EVALUATING THE 4AS FRAMEWORK IN SERVING THE LOW-INCOME CONSUMER

SELF-HELP HOUSING NEEDS

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ABSTRACT

This research project investigated the applicability of the 4As framework amongst the low-income consumers for self-help housing in South Africa based on the study by Anderson and Billou (2007). In their research they established that in the heart of all organisations' success in serving the low-income consumer; there is development of an approach that delivers the 4As, namely: acceptability, availability, affordability and awareness.

South Africa, like the rest of the developing world, has a dire need to address poverty with regards to shelter as a more visible dimension of poverty. The lack of housing delivery has persisted despite South Africa putting in place a number of housing initiatives meant to alleviate the housing backlog. This research was conducted under the assumption that when people have control and responsibility over key decisions in the housing process (self-help housing), that helps break the barrier to alleviation of poverty and lack of reasonable housing. Recognition of any continuous improvement idea in low-cost housing (like the 4As framework), should help strengthen the self-help housing efforts and help the state achieve more with less effort.

The study was conducted using quantitative method - focused on the consumer perspective and was confined to household owners whose earnings are less than R3,500 per month. This was the target group in the scope of the study regarded as the low-income housing consumer and were designated as 'poor' for purposes of this study.

The study found that the 4As framework does work and can be applied in the low-income consumer market for self-help housing needs. The research also found that affordability and availability were the highest rated by the poor consumers confirming the theory that affordability and availability of products amongst the low-income consumers are the main barriers.

DECLARATION

I declare that this research is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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GLOSSARY

Definition of Terms and Acronyms

- **ANC**   African National Congress

- **ANOVA**   Analysis of Variance

- **BOP**   Bottom / Base of the Pyramid

- **CKS**   Centre for Knowledge Society

- **DoH**   Department of Housing

- **FMCG**   Fast Moving Consumer Goods

- **GoSA**   Government of South Africa

- **IFC**   International Finance Corporation

- **MNCs**   Multinational Corporations

- **NGOs**   Non Governmental Organizations

- **PHP**   People's Housing Process

- **PPP**   Purchasing power parity

- **R&D**   Research and Development

- **RDP**   Reconstruction and Development Programme

- **SA**   South Africa

- **UN**   United Nations

- **UNDP**   United Nations Development Programme

- **WRI**   World Resources Institute

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CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1   INTRODUCTION

South Africa, like the rest of the developing world, has a dire need to address poverty with regards to shelter as a more visible dimension of poverty (Marais, Van Rensburg and Botes, 2003). Access to housing and secure accommodation is an integral part of government's commitment to reducing poverty and improving the quality of people's lives. Low cost housing remains a major challenge to government post-apartheid South Africa, as the government attempts to address inequalities, poor municipal service delivery and rapid urbanisation (Marais, Van Rensburg and Botes, 2003).

The White Paper on Housing of 1994 prioritised the needs of the poor and promised to deliver one million houses in five years. This has been done through community participation and the private sector (Goebel, 2007). Although housing delivery has been substantial since 1994, the sector is facing challenges relating to coordination. Clearer lines of accountability are necessary to ensure government meets its responsibility towards both poor and low-income households for them to have access to adequate housing and the housing market.

The lack of housing delivery has persisted despite South African Government having put in place a number of housing initiatives to help alleviate the housing backlog (Kajimo-Shakantu and Evans, 2006). The Department of Housing (DoH) annual report (2007) bears testimony to Kajimo-Shakantu and Evans' view that despite the delivery of 2 million subsidised houses since the inception of the new housing programme in 1994, the housing backlog has continued to grow and was estimated at some 2,4 million units in mid 2007 (Department of Housing, 2007).

According to the Department of Housing (2007, p. 17) "if the size of the economy is compared with that of the population of the country, there are indications that the average share of each individual South African in the economy is above R30 000". Despite this, more than 25% of the South African population is unemployed and is excluded from benefiting from the economy and consequently have limited means to provide for their needs, including housing needs.

