model shows partly embeddedness. This is also the case when it comes to product and service development. The process of innovation is partly embedded as mainly business co-creation is observable in cases like Vodafone M-PESA., but not the whole process has been undertaken together with the BOP-community. A case like Microsoft Unlimited Potential (case V) shows elements of embedded innovation as product development is sometimes situated near the BOP communities, but none of the cases discussed go as far as the BOP Protocol recommends (cf. Simanis et al., 2008).

The product development of the Classmate PC shows disruptive innovation (cf. Christensen, 2008), even though it appears to be initially sparked by the OLPC[36] development. Although the Classmate PC seems to be simple, the design is sophisticated. It is rugged, sturdy, designed to withstand the harsh conditions of BOP regions (sand, dust, rain etc.). Advanced models even have touch screen capabilities (Wikipedia, 2009, Intel, 2009b).

The same situation arises in mobile banking (see M-PESA, case I). The development of mobile banking & paying takes place in a BOP market where the unbanked are now offered real banking services via the mobile phone infrastructure. This leapfrogging development (cf. Kandachar 2008b), where older technology is skipped and one directly jumps, is evident in this case. Mobile banking has the potential to be a hugely disruptive innovation in a setting where nonbarter[37] transactions, savings or other financial practices may have been previously nonexistent (Lehr, 2007). However this kind of services is bound to regulatory restrictions in countries. But in recent years some countries are loosening the rules stimulating the development of mobile banking (Rosenberg, 2008, Lehr, 2007).

In most cases the incorporation of clean technology was not really visible, except that case of the Classmate PC with its eco-friendly design and occasional usage of solar panels as energy source for NSN Village Connection setups. So the convergence of clean technology and BOP-strategy (cf. Hart, 2008) is not clearly visible in the examined case studies.

7.C.   Discussion of findings on partnership

Partnerships are essential for operating in the BOP arena. The findings on partnerships were examined by using the typology of partnerships and the literature on partnerships in chapter 3.C. The findings confirm the literature that unconventional partnerships are used for engaging with the BOP (London and Hart, 2004). A variety of partnerships occur ranging the whole spectrum. It means that multinational companies need to be aware of various interests when entering such a partnership.

For the development of M-PESA (case I) the funding was crucial. This was received from a public–private partnership between DFID and Vodafone. This observation is in agreement with Jenkins' (2007) argument on pooling (financial) resources is important for achieving impact in development.

In the case of Village Phone (case II) the stakeholders together set up a separate company, the Village Phone Company, which manages all the operations for the Village Phone scheme. This is in agreement with the recommendation of Seelos (2008) that such a dedicated unit can smoothen communication between the various stakeholders and acts as a culture buffer between the profit company and the non-profit partner (cf. Jochim, 2008).

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[36] One Laptop Per Child project, which designed the low-cost XO laptop for educational purposes (OLPC, 2009).

[37] Barter is a trade or exchange of goods and services without the use of money. So, nonbarter trade is exchanging goods etc. for money or vice versa (IEF, 2009).

NSN Village Connection (case III) shows the usefulness of an intermediary partner, here the telecom operator, to seek the right local partner, namely the Village operator as suggested by Hosman and Fife (2007) .

In agreement with Weiser et al. (2006) Intel 's partnership with government agencies for the World Ahead activities for Classmate PC (case IV) is critical for success in the BOP market.

Also for Microsoft Unlimited Potential in its activities with telecenters (case V) partnerships and alliances with businesses and nonprofit organizations are critical for success (cf. Weiser et al., 2006). Microsoft teams up with a variety of partners and NGOs play an important role in establishing the sustainability of the business (cf. Chesbrough, 2006).

As mentioned in the findings on partnerships in section 6.C a variety of issues in partnerships are observed. Based upon this information and extended with the research material of other cases a framework of issues that are affecting the health of partnerships has been identified. By weakening the health this results in deterioration of the outcome and success of the BOP project. As a spinoff of this thesis research three papers have been published so far, discussing the subject of cooperation issues in the context of BOP related projects (Smit et al., 2009b, Silvius et al., 2009, Smit et al., 2009a).

These papers zoom in at the nature of the relationship and interaction between ICT MNC and local partners. This has been investigated by several researchers, for instance Das and Teng (2001); Kramer et al. (2007); Seelos and Mair (2007) and (Simanis et al., 2008b), and it is acknowledged that the success of such projects is dependent on the health of the relationship between partners.

In particular, the papers investigate the effect of partnership problems on the outcome of the BOP project, in terms of sustainable or development goals. It is argued that for monitoring monitor and assessing the contribution of ICT towards the achievement of those goals it would make sense to device and include some form of diagnostic attention to the nature of cooperation between partners. Although a variety of cooperation issues have already been identified by the researchers such as Das and Teng (2001); Kramer et al. (2007); Seelos and Mair (2007) and (Simanis et al., 2008b) as mentioned above, there seems to be need for a more holistic frame of reference for studying and diagnosing these issues in cooperation. First let us look at some of the material used for developing the outline of a diagnostic framework. The cases examined in the thesis were combined with material of five other cases related to cooperation between IT MNCs and a local partner gathered in the research. Appendix C consists of the paper as submitted for the PACIS[38] conference and shows all the material used for the research. The combined data reveals several factors and these were categorized as *driving force factors, skill factors, input-output factors, socio-cultural factors, systems factors, and trust factors*. Only issues around trust did not show up in the examined cases of this thesis.

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[38] Pacific Asia Conference on Information Systems (PACIS 2009)

Table 31: "Chain of evidence" that identified factors relate closely to data that was collected.

Nr	Case	Quote or example	Factor(s) identified
I	**Vodafone M-Pesa**	• The differences in operation culture between profit and nonprofit organizations and the difficulties it brings in cooperation.	Socio-cultural Factors
		• Integrating with Faulu's back office information management systems proved to be an obstacle. • The actual usage of implemented systems tends to be different from the intended usage.	Systems Factors
II	**Nokia Grameen MTN Village Phone**	• ICT MNCs struggle to deal with the diversity in skill levels found	Skill Factors
III	**NSN Village Connection**	• The partnership exhibits unequal risk sharing. • The nature of the cooperation transforms from a partnership to employer-employee relationship.	Input-Output factors
IV	**Microsoft Unlimited Potential (Telecenter)**	• "If the company helps to grow ICT development and the local ecosystem then there needs to be protection of intellectual property".	Input-Output factors
		• "If there is not a sustainable model, mutual benefits the project will fail."	Driving Force factors
V	**Intel World ahead (Class-mate PC)**	• Chang of priorities of the partner	Driving Force factors
		• "You need have to patience. Results come not fast."	Socio-cultural Factors
		• "One needs time for mutual understanding before going in a project."	Driving Force factors

Table 31 illustrates how the identified factors relate to the data by presenting each case, then an example of an observation or direct quote from the project, and finally the factor into which it was categorized.

These factors are now explained briefly in the next table (Table 32). For a more elaborate analysis I refer to Appendix C. For clarification the table also illustrates how the factors that were identified in the research are supported in literature.

Table 32: Overview of categories of factors in partnership issues with examples of theoretical perspectives.

Category of Factors	Description	Examples of relevant theoretical perspectives (see appendix C)
Driving force factors	Driving Force factors refers to problems that occur as a result of misaligned fundamental driving forces that shape the goals, purposes and process of ICT projects in developing countries, both from the perspective of the ICT MNC as well as that of local partners. The data reveals that problems arise when the goal and purpose of the project are different for each partner, and when these differences are not acknowledged.	Different foci on results versus process (Kumar et al., 2005) Technocratic approach of MNCs (Chio, 2005) Over-emphasis on "top-down, closed access and 'expert' driven" research (Gurstein, 2005) Bottom-up approach that builds on indigenous knowledge (Simanis et al., 2008c) Failure to continuously monitor the relationship (Seelos and Mair, 2007)
Skill factors	The data reveals that ICT MNCs tend to have unrealistic expectations about local skills and knowledge on a variety of topics ranging from IT skills and knowledge to managerial skills and knowledge. In addition it emerged that ICT MNCs struggle to deal with the diversity in skill levels found at the local environment.	Becoming and staying aware of the variety of resources, e.g. Prahalad (2005), Simanis et al. (2008a) and Jenkins (2007)
Input-Output factors	Input-Output factors refer to difficulties that may arise as a result of unequal investments by partners in projects, as well as unequal gains by partners from their projects. In addition certain outputs of projects might be cause for problem in business partnerships.	Sustainable business (Prahalad, 2005, Simanis et al., 2008b) Business partnerships related to intellectual property and patents (Matson, 2006)
Socio-cultural factors	A natural difficulty that organisations experience when making investments in developing areas are those related to social aspects of the partnership. In particular there are those obvious difficulties related to cultural differences.	Social embeddedness (London and Hart, 2004) Culture shock (Oberg, 1960, Marx, 2001) U-curve theory e.g. Lysgaard and (Ward et al., 1998)
Systems factors	Although partners expect that some form of integration is required it seems that problems are often more than expected. In addition it seems that it may also happen that the actual usage of implemented systems tends to be different from the intended usage.	Integration of systems (Butt et al., 2008)
Trust factors	For establishing a solid partnership a fair amount of mutual trust is needed.	Trust as a relevant factor (Das and Teng, 2001). "Social desirability bias" (Randall et al., 1993)

The categories of factors as identified in partnership issues and the link to theoretical perspectives is extensively discussed in appendix D. The categories of problems in partnership identified and described in the preceding pages were created through analysis of data collected from a variety of sources, with the purpose of creating a basic and provisional frame of reference. Clearly this frame of reference requires some work, in particular confirmation of the patterns (or core categories) that were identified.

7.D.   Discussion in general

In this final section of the Discussion chapter some general remarks are made on the thesis research and the findings as a whole. Furthermore the limitations of the research and the originality will be discussed.

The multinational companies involved with this research offer a variety of products and services. Interestingly one could argue that all these offerings end up at the consumer in (at least) two varieties of devices and their ecosystem. First there is a mobile phone initially used solely for calling. Second, there is a personal computer. Nowadays the distinction is less clear and from functionality perspective there is even overlap.

The telecom multinational companies Vodafone, Nokia and Nokia-Siemens seem to bet on the mobile phone as platform for services. Intel and Microsoft focus on the PC as platform in the studied cases. However, these two firms have not ignored the mobile phone as a platform and showed a keen interest (e.g. processors for phones by Intel, embedded operating system by Microsoft) and acknowledge its potential and already engage in competition (Laszlo, 2008, Clarke, 2008) The mobile phone is the computer for Africa some experts say (Hersman, 2007, Selanikio, 2008). Critics might say that the projects in the case studies are low-hanging fruit (Quadir and Negroponte, 2009). It is to be seen how ICT further will develop and will be available for the BOP.

Figure 49: Simple formula for African technology; the mobile phone is the platform of the masses (Hersman, 2007)

The mobile payment system like M-PESA show the versatility of the mobile phone and the variety of services it can offer. The future could be voice, applications, SMS and web connectivity and location based services (Hersman, 2007). However the connectivity speed is much less than that of the PCs via WiMax or other often wireless technologies in Africa. PCs proof their validity as they are of use in for instance education or bringing services in telecenters. All cases, except the Vodafone M-PESA and the Village Phone case still have to prove their long term viability.

The case studies show that the Base of the Pyramid cannot be ignored as it comprises the majority if the word population. The BOP demonstrates its value as an incubator for new technologies and business models and it is the breeding ground for next generation global competitors (Christensen, 2008, Prahalad, 2006d).

The BOP further demonstrates that inclusive business, implying the merger of profitability for the company and sustainable development for the community is possible (Hart and Milstein, 2003, UNDP, 2007b). All the cases show business initiatives that demonstrate that for-profit efforts can have a scaled impact. It is interesting to compare this impact with pure philanthropy or pure CSR initiatives.

8. Conclusions

In this chapter the conclusion based on the research is reported. First the research objectives are examined and this is followed by the overall conclusion on the research question. The limitations and originality of the research are discussed. For navigational purpose the picture on the right indicates the place of this chapter in the research process.

8.A.   Conclusion on research objectives

In this chapter the research questions are re-iterated and their answers derived from the research findings and discussions are recapitulated.

This research question is a two-fold question:

- How can multinational ICT companies (ICT MNC) gain benefit from entering the Base of the Pyramid (BOP) market in a commercial successful and sustainable way?

- And what could be the opportunities in the BOP market for multinational ICT companies?

The first question deals with the way the multinational ICT company can manifest itself in this market and focuses on how to enter this for probably most of these companies unknown terrain. A certain *business model and strategy* has to be utilized. Furthermore, *partnership* with others might be inevitable.The second question deals with *products and services* offered.

This two-fold research question has been decomposed in the following objectives, here formulated as sub questions. First the answer on these objectives will be summarized and it is concluded by reviewing the two-fold research question.

1. *What is the so called BOP market and how does it look like in Africa?*

This question has been answered in chapter 2. The BOP population segment is defined as those with annual incomes up to and including $3,000 per capita per year in local purchasing power (WRI, 2007b). The Base of the Pyramid economies represents four billion people in the world living in or near poverty. In economics, the Base of the Pyramid is the largest, but poorest socio-economic group. The Base of the Pyramid communities although geographically not bounded to one particular region have some general shared features (WRI, 2007b, Brewer, 2003, Hammond and Prahalad, 2003):

- Approximately 4 billion people with a low income of below US$3,000 per capita per year (PPP).

- Most live in rural villages or urban slums and shanty towns.

- Education levels are low or no-existent (especially for women).

- Significant unmet needs. Lack of access to water, sanitation services and basic health care services etc.

- Dependence on informal or subsistence livelihoods

- Impacted by a BOP penalty, meaning that many of those in the BOP, and perhaps most, pay higher prices for basic goods and services than do wealthier consumers. The poor live in very high-cost economies.

Africa has a BOP market of approximately $429 billion. The BOP is by far the region's dominant consumer market, with 71% of purchasing power. It includes 486 million people in 22 surveyed countries, 95% of the surveyed population of those countries (WRI, 2007b).

2. *Of what interest is the BOP for the researched multinational ICT companies?*

This has been addressed in the case reports in subsection "Potential" of the "Business & Strategy" section. In the (cross) case analysis reports this has been used as input for the Value Proposition and Scalability business model qualities.

Several sources of opportunity for the companies are identified:

- All cases confirm that the argument of Prahalad and Hart (2002) that the BOP has massive and a **growing underserved markets**. The potential for the companies has been described extensively in the case reports.

- Many local innovations can be **leveraged across other BOP markets**. The findings show that all concepts described in the cases are designed to be scalable, both in magnitude as well as geographical spread as there is large potential In all cases it is observed that the multinational ICT companies learn from local partners or from the local BOP community, either via field research, ethnographic research, or via the community's involvement in the business development. This confirms the views of Prahalad (2005).

- Multinational companies learn capabilities, practices and innovations that they might **transfer to their higher-income markets** (Prahalad, 2005, Hart and Christensen, 2002). This seems to be the case in the Vodafone M-PESA case study (Vodafone, 2007c).

3. *What kind of BOP business models & strategies are pursued by the researched multinational ICT companies?*

Chapter 3.A provides an overview from the literature on recommendations for BOP business models and strategies. All of them possess certain qualities which are described by Klein's business model qualities (Klein, 2008). Instead of describing the particular business model focus was laid on the qualities of the business model. The business model of the individual cases itself was described in the case reports (chapter 5).

In chapter 7.A the business model qualities of the researched cases have been extensively discussed. Klein's research has revealed five qualities that have to be addressed when doing business with the BOP (Klein, 2008). The Business model qualities have been used for assessing the case studies. These qualities are: value creation, local capacity building, embeddedness, learning through native capability and scalability (see page 34).

The value creation in most cases has been localized by the use of local BOP-entrepreneurs, thereby adjusting the value proposition to local conditions and needs (Klein, 2008).

The local community is often included in the capacity building and entrepreneurial activity is being stimulated. This suggests that the activities form the case studies are positively linked to poverty alleviation by increasing local economic activity and creating employment opportunities which results in greater spending power (cf. Lenstra and Wälholz, 2008).

As Klein (2008) states full embeddedness would imply that the business model is indigenous and builds upon the local customs and conditions. However that is not fully the situation observed in the cases. The cases resemble situations of partly embeddedness.

Learning form local partners and in particular the BOP-community is one way to tap into new knowledge sources and thus making use of local intelligence (WBCSD, 2004, Boyer, 2003). This has been identified in all cases.

All cases show a business model with the capacity to scale-out, as suggested by researchers like Touesnard (2008) and SadreGhazi and Duysters (2008).

Recollecting the difference in BOP 1.0 and BOP 2.0 strategy, it basically can be summarized as "selling to the poor" versus "business co-venturing" (see Table 9, page 32). All cases exhibit BOP 1.0 aspects, but this black & white distinction is ambiguous in four cases as reported in the findings (i.e. Vodafone M-PESA, Nokia MTN Village Phone, Nokia Siemens Village Connection and Microsoft Unlimited Potential). In those cases, one could speak of a *hybrid BOP strategy* resulting in a situation somewhere between a BOP 1.0 and BOP 2.0 strategy.

4. ***What kind of products & services are developed and delivered to the BOP by the researched multinational ICT companies?***

In all cases the described product or service was often offered in rural areas. The ICT based products and services needed to deliver on 4As: affordability acceptability, availability and awareness (see Table 11 on page 39). This 4A-framework has been used for assessing the ICT product & services in the case studies.

Regarding the affordability, in all cases one of the Principles of Innovation as proclaimed by Prahalad (2005), namely "focus on (quantum jumps) in price performance" has been targeted.

The price-offering and ease of use of services in all cases stimulated the acceptability highly.

Awareness was reached by educating customers in product usage by local BOP-entrepreneurs (cf. Prahalad, 2005) who simultaneously proved to be valuable for effectively distributing to the product or service BOP community.

Regarding the product and service development, it is apparent that the researched cases show that multi-disciplinary research and spending time on the ground has become invaluable.

The process of innovation is partly embedded as mainly business co-creation is observable in the studied cases, but not the whole process has been undertaken in together with the BOP-community.

The Vodafone M-PESA case (case study I) is an example of the concept of innovation blowback (cf. Brown, 2005). Innovation from low-income (BOP) markets has applicability in higher income segments and developed countries.

The product development of Vodafone M-PESA and Intel Classmate PC shows disruptive innovation. Disruptive innovation describes a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors (Christensen, 2008). Leapfrogging development (cf. Kandachar 2008b), where older technology is skipped and one directly jumps, is evident in the Vodafone M-PESA case. The development of mobile banking & paying takes place in a BOP market where the "unbanked" are now offered real banking services via the mobile phone infrastructure, skipping an ATM[39] and landline infrastructure.

The convergence of clean technology and BOP-strategy (cf. Hart, 2008) is not prominently clearly visible in the examined case studies, except the eco-friendly design of the Classmate PC and occasional usage of solar panels as energy source for NSN Village Connection setups.

5. ***Assuming ICT MNCs cannot or will not enter this BOP market alone, with what kind of organization is a partnership forged by the researched multinational ICT companies?***

A typology of the variety of partnerships is provided in chapter 3.C. The findings confirm the literature that unconventional partnerships are used for engaging with the BOP (London and Hart, 2004). A variety of partnerships occur ranging the whole spectrum, ranging from local entrepreneur, NGO, non-profit organization to local government institution, and even one step further involving the BOP-community as a partner. It means that multinational companies need to be aware of various interests when entering such a partnership.

As mentioned in the findings on partnerships in section 6.C a variety of issues in partnerships are observed. Based upon this information and extended with the research material of other cases a framework of issues that are affecting the health of partnerships has been identified. As a spinoff of this thesis research three papers have been published so far, discussing the subject of cooperation issues in the context of BOP related projects (Smit et al., 2009b, Silvius et al., 2009, Smit et al., 2009a). The cases examined in the thesis were combined with material of five other cases related to cooperation between IT MNCs and a local partner gathered in the research. Appendix C consists of the paper as submitted for the PACIS[40] conference and shows all the

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[39] Automated teller machine.

[40] Pacific Asia Conference on Information Systems (PACIS 2009)

material used for the research. The combined data reveals several factors and these were categorized as *driving force factors, skill factors, input-output factors, socio-cultural factors, systems factors, and trust factors.*

6. ***Is there an interrelation between the main units of analysis of this research, namely BOP business models & strategies, products & services and partnership?***

The findings (see chapter 6.A.3) show in all cases interaction between BOP business model & strategy, partnerships and products & services. The average configuration of these interactions is compared with the hypothesized configuration (Figure 47).

Based upon the literature (see chapter 3.D) a hypothesis was stated in chapter 3.E and this is represented by the picture here (figure 50 recapitulated from chapter 7.A), where the bidirectional arrows do not mean that bidirectional interaction is always expected, but that both directions of the arrow are a possibility of interaction and alignment. In a way it represents the degrees of freedom of interaction between the three factors BOP business model & strategy, partnerships and products & services.
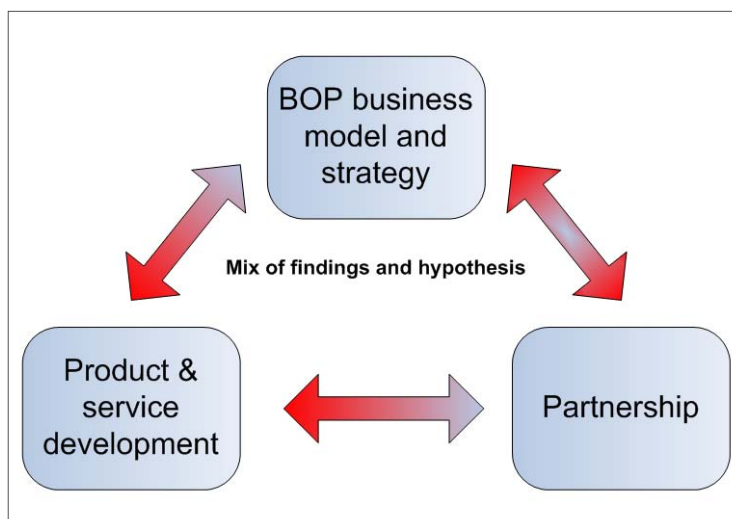
Figure 50: Mix of findings and hypothesis, where the red color indicates the direction of preference based upon the findings (reiteration of Figure 48).

The average picture of the researched cases only suggests that in this small sample of cases a certain preferences appearing in direction of the interactions between BOP business model & strategy, partnerships and products & services (see Figure 47).

The red color in the arrows indicates the average" result of the findings. It suggests that in this small sample of cases a certain preferences appearing in direction of the interactions between BOP business model & strategy, partnerships and products & services. In the researched cases product & service development was mainly directed by the BOP business model & strategy. Also the partnership influenced the product & service development. However, the "BOP business model & strategy" influenced/directed the partnership choice and vice versa.

But as this result cannot be called significantly conclusive enough, the initial assumption of the hypothesis that actually any configuration of influence between the three factors is possible and that the only key prerequisite is that they should be aligned for success in a BOP venture is still possible as a general outcome. The findings do not reject this significantly. The findings only show that in this small sample a certain preference is observed.

8.B.   Conclusion on research questions

We return to the main research question which is a two-fold question and based upon the answers on the objectives start to conclude the answer.

> Part I: How can multinational ICT companies (ICT MNC) gain benefit from entering the Base of the Pyramid (BOP) market in a commercial successful and sustainable way?

The literature provides plenty of clues for preparing the company for the BOP venture (see chapter 3.A). But following a recipe or checklist is not enough. The process and awareness for the BOP concept requires a shift in mindset (cf. Prahalad and Hart, 2002), namely from the poor people of the BOP as a development problem towards the BOP as an active market and even boldly the BOP as a source of innovation. The answer of how the BOP business model should look like is not simple to answer. Chapter 3.A provides up-to-date insight form the literature and chapter 6.A shows the quality aspects of the business model of the researched cases. A myriad of possibilities exist. To assess the business model, the framework of business model qualities can be applied (Klein, 2008). This framework was used for analyzing quality aspects of BOP business models concerning value creation, local capacity building, embeddedness, learning through native capability and scalability (see page 34).

None of the researched companies entered the BOP market on its own. For this journey one needs intelligence data and experience on the ground and then the right partnership comes at hand. This also requires a shift in mindset as unconventional partnerships prove to be invaluable when engaging with the BOP. Unconventional partnerships are not everyday practice for all those involved and caution should be used to mitigate the issues that can affect the health of the partnership (see chapter 7.C and Table 32). Those issues are categorized as: categorized as driving force factors, skill factors, input-output factors, socio-cultural factors, systems factors, and trust factors.

It's not only about partnership with local for profit partners, but it extends to nonprofit organizations and even includes representatives of the BOP community as well. The latter has its implications on BOP products and service development. The BOP people are not only included as consumers in the selling of the products and services ("selling to the poor"). The researched companies include BOP people as entrepreneurs in their distribution system. The BOP people actively participate in the selling as being part of the value chain as local entrepreneurs, distributors etc. This involvement can lead toward a positive spiraling development for the BOP community as the products and services, if

appropriate, offer employment opportunities and productivity enhancement which consecutively lead to an increase in spending power (cf. Figure 11).

Furthermore the involvement of the BOP community in the product en services creation and design process was key for understanding the needs of the BOP. In all researched cases the companies spend much time on the ground within the BOP community and used multidisciplinary field research. The researched companies did not go as far as the BOP-protocol (see appendix D) would prescribe and opted not for total co-venturing with the BOP community. However in some cases the elements of the philosophy of business co-venturing were visible. This suggests that a shift in mindset from just "selling to the poor" (BOP 1.0) toward "Business co-venturing" (BOP 2.0) is taking place and I suggest to label this in-between phase a hybrid form of BOP 1.0 & 2.0 strategy (cf. table 9). The research also suggests that companies need to align on one way or another "BOP Business model & strategy" with the chosen "Partnership" and the "BOP Product & Service development".

From the sustainability perspective the "planet" aspect has been less highlighted by the researched companies so far. Time will tell whether a merger of clean technologies and BOP strategy will actually take place in the provision of ICT products and services to the BOP but it seems inevitable that something will happen as natural resources become scarce.

Part II: And what could be the opportunities in the BOP market for multinational ICT companies?

The research has shown a variety of opportunities exist for commercial and sustainable viable business with the Base of the Pyramid. The literature study reveals in chapter 2.C the opportunities that exist in the BOP market (Prahalad and Hart, 2002, Prahalad, 2005, Hart and Christensen, 2002).

- BOP has massive and a growing **underserved markets**.

- Many local **innovations** can be leveraged across other BOP markets (e.g. disruptive innovation and leapfrogging).

- It is also argued that by getting engaged in BOP markets, multinational companies can learn about important capabilities, practices and innovations that they might **transfer to their higher-income markets** (e.g. innovation blowback).

The findings in chapter 7.A confirm all these opportunities.

Multinational ICT companies can help the Base of the Pyramid to develop, but multinational ICT companies can also learn from Base of the Pyramid markets.

8.C.   *Limitations of study*

Before addressing the limitations of the research some reflective remarks are made on the followed research method (i.e. multiple case study) and analysis frameworks derived from the literature research.

The guidelines for a multiple case study by Yin (2003) proved to be a an invaluable resource. The method has proven its practicality for qualitative research and so it did for the purpose for this research. The research could not have reached the validity level it has now without access to primary sources. By using semi-structured interviews and combining that information with secondary sources triangulation and confirmation of facts was achieved. It was essential to have aligned to interview questions to the objectives and ultimately the research questions. Training of interviewing skills was an ongoing process. Furthermore the data gathering and presentation in a case report intentionally was carried out with a broader focus in mind than the strict research question, but within the perimeters of the research area. It leads to additional data that has been used for three publications. This proved to be fruitful as it leads to accumulation of evidence for a framework of issues in partnerships between IT MNCs and their local partner.

Looking at the chosen research method (i.e. multiple case study method), this study has its limitations in that it did not conduct its own research on the ground. The study only received primary information of a small sample of IT MNCs, namely five for this thesis research. Data gathering on failed BOP projects of IT MNCs proved to be hard. Only the case of HP pulling out the BOP in 2006 (only remaining there with its CSR activities) because of a change of CEO and consequently strategy is documented and public accessible. However that case is not up-to-date to consider within the thesis; it has been used for the papers published around partnership issues (see appendix C). Therefore the case studies show data of projects that either are successful or still are in the pilot stage, while having to proof their long-term viability.

Some limitations have to be considered when it comes to the way analysis was carried out.

The choice of the business model qualities as an assessment tool for the unit of analysis "Business model & Strategy" is arbitrary in the sense of communication purpose. It has its merit for assessing business models on its preparation for the BOP, but actually it assesses on a meta level. It is derived from the research of Klein based on a large number of cases (150+) in the BOP arena. The direct implication in an actual business model might have been more clearly visualized with "standard" business model frameworks such as the business model ontology of Osterwald (2006). However both that ontology and to certain extent also Klein's framework of business model qualities make it hard to reveal the sustainability aspects. The latter does show socio-cultural and economic development, but none of the models does indicate what happens when it comes to the "planet" side of sustainability (e.g. impact on sustainability of clean or eco-friendly technology and business models). Additional assessment tools were needed and therefore the sustainability-triple-P aspect, BOP 1.0/2.0 aspect

and the value chain scheme were introduced to indicate sustainability respectively the engagement of the BOP in the value chain.

The hypothesis on the relation business model & strategy, partnership and products & services and the way it was presented is completely based on own literature research of a limited set of sources (approximately 14). However, this could be a part of further research instead of considering this a limitation.

The 4A-framework (Affordability Acceptability, Availability and Awareness) was useful to reveal the key-ingredients of the unit of analysis "Product & Service" for the BOP. However it did not show the process of BOP related product and service development. It only summed up the requirements that had to be fulfilled. The literature revalued some recipes like disruptive and embedded innovation. So again for analysis purposes for the unit of analysis "Products & Services) in addition to the 4A-framework also products development was assessed. Possibly the twelve innovation principles from Prahalad might have been a good assessment tool; however these principles cover both the business model & strategy as well as products & services, so it needed careful extraction to analyze those units of analysis separately.

The unit of analysis "Partnerships" was assessed by examining the typology which only labeled the partnership-structure. But for deeper analysis the typology was not enough and therefore an additional assessment aspect was used, labeled "Cooperation". The question remains whether the typology has enriched the insight gained from this research. Obviously it confirmed existing findings (that unconventional partnerships occur).

8.D.   Originality of research & contribution

This thesis research has proved to be both in academic and practical terms relevant. In academic perspective, the study has resulted in an up-to-date overview of BOP literature, organized around three main themes (the main units of analysis of this research). This research reveals the relation and interdependence business model & strategy, partnership and products & services have. Furthermore it shows (a preliminary classification of) issues that may arise in partnerships between IT MNCs and a local partner.

The case studies have been used to assess some aspects from BOP literature and recommendations for further research are outlined in the Implications chapter.

The practical side is the contribution to knowledge dissemination around stakeholders engaged with BOP-projects. The thesis will be shared with the respondents and others working for either IT MNCs, NGOs or organizations involved with the BOP who showed interest in the contents by means of Internet tools Furthermore, the contacts gathered during the research process can get in touch with each other as they have become part of the same LinkedIn community group I used for maintaining research contacts and reinforcing BOP-research particularly in The Netherlands.

8.E.   Hands-on summary

Finally, a short hands-on summary, based upon the findings of this research, is presented which provides some advice for managing BOP projects. It provides advices on all three main units of analysis of this research. Regarding BOP strategy & business model a multitude on configurations exist as described in chapter 3.A. but it is recommendable to assess the qualities of the business model using Klein's framework as has been done with the case studies in this thesis (chapter 7.A). The red color of the arrows indicates the preference in direction of influences from the findings. The arrows suggest that alignment between the three units of analysis should be effectuated.
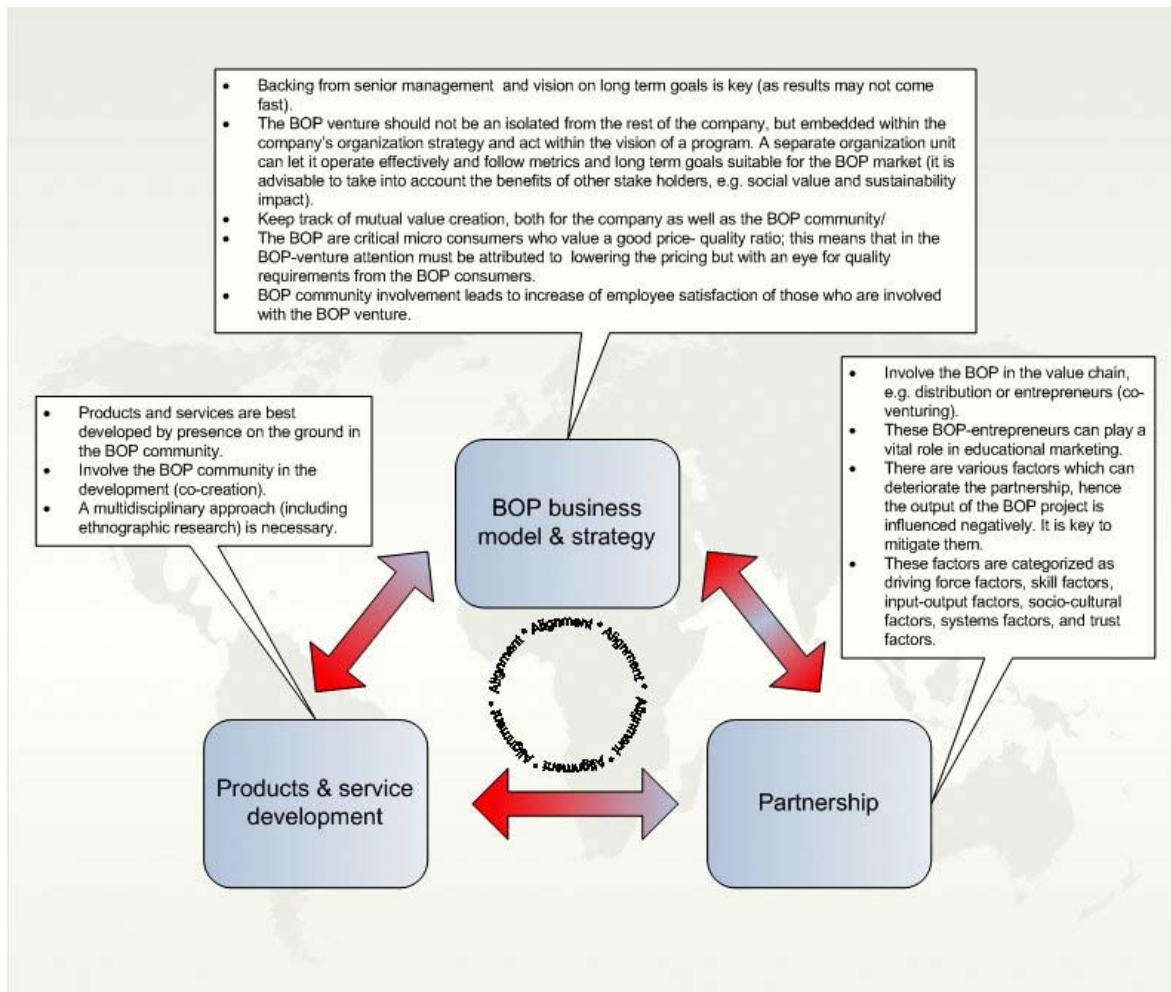
Figure 51: Hands-on summary of advice for managing BOP projects based upon the findings of the research.

9. Implications

This chapter discuses some of the implications of this thesis research to the research field, the practice of the companies and their partners and to education. For navigational purpose the picture on the right indicates the place of this chapter in the research process.
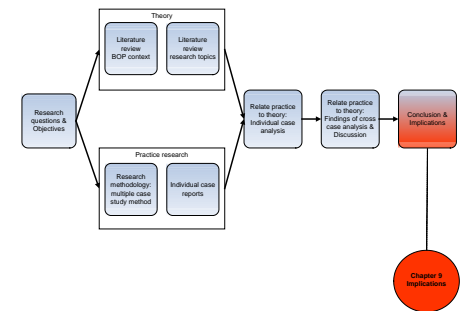
9.A.   Implications in research

As we have seen earlier in the discussion of findings BOP business model & strategy (see Figure 48 on page 138), a certain preference in influence direction occurs between BOP business model & strategy, partnerships and products & services. However caution must be taken when interpreting this result. As an implication of this finding it might be interesting to research in a quantitative manner which configurations occur and whether this is only the case for BOP ventures in which multinational ICT companies are involved.

Furthermore it is interesting to see what impact it would have when multinational ICT companies would also include the routes for alignment that were not taken yet, meaning interaction between factors following the direction of the blue color toned tips of the arrows. Hence, this could enhance the flexibility of operations and could lead to more bidirectional ways of (mutual) interaction and alignment. The question is whether this would provide an advantage to the multinational ICT company and the other stakeholders. Further research is required to proof or reject this.

Another way this research could be followed up is by a more quantitative approach. Combinations of qualitative and quantitative studies mutually reinforce each other and further improve our knowledge in this field. This could provide more solid ground for arguing which good practices occur in BOP business models and strategy etc.

Examples are, conducting quantitative research on business model structure, partnership and products and service development of a large dataset of IT MNCs. Another direction could be to investigate the involvement of SMEs and social entrepreneurs (on their own and in business linkages with MNCs) in the delivery of ICT-related products and services to the BOP and sustainable development for the BOP and compare its effectiveness with that of the IT MNCs; cf. (Raynard and Forstater, 2002).

The scope for the research was multinational ICT companies, in fact western companies. It would be interesting to compare with ICT companies that were created in emerging markets, thus local competitors (some even emerging-market-MNC), like Zain Telecommunication Network (former Celtel) in Africa, Spice Telecommunications Limited in India or Smart Communications, Inc. (SMART) in the Philippines. Are there differences in the way they engage with the BOP compared with western IT MNCs? Further research is needed.

9.B.   Implications in practice

In practice this research could inspire multinational ICT companies to investigate the possibility for engaging with the BOP. Those companies that already have engaged with the BOP might pay notice at the differences between the researched multinational ICT companies. Furthermore it highlights the importance of partnerships for reaching the BOP and cooperation with non-conventional partners. Both engaging with the BOP and cooperating with non-conventional partners require a different mindset and preparation of company employees and management. In the cases it is apparent that long term goals are more realistic than shot term targets. Companies could define metrics for these. It is advisable to train staff for potential culture shock aspects when staying "on the ground" in the BOP community. Furthermore cross-cultural management skills and mutual understanding are needed for improving the partnership with non- conventional partners. The identification of the issues that affect the health of the cooperation might be useful.

From this small qualitative research one cannot suggest "best practices" but the literature research and the case study research conducted, show several options how companies operate and provide them possibly a useful resource for further investigation to improve their own operations when engaging with the BOP. The NGO representatives I encountered while conducting this research might find the findings useful for understanding the benefits companies seek in partnerships with them when engaging with the BOP.

Ecological sustainability is a challenge for business, but academics argue that BOP strategies (in conjunction with clean technology) might proof to be invaluable for companies, leading to a competitive advantage.

To conclude on this: it is advisable that management has long-term targets set for BOP ventures and use appropriate metrics to measure its output. Employees involved with BOP projects should be staying significant time on the ground for better engaging with the BOP and understanding the needs.

9.C.   Implications in education

As mentioned in the implications for practice section, it is useful that business students (MBA etc.) are made aware of the fact the some projects need a long-tem horizon and operate with different metrics. More attention is need in the training of cross cultural management skills, as partnerships with non-conventional partners need and thrive with mutual understanding. For instance internships in cross-sectoral projects can raise that understanding.

Furthermore sustainability could be a key driver for future business, that means that the next generation of business leaders have to be prepared for identifying social, economic and ecological impact business can have.

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Appendices

A. Introduction memo for research

The World Economic Pyramid

Individual annual income
(US$/PPP in Purchasing Power Parity)

0.9 billion	Mature markets: >$20,000
2 billion	Emerging markets: $2,000 to $20,000
4 billion	Survival markets: <$2,000

Population

Most companies focus on mature and emerging markets while the huge market of 4 billion people living on less than $2,000 a year goes largely untapped.

World Resources Institute

BOP & ICT or the Base of the Pyramid approach reflected on the strategy of multinational ICT corporations

LinkedIn www.linkedin.com/anandsheombar -
E-mail anand.sheombar [at] gmail.com

Dear reader,

I am conducting my master's thesis research in the field of business informatics at the Utrecht professional university for applied sciences or 'Hogeschool Utrecht' (to be ready around summer 2009). The subject of my research concerns the way IT and telecommunication companies could approach the Base of the economic Pyramid market, commonly referred to as BOP.

This BOP market consists of approximately 4 billion people and has huge potential benefits for these companies and at the same time NGOs recognize the potential positive impact the usage of IT and telecommunication could have for the development of our world citizens who populate this base of the pyramid.

For my thesis research I am interested to meet people who work in IT or telecommunication companies, or in NGOs or as local entrepreneurs who are involved in projects concerning IT or telecommunication for the people at the Base of the (economic) Pyramid.

If you fit this description, I am looking forward to get in touch with you!
Or, if you have interesting reports or other material for me, I am glad to hear from you.

Best regards,
Anand Sheombar (ICT consultant & part time student)

Research questions

The research working title is: "BOP & ICT or the Base of the Pyramid approach reflected on the strategy of multinational ICT corporations". To clarify this, I have formulated this as a research question.

This research question is in fact a two-fold question:
- How can multinational ICT companies (ICT MNC) gain benefit from entering the Base of the Pyramid (BOP) market in a commercial successful and sustainable way?

- And what could be the opportunities in the BOP market for multinational ICT companies, as well for other stakeholders?

The scheme illustrates the interactions studied in this research: those between the multinational ICT company and the local partner and those with the targeted market: the Base of the Pyramid market.

ICT company ⟷ Local partner (NGO / local entrepreneur etc)

BoP market
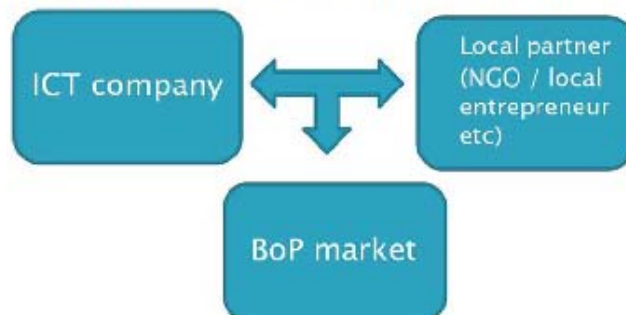
B. Questions topic list for ICT MNCs and local partners like NGOs

The list of questions that were used for the semi-structured interviews. *Check: before interview: personal introduction, test recording after approval. Confirm data usage for academic research.*

Number	Topic	ICT Company	Local partner, e.g. NGO
1.	Administrative	Introduction: could you introduce yourself? What's your name, your function or responsibility?	Introduction: could you introduce yourself? What's your name, your function or responsibility?
2.	BOP	What do you know about the BOP?	What do you know about the BOP?
3.	BOP -Project	Is your company involved with projects of product development for the Base of the Pyramid Market? If so, could you provide an example?	Is your organization involved with projects for the Base of the Pyramid Market? If so, could you provide an example?
4.	Project	How did you start?	How did you start?
5.	Cooperation	How did you get in touch with local partners e.g. NGOs?	How did you get in touch with the ICT company?
6.	Cooperation	Was the cooperation with the local partner based on equal relationship?	Was the cooperation with the company based on equal relationship?
7.	Strategy	Was there an orchestrated strategy or were things just handled along the road.	Was there an orchestrated strategy or were things just handled along the road.
8.	Strategy	Could you tell me something about the decision structure and how were resources from your company allocated?	Did the project fit within the aims of your organization?
9.	Outcome	Did the project succeed? (How) was this measured?	Did the project succeed? (How) was this measured?
10.	Outcome	Did the local people benefit from it? And why do you think so?	Did the local people benefit from it? And why do you think so?
11.	Products & Services	If you had a project, did the outcome result in different products for the BoP market compared with the Top of the Pyramid market? Did these BoP products influence the ToP market	
12.	Products & Services	What kind of service of product was delivered? And did one had to pay for this?	What kind of service or product was delivered? And did one had to pay for this?
13.	Focus market	Who was the target group of 'consumers'; how large was the group?	Who was the target group of 'consumers'; how large was the group?

C. Spinoff of thesis research: PACIS paper on partnership issues in BOP ICT projects

This is one the articles published recently as a spinoff off the thesis research: (Smit et al., 2009a). Other articles published include Smit et al. (2009b) and Silvius et al (2009).

THE PARTNERSHIP HEALTH OF ICT PROJECTS IN DEVELOPING COUNTRIES

Jakobus Smit
Utrecht University of Applied Sciences, The Netherlands
kobus.smit@hu.nl

Anand Sheombar
Utrecht University of Applied Sciences, The Netherlands
anand.sheombar@gmail.com

Gilbert Silvius
Utrecht University of Applied Sciences, The Netherlands
gilbert.silvius@hu.nl

Abstract

There have been, generally speaking, for many years high expectations that information and communication technologies (ICTs) can make a contribution toward development. However this is not always achieved and, as has been found by several researchers, this unfavourable outcome is, amongst other things caused by partnership problems between partners.

The basic argument of this paper is that successful contributions in developing countries that are made with, and through, ICT are partly dependent on the health of the relationship between partners. It would therefore be necessary to study the factors that may influence the health of the relationship between partners in ICT related projects in developing countries. This could eventually serve as a foundation for some form of framework of partnership issues in such projects. This framework could then serve as the foundation for further research into developing a diagnostic instrument for this purpose.

The research was conducted in 10 projects involving multinational ICT companies, which were studied as separate case studies. Qualitative data was collected using the case study method and the data was analyzed for emerging patterns. It was found that problems with partner cooperation revolve around six core categories namely driving force factors, skill factors, input-output factors, socio-cultural factors, systems factors, and trust factors. These are explained in this paper. It is suggested that further research can serve to interrogate the proposed factors.

Keywords: partnership cooperation, partnership health, partnerships for development, information and communication technology for development, multi-national companies, development projects

1   Introduction

The idea that information and communication technologies (ICT) can play an important role in the developing world is not new. Heeks (2008) suggests that the history of using technology in developing areas started with the first computer in Kolkata in 1956 for the use of statistical calculations. ICT then filled the role of administrative function, mostly for governments. Things have progressed over the years to more advanced and complicated efforts, not in the least as a result of the internet and the World Wide Web. The lessons learnt so far are about sustainability, scalability, and evaluation according to Heeks (2008). Projects needed to have a longer life, needed to reach more people, and needed some form of objective assessment.

But at the beginning of the 21st century stakeholders also started focusing on partnerships as a potentially influential factor in the success of development efforts in general (Van Tulder, 2008). The term 'partnership' became the new buzzword and, according to Van Tulder (2008) partnerships were being regarded as essential to the goal of addressing increasingly complex challenges.

This is also true for ICT projects in developing areas and researchers such as Das and Teng (2001), Kramer et al. (2007), Seelos and Mair (2007) and Simanis et al. (2008a) emphasise that the success of such projects is dependent on the health of the relationship between partners. A specific issue of interest for the purpose of this paper is therefore the nature of the relationship and interaction between multinational ICT companies (ICT MNCs) and local partners.

For the purpose of this paper the definition of partnerships as discussed by Mullinix (2002) will be used, namely that partnerships refer to "an association between two or more persons, groups, or organizations who join together to achieve a common goal that neither one alone can accomplish". Furthermore the term 'partnership health' will, for the purpose of this paper refer to the general status, or well-being, of the relationship between partners in a BOP project.

The next section provides the research questions, as well as some background to the study. This is followed by the literature review. The methodology is described and finally the findings are discussed.

2   Research questions

The basic research questions for the research that is reported in the paper were:
What are the difficulties that ICT MNCs experience in their cooperation with partners in their efforts to reach markets in developing countries;
And more specifically, how could these observed issues be categorized as factors that influence the health of these partnerships?

For clarification purposes it needs to be mentioned that in this research project the relationships that ICT MNCs have with local partners was identified as always including a local for-profit organization and sometimes also including local non-profit organizations who act as intermediaries. Figure 1 clarifies this explanation. The relationships marked with stars indicate the area of interest for this research, namely the relationship between ICT MNCs and local partners, albeit non-profit or for-profit organizations.
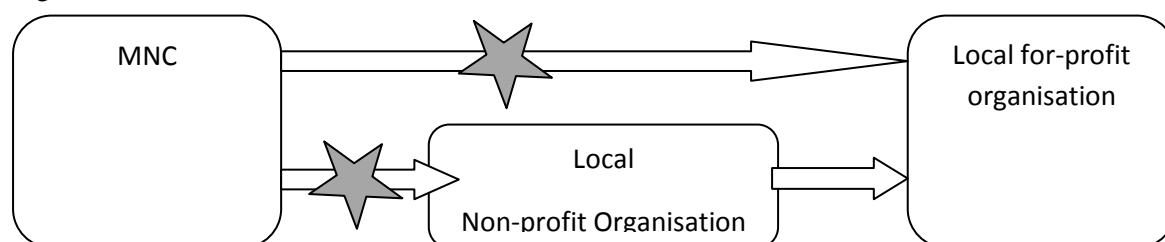

Figure 1: The relationships between partners

In order to find answers to these questions the research project followed a general exploratory research design consisting of an in-depth study of the literature, followed by data collection and analysis using qualitative research methods. The result is a set of factors that could serve as the basis for further research.

The next section of this paper details some existing research work that has been done in this area, as reported in the literature, with specific reference to relationship issues that may have an impact on the success of ICT projects in developing countries.

3 Literature Review

Recent years have seen a significant growth in the number and size of projects where partnerships are being regarded as a way to address complex problems. Zadek and Radovich (2006) suggest that partnerships are "….*emerging as the institutional 'pathway of choice' across an extraordinary range of activities*." It would be reasonable to suggest that this choice is driven by expectations of greater success. Jamali & Keshishian (2009) indeed argue that strategic partnerships can lead to better results for all stakeholders.

The notion that the success of projects is related to the partnership between stakeholders in development efforts in general is not new. London and Hart (2004), for instance, conducted an exploratory analysis, covering in total 24 cases across the Americas, Africa and Asia and 4 additional cases of MNCs which were extremely active in developing markets across the world. The findings show that successful ventures include (proactively) developing relationships with non-traditional partners, both profit as well as non-profit organizations. Jenkins (2007) suggests that collaborative action by business and development communities is important in order to achieve systematic impact. When it comes to ICT related projects, Kramer et al. (2007), similarly suggests that strong partnerships have the potential to expand economic opportunity.

Other advantages that can be achieved through partnerships also enjoy attention in the literature. Jenkins (2007) for instance found that collaboration allows partners to share knowledge and information, pools scarce or diverse assets and resources, access new sources of innovation, create economies of scale and enhance the legitimacy of the parties' own individual activities. Mullinix (2002) essentially suggests that partnerships are being seen as an important way to address complicated problems.

However, it is clear from the literature that these partnerships require some attention, and that purely creating a partnership does not guarantee success. Das and Teng (2001) for instance regard trust is an important factor of successful partnerships. They argue that some effort should be made towards fostering trust, and that this is the main challenge of non-commercial stakeholder partnerships in low-income markets because it leads to effective cooperation. Unwin (2005) highlights 7 key elements that need to be in place for the success of ICT for development (ICT4D) partnerships: Trust; Focus; Champions; Sustainability; Balance between demand and supply; Networking and Transparency and sound ethical basis.

Building on the findings of their study using three cases, two from Bangladesh and one from India, Seelos and Mair (2007) recommend the monitoring of the dynamics of the environment and/or the development of the partner's overall model and strategic objectives. They argue that this helps to recognize and address emerging threats to the sustainability of the alliance.

More than 9 cases in the field of ICT companies were examined by Kramer et al. (2007). Their findings show that collaboration helps ICT companies address two fundamental challenges to inclusive business models. The first is establishing and strengthening the value proposition. The second challenge is business model innovation and implementation. ICT companies have enormous potential to leverage their collaborative capabilities to expand economic opportunity more widely in developing countries.

Jenkins (2007), draws on the results of eight industry-specific projects and identifies four key strategies that companies use to expand economic opportunity. These strategies are: creating inclusive business models, developing human capital, building institutional capacity, and shaping public policy. She suggests that the business community and large firms have both the capabilities and the strategic business reasons to play a major role in creating economic opportunity. Jenkins (2007) goes on to identify the importance of collaborative action in achieving systemic impact and scale by the business and development communities. The findings show that

Although the literature reveals much attention to these kinds of issues and several lists of strategies and guidelines, there seems to be little effort to effectively explore these issues in a structured way using a more holistic point of view of cooperation issues in the MNC/Local Partner relationships, particularly in the ICT arena. The following section describes the research process in a project of which the aim was to move towards such a frame of reference.

4 Research Process

4.1 Research Method

As a research method, the case study is used in many situations to contribute knowledge of group, organizational, social, political, and related phenomena. It has been a common research strategy in social and political science, but has found usage in business and economics where for instance the structure of a given industry is investigated. As Yin (2003) states "…the case study method allows investigators to retain the holistic and meaningful characteristics of real-life events…".

Each individual case study consists of a "whole" study, in which facts are gathered from various sources and conclusions drawn on those facts. For this research the use of multiple case studies is preferred in order to be able to generalize and raise solid evidence.

4.2 Sources of evidence and data collection

The targeted organizations consisted of either ICT MNCs or internationally operating NGOs who closely collaborated with an ICT MNC in its projects. In order to obtain a consistent group of participating organizations and projects they were selected on the basis that they were operating into and within Africa. The second selection criterion was that the MNC or NGO was involved in a project aim at the BOP market. The third criterion was that it should be an ICT related project; in practice that meant that MNC should be an ICT MNC or that the NGO collaborated with the ICT MNC.

In order to get access to these organizations some conferences and seminars were attended to get in touch with representatives of the target group. Two of the respondents were approached after being introduced via acquaintances, i.e. "snowball sampling" (Heckathorn, 2002).

The result was the identification of (and access to) 10 separate projects involving a variety of organizations and partners that could participate in the investigation. Within each project a variety of sources were used for data collection

Yin (2003) identified several sources of evidence in case studies and he suggests that a combination of different sources can provide more reliable data. Case studies often use triangulation, which means that data items are affirmed from at least one other source and normally by another method of data collection. Golafshani (2003) highlights that triangulation also serves as a way to improve the validity and reliability of findings in qualitative research.

The kind of documents that were used as sources for this project included existing case reports, administrative documents, and multimedia online resources. In the interest of triangulation the documents served to confirm the evidence from other sources. Archival documents included service records, organizational records, lists of names, survey data, and other such records. Desktop research provided background material and furthermore provided means of crosschecking information.

Interviews are one of the most important sources of case study information (Yin, 2003). They may propose solutions or provide insight into events. They may also confirm evidence obtained from other sources (Tellis, 1997). Semi-structured interviews were used for the purpose of this study and key respondents were asked to comment about certain events and issues. The discussions revolved around the topic of problems related to cooperation with partners and issues and success factors related to this. All the respondents gave permission for recording the interview. These included 8 interviews with senior members of ICT MNCs and NGOs. The interviewees were either directly active in the described projects or were seeing to its outcome . As Yin (2003) recommends, a case study protocol was used, which included an overview of the project, field procedures, question list and guidelines for the report.

Table 1 lists the participating companies, some details about the projects they were involved in as well as the sources of evidence that were used in each case.

Project	Description	MNCs	Local partners	Source(s) of information
M-Pesa	Mobile payments & banking	Vodafone (Safaricom in Kenya)	microfinance organization Faulu-Kenya	Case reports, website, research papers, cf. (Vaughan, 2007, Hughes and Lonie, 2007c, Lonie, 2007, DFID, 2007), interview with sr. manager of company involved.
Village Phone in Uganda	Rural shared telephone facility	Grameen & Nokia	Nine microfinance institutions (MFIs) and a cellular provider, MTN Uganda.	Case reports, website, research papers, cf. (Tetelman et al., 2004, Knight-John et al., 2005a, Keogh and Wood, 2005, Nokia, 2006b, Lakshman, 2007, Grameen-Foundation, 2008b)
Village Connec-tion	Rural local phone network in the village	Nokia-Siemens	Local entrepreneurs	Case reports, website, research papers, cf.(Granath, 2007a, Nokia-Siemens, 2007, Schwartz, 2008), interview with sr. manager of company involved.
Unlimited Potential	Various ICT activities aimed at emerging markets.	Microsoft	NGOs, local authorities, community	(Microsoft, 2007c, Bossicard, 2007b), interview with manager of company involved.
Public-private partner-ships - Tapping into innovation	IT consultancy activities in developing countries.	Several companies ICT MNC (like Altran, Atos Origin & Cap Gemini)	IICD acted as intermediary for several local NGOs in 9 countries in Africa and Latin America.	Case reports, website,cf. (Rozendal, 2002, IICD, 2004, IICD, 2006, IICD, 2007), interview with manager of IICD involved with projects.
Public-private partnerships - ICT & media	IT consultancy activities in developing countries	Several ICT MNCs like Logica CMG, KPN	Hivos acted as intermediary for several local NGOs.	Case reports, website, research papers, cf. (Doodewaard, 2006a, Doodewaard, 2006b, Muller and van Tulder, 2006), interview with NGO officer involved

				with projects.
i-Community in South Africa	Telecenter.	HP	Mogalkwena Telecenter	Case reports, conference proceeding, research papers, cf. (Didier, 2003, WBCSD, 2005, McFalls, 2008)
World ahead (e.g. Class-mate PC)	Sustainable technology for users in developing countries.	Intel	Local government/ civil society	Case reports, online multimedia, research papers, cf. (Intel, 2006b, eLA, 2007, Intel, 2007a) interview with sr. manager of company involved.
Digital Bridge	Bringing connectivity to the unconnected	Alcatel-Lucent	ATD Quart Monde in Madagascar,	research paper, Web page cf. (Alcatel and Infodev, 2005, Alcatel, 2006), interview with sr. manager of company involved.
Communication for all	Bringing communication to all.	Ericsson	Health care NGO	Conference paper, cf. (Nielsen, 2008, Fontanini, 2006), interview with sr. manager of company involved.

Table 1: Participating companies and their projects.

4.3 Data analysis

For analyzing case study evidence Yin (2003) suggests three strategies for general use: one is to rely on theoretical propositions of the study, and then to analyze the evidence based on those propositions. A second is to use rival explanations by setting up a framework based on these rival explanations. The third technique is to develop a case description, which would be a descriptive framework around which the case study is organized.

For the purpose of this research multiple cases were described and cross-analyzed, effectively following, in part, the suggestions by Yin (2003) of a more specific analysis technique called cross-case synthesis. However for this project word tables, as suggested by Yin (2003), were not used, but rather the basic coding techniques of grounded theory as suggested by Glaser and Straus (1967) and Glaser (1978). The reason is that the use of constant comparative analysis, for instance, lends itself much more towards the identification of categories such as those being presented in this paper. It has to be noted however that the categories suggested here was not created only from data collected in the field, but was also guided by propositions in existing literature as can be seen in the next section that present the findings and a discussion of the proposed factors. The result should therefore not be regarded as a grounded theory.

Constant comparative analysis can be explained, rather simplistically, as a process of looking for patterns in data and conceptualising them. In practical terms one has to compare incident with incident (and incidents with concepts) in the data, by looking for patterns indicating similarities and differences between incidents. Similar incidents are coded into a category, and the category is given a conceptual name (Glaser, 1992). In this project the resulting categorisation therefore enjoys a close link with data that was collected in the field and is therefore 'grounded' in data. The next section serves to present the categorisation of factor that influence partnership health in ICT projects in developing countries.

5   Findings and Discussion

The data reveals several factors and these were categorized as driving force factors, skill factors, input-output factors, socio-cultural factors, systems factors, and trust factors. For the purpose of presenting some kind of 'chain of evidence', Table 2 firstly illustrates how the identified factors relate to the data by presenting each project, then an example of an observation or direct quote from the project, and finally the factor into which it was categorised. The table is followed by an explication of each factor in which some references to the literature are also added. Finally Table 3 summarizes perspectives from the literature that relate to the identified factors.

Project	Quote or example	Factor(s) identified
M-Pesa	• The differences in operation culture between profit and nonprofit organizations and the difficulties it brings in cooperation.	Socio-cultural Factors
	• Integrating with Faulu's back office information management systems proved to be an obstacle. • The actual usage of implemented systems tends to be different from the intended usage.	Systems Factors
Village Phone in Uganda	• ICT MNCs struggle to deal with the diversity in skill levels found	Skill Factors
Village Connection	• The partnership exhibits unequal risk sharing. • The nature of the cooperation transforms from a partnership to employer-employee relationship.	Input-Output factors
Unlimited Potential	• "If 'Company X' helps to grow ICT development and the local ecosystem then there needs to be protection of intellectual property".	Input-Output factors
	• "If there is not a sustainable model, mutual benefits the project will fail."	Driving Force factors
Public-private partner-ships **- Tapping into innovation**	• Different foci on results versus process by different partners. • Tendency of ICT MNCs to be technocratic.	Driving Force factors
	• ICT MNCs tend to have unrealistic expectations about local skills and knowledge.	Skill Factors
	• "Sometimes IT consultants promise more than can be delivered or they expect that local partner will do more".	Trust Factors
Public-private partnerships - ICT & media	• "If there is not a sustainable [business] model and mutual benefits, the project will fail." • Failing to maintain continuous communication with the partners can cause misalignment problems.	Driving Force factors
	• "You have this underestimating of knowledge…we have forgotten that there already exists some knowledge… [of ICT]"	Skill Factors

	• "IT Consultants are not always mentally prepared for the challenge they face on site"	Socio-cultural Factors
	• "It starts with mutual understanding: the local partner has to understand what the IT MNC wants and vice versa. Trust is essential…" • "…this 'willingness to please' led to dissemination of misinformation. A possible motive was the eagerness to keep the partnership going…"	Trust Factors
i-Community in South Africa	• Focus on short term profit strategy and therefore this project was abandoned.	Driving Force factors
World ahead (e.g. Class-mate PC)	• Chang of priorities of the partner	Driving Force factors
	• "You need have to patience. Results come not fast."	Socio-cultural Factors
Digital Bridge	• It took a year before one finally understood each other and the project could starts.	Socio-cultural Factors
	• "One needs time for mutual understanding before going in a project."	Driving Force factors
Communication for all	• IT MNCs in general want to act fast, whereas the local partner has a different, slower, pace, which causes some friction" • Inflexibility from the NGO according to the MNC. • ' although…a NGO is much easier than working with the UN"	Socio-cultural Factors

Table 2: The 'chain of evidence'.

As can be seen form Table 2, the identified factors relate closely to data that was collected in the field. These factors are now explained further in the following sections.

5.1 Driving Force Factors

Driving Force factors refers to problems that occur as a result of misaligned fundamental driving forces that shape the goals, purposes and process of ICT projects in developing countries, both from the perspective of the ICT MNC as well as that of local partners. The data reveals that problems arise when the goal and purpose of the project are different for each partner, and when these differences are not acknowledged. "If there is not a sustainable [business] model and mutual benefits, the project will fail." one of the respondents told us.

Another driving force is that which involves the different foci on results versus process by different partners. A respondent stated: "[western] consultants are very result orientated, whereas in developing countries there is more focus on the process. …How to explain this to a [western] consultant?". In support of this Kumar, et al (2005) highlight the difficulties this creates and mention how projects can fail as a result of a mismatch in this regard.

At the same time the data also reveals that another more covert driving force could also lead to cooperation problems namely the tendency of ICT MNCs to be technocratic or technology driven in situations where small business driven projects may rather be more successful. One respondent said:

"IT consultants, often male consultants, are technology driven. IT will become a target instead of the means for an aim ". This tendency is also suggested by Chio (2005).

Another, fairly debilitating, issue for projects that is revealed by the data is that of failing to get local input before investments are made. This is a critical driving force that often gets neglected. In the literature Gurstein (2005) laments the over-emphasis in research on "top-down, closed access and 'expert' driven" (p. 3) research in the ICT4D area. Ranganathan (2005) adds that actual ICT implementation (in this case within the educational sphere) itself suffers the same fate and that a bottom-up approach that build on indigenous knowledge provides much more sustainability.

Furthermore the data reveals that as expectations and aims tend to shift through time, failing to maintain continuous communication with the partners can cause further misalignment problems. This confirms Seelos and Mair's (2007) argument, which effectively implies that failure to continuously monitor the relationship could add to difficulties in the cooperation.

5.2 Skill Factors

The data reveals that ICT MNCs tend to have unrealistic expectations about local skills and knowledge on a variety of topics ranging from IT skills and knowledge to managerial skills and knowledge. The word 'unrealistic' is used here because ICT MNCs tend to either over-estimate or under-estimate the knowledge and skills levels, as this phrase of one the respondents illustrates: "You have this underestimating of knowledge…we have forgotten that there already exists some knowledge… [of ICT]"

In addition it emerged that ICT MNCs struggle to deal with the diversity in skill levels found at the local environment. An example is the Nokia project for shared telephony in Uganda where it was found that skill and knowledge levels vary greatly from one individual or partner to the next. The difficulty that ICT MNCs seem to experience is that of becoming and staying aware of this variety of resources as well as tapping into and cultivating these resources.

Prahalad (2005), Simanis et al. (2008a) and Jenkins (2007) highlight the importance of this kind of collaboration and sharing of skills and knowledge.

5.3 Input-Output Factors

Input-Output factors refer to difficulties that may arise as a result of unequal investments by partners in projects, as well as unequal gains by partners from their projects. The data reveals in some cases that the partnership exhibits unequal risk sharing. Very often one party has the burden of all financial investments. Local entrepreneurs most often do not have the means to bear a high investment. When local entrepreneurs do not find their own financing and ICT MNCs have to be the majority investor, the nature of the cooperation transforms from a partnership to employer-employee relationship.

The fact that there is unequal risk sharing may not be new; in fact it may well be argued that many ICT projects in developing countries are characterized as such, even with the knowledge and agreement of both partners. However a matter for concern may be the impact that this inequality could have on cooperation in terms of aspects such as misaligned driving forces. The reality is that those who take the most risk are more careful with a project than those who take less risk.

In addition certain outputs of projects might be cause for problem. Matson (2006) highlights problems in business partnerships related to intellectual property and patents. This may be true for profit-profit relationships, but even more so in profit-nonprofit settings as encountered between ICT MNCs and NGOs. In these partnership new products and services may arise which have a potential market value. The sharing of revenues and protection of investments is an aspect common to ICT MNCs but unfamiliar terrain for their nonprofit partners. "If 'Company X' helps to grow ICT development and the local ecosystem then there needs to be protection of intellectual property", a senior manager stated.

It would seem that all partners are not always explicitly aware of their mutual interest and potential mutual gains. It is not stated that "selling to the poor" is the foremost aim of ICT MNCs, but it is an aspect which arises in sustainable business (Prahalad, 2005, Simanis et al., 2008b), and it brings the need for agreement upon the spinoff of ventures on the surface. Trust will be a relevant factor in this (Das and Teng, 2001).

5.4 Socio-cultural Factors

A natural difficulty that organisations experience when making investments in developing areas are those related to social aspects of the partnership. In particular there are those obvious difficulties related to cultural differences. The data reveals that one or more partners seem to experience difficulty at some point in the relationship in understanding the behaviour of partners, and developing an understanding of the local environment. One respondent said that IT MNCs in general want to act fast, whereas the local partner has a different, slower, pace, which causes some friction while adjusting to a common rhythm. Some respondents touched the differences in operation culture between profit and nonprofit organizations and the difficulties it brings in cooperation, although one respondent stated:" Working with an NGO is much easier than working with the UN".

These difficulties were also highlighted by London and Hart (2004) as discussed earlier, and they refer to the issue of social embeddedness. One such social issue is that of culture shock, which refers to general feelings such as frustration and anxiety that people experience while living and working in a different country (Oberg, 1960). "IT Consultants are not always mentally prepared for the challenge they face on site", a respondent said. Business people from ICT MNCs seem to experience business culture shock when having to spend time in the local environment, an issue that has enjoyed some attention from Marx (2001). She suggests that business people experience problems in something that is called the culture shock triangle; referring to three problem areas namely: an emotional side, a thinking side and a social side.

There has been some interest in the phases that people go through when adjusting to a new environment (Ward et al., 1998). The generally accepted explanation has for many years been the U-curve theory, originally suggested by Lysgaard in 1955 according to Ward et al. (1998).The explanation is that cultural adjustment is a process that starts with an initial phase characterized by positive perceptions and experience (referred to as the "honeymoon" phase), followed by a phase where the situation is experienced more negatively, and ending with final phase where adjustment has taken place. Ward et al. (1998) however propose that problems with adjustment are actually greater at the entry point and tend to decrease over time. This effectively implies that approaches to cultural adjustment programmes for individuals in BOP projects may need to be revisited.

5.5 Systems Factors

The data reveals that systems integration seems to be an issue. Although partners expect that some form of integration is required it seems that problems are often more than expected. One example is that of the Vodafone project in Kenya where the integration of systems with the local partner's back-office was a noteworthy obstacle. Butt et al. (2008) suggests that these problems are common confirming the findings of this study.

In addition it seems that it may also happen that the actual usage of implemented systems tends to be different from the intended usage. This may result in redundant systems. An example comes once again from the Vodafone project in Kenya, where the original intention was micro financing, but in reality users only utilized the system to make person-to-person payments, effectively making the installed micro-loan systems redundant (Hughes and Lonie, 2007).

5.6 Trust Factors

The data reveals that for establishing a solid partnership a fair amount of mutual trust is needed. One of the respondents said "It starts with mutual understanding: the local partner has to understand what the IT MNC wants and vice versa. Trust is essential…" This is confirmed by Das and Teng (2001). The data reveals in certain cases instances of partners (on both sides of the relationship) that promise more than what could be delivered. A respondent said: "Sometimes IT consultants promise more than can be delivered or they expect that local partner will do more". This could clearly impact on the trust relationship between partners.

An interesting observation is what seems to be a high level of eagerness on the side of the local partner to report in a favourable or positive way to the ICT MNC or sometimes the NGO acting as an intermediary party. "The local partner has the tendency to tell you what you want to hear", a respondent stated; "…this 'willingness to please' led to dissemination of misinformation. A possible motive was the eagerness to keep the partnership going..."

It is possible to borrow a term from the social sciences research field namely that of "social desirability bias" which refers to the tendency of research subjects to behave in a way that they think may be perceived as favorable by the researcher (Randall et al., 1993). However in the context of this paper a more suitable term may be "business desirability bias".

The discussion above explains the six categories of factors that may influence the health of partnerships and the discussion combined the findings from the case study with information form the literature. For clarification Table 3 illustrates how the categories that were identified in this research are supported in literature.

Category of Factors	Examples of Relevant Theoretical Perspectives
Driving force factors	Different foci on results versus process (Kumar et al., 2005) Technocratic approach of MNCs (Chio, 2005) Over-emphasis on "top-down, closed access and 'expert' driven" research (Gurstein, 2005) Bottom-up approach that builds on indigenous knowledge (Simanis et al., 2008c) Failure to continuously monitor the relationship (Seelos and Mair, 2007)
Skill factors	Becoming and staying aware of the variety of resources, e.g. Prahalad (2005), Simanis et al. (2008a) and Jenkins (2007)
Input-Output factors	Sustainable business (Prahalad, 2005, Simanis et al., 2008b) Business partnerships related to intellectual property and patents (Matson, 2006)
Socio-cultural factors	Social embeddedness (London and Hart, 2004) Culture shock (Oberg, 1960, Marx, 2001) U-curve theory e.g. Lysgaard and (Ward et al., 1998)
Systems factors	Integration of systems (Butt et al., 2008)
Trust factors	Trust as a relevant factor (Das and Teng, 2001). "Social desirability bias" (Randall et al., 1993)

Table 3: Examples of Relevant Theoretical Perspectives for the identified Categories of Factors.

6 Conclusion and recommendations

The categories of factors identified and described in the preceding section were created through analysis of data collected from a variety of sources, with the purpose of creating a basic and provisional frame of reference. Certain limitations of this research need to be acknowledged. A fairly small sample of projects (10) was used and these projects were only those that specifically involved local for-profit organizations. The question of whether these findings can be generalized to other ICT projects or even other development projects can only be answered through further research.

Clearly this categorisation also requires some work, in particular confirmation of the patterns (or core categories) that were identified. To this end further research on the stability of these core categories is required. In particular it might be useful to conduct further qualitative research in which these categories could be further investigated with the aim of obtaining richer descriptions of these issues, and, perhaps, to adjust the existing categories for better fit with newly collected data.

Finally further research may be required in order to investigate the relevance of contextual issues, such as the nature of partnerships, and their impact on project success. It could for instance be argued that certain types of partnerships (such as ICT MNCs with non-profit partners) experience different problems than others (such as ICT MNCs with profit partners).

Ultimately the factors suggested here could serve as the foundation for the development of a diagnostic instrument to help study the nature of cooperation issues in this field. It would in addition add an extra dimension of assessing the contribution of ICTs to development goals. Nevertheless it can well be argued that this work provides a relatively clear and sober perspective on issues that may be of concern to ICT MNCs and their partners in ICT related projects in developing countries. At the very least players in this area would do well to prepare themselves for these kinds of projects by analyzing the potential pitfalls using these factors as a guide, and then to mitigate them by taking appropriate steps.

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D. BOP Protocol

Key elements of the BoP-Protocol

1. The "Protocol for Mutual Value creation" is based on the perception that conventional market processes and the capitalist system are failing to deliver on the triple bottom line of economic, social and environmental sustainability. This applies in particular to those at the Base of the pyramid, i.e. about 4 billion people of the world population.

2. The proposed paradigm is based on a more thorough (mutual) understanding of local needs and perspectives and the development of business models in partnership with BoP communities. Such an approach needs to be pursued by all the major players in society, with the BoP Protocol placing particular emphasis on the corporate sector (including MNCs as well as medium-sized enterprises). In fact, the corporate sector has to play a critical role in the implementation of the new paradigm of "*development through business*".

3. To facilitate and streamline that role, the BoP-Protocol supports an approach which emphasises key elements, though still leaves wide scope for variations on the strategies and tactics of the different players.

4. Viewed from such a corporate perspective, the Protocol distinguishes three stages or "mutual value chains", this is:

Chain/phase 1: The **"opening up"** phase, which implies a process of immersion, engagement, needs and asset identification, idea generation and general preparation for a new, more comprehensive type of involvement in appropriate business ventures.

Chain 2/phase: "**Building the Ecosystem**", which covers network development, the assessment of resources and capabilities, the development of a business plan for the envisaged venture(s) and a broad-based engagement with the particular community to be affected by the venture.

Chain 3/phase: "**Enterprise Creation**", which refers to be actual start and unfolding of the new venture aimed at the BoP-market, taking into account the growth of this as well as other (affected) local ventures, the outsourcing into local communities and the possible hiving-off of business segments.

Each one of these elements, phases or chains is seen to contain a range of steps, with their sequence (and, in fact, the timing of all the phases) subject to wide variations as soon as we look at real life developments. Thus, the Protocol should be seen as a tool to better understand the different elements and behaviour patterns in the business development process rather than a mechanical sequence of business actions. The phases are drawn on the next page.

Phase I — Opening Up

Enterprise Co-Creation	Market Co-Creation
• **Business Strategy:** Actionable "umbrella business concept" • **Organization Culture:** Cautious trust and deep respect from community members and local CBO • **Team Roles:** Tested cohort of community partners and company team members committed to joint action	• **Brand Recognition:** Broad awareness of company name and strong face-recognition of company team members • **Business Alignment:** Clarity within community around company's general intentions

Phase II — Building the Ecosystem

Enterprise Co-Creation	Market Co-Creation
• **Business Strategy:** Community-tested business prototype • **Organization Culture:** Shared understanding of business model and value created and deep commitment to its success • **Team Roles:** Identification of individual's business and leadership skills and effective group decision making processes	• **Brand Recognition:** Heightened community awareness of emerging company and broad interest in team's efforts • **Business Alignment:** Feeling by broader community of active participation in development and evolution of the business offering

Phase III — Enterprise Creation

Enterprise Co-Creation	Market Co-Creation
• **Business Strategy:** Locally-embedded business enterprise • **Organization Culture:** Organizational culture that reinforces business brand and offering • **Team Roles:** Community business team with requisite management skills to sustain and drive the business	• **Brand Recognition:** Deep embedding of company brand within social consciousness of community • **Business Alignment:** Feeling by broader community of loyalty and commitment to the local business

The tag cloud on the back side was generated with the use of the Wordle web application.