This research sought to investigate whether the 4As framework can help alleviate the challenges faced with respect to lack of housing amongst the low-income consumers in South Africa as proclaimed in the study *"Serving the world's poor: Innovation at the Base of the Economic Pyramid"* by Anderson and Billou (2007), or not. The 4As framework stands for acceptability, availability, affordability and awareness.

1.2 THE RESEARCH PROBLEM

According to Pillay and Naude (2006) the inherited housing backlog in South Africa is largely a result of high levels of urbanisation, poverty, and high unemployment, together with the history of apartheid and separate development. Redressing the inherited inequalities of apartheid has meant a complex and challenging context for meeting basic needs in contemporary South Africa and given the physical and political segregation of apartheid, meeting the demand for housing has been a central development challenge since 1994 (Pottie, 2004). The importance of the need for housing is amplified as the concept of accessibility is now entrenched in the South African Constitution; "Everyone has the right to have access to adequate housing" and that "the state must take reasonable legislative and other measures with its available resources, to achieve the progressive realisation of this right" (Pottie, 2004, p. 607).

Housing for many households around the world is both the largest expense and the most important asset and is also an important determinant of quality of life. A well functioning housing market influences not only as shelter to people; but can improve public health by reducing the outbreaks of diseases, stimulate economic growth through own job creation and also be used as workplaces for home-based entrepreneurs. Housing can also have social spin offs by influencing the reduction of crime (Warnock and Warnock, 2008).

Warnock and Warnock (2008) further argued that access to housing increases the number of bankable projects as houses can be used as collateral to access finance for business purposes. In addition, efficient delivery of housing enhances social capital in a community. Social capital is very important for economic development as evidenced by the recent xenophobia attacks in early 2008 in several parts of South Africa; these attacks were purportedly sparked off by the lack of adequate housing, among other reasons.

On her 2008/9 Budget Vote speech to the National Assembly on 28 May 2008, the Honourable Minister of Housing, Lindiwe Sisulu, said:

"Conditions of poverty, especially within the informal settlements are unacceptable. We have drawn attention to this ad museum. It is precisely on this realization that we, as the Housing sector have prioritised the informal settlement eradication and have given it a target date. For this we would like to mobilise the rest of government and civil society to join us. In a country with our level of economic development, it is not justifiable to have these pockets of poverty and vulnerability where the poor scramble for scant resources and when they experience periods of severe hardship, their frustration knows no moral bounds" (Sisulu, 2008, p.1).

Furthermore, the high rate of unemployment is expected to remain so for a longer period of time, and this will continue to force millions of South Africans to rely on government for free housing and service provision. Continuation of the status quo where the economy fails to respond adequately to unemployment and the creation of resources for government will impede on eradication of informal settlements in the country and poverty alleviation (Pillay and Naude, 2006). What can be acknowledged by most is that Government alone cannot solve the problem of housing. Both the Government and the private sector need to join hands towards eradicating informal settlements in South Africa. Delivery of infrastructure in South Africa is characterised by huge backlogs challenges.

It is against the above backdrop that this research sought to investigate whether the 4As framework can help in better serving the needs of the low-income consumers for self-help housing in South Africa as proclaimed in the study *"Serving the world's poor: Innovation at the Base of the Economic Pyramid"* by Anderson and Billou (2007), or not. The 4As framework was developed to address issues that companies need to keep in mind when trying to develop successful strategies for serving low-income consumers.

This research assesses the framework by not looking into companies, but rather the end consumers themselves in confirming whether they would agree with most of the factors suggested by Anderson and Billou with respect to better serving their needs. Should this be true, it will ultimately help low-income consumers to access the products/services in their self-help housing and alleviate housing backlog that has persisted for a long time in the low-income market in South Africa.

1.3   WHY USE THE 4AS FRAMEWORK?

The 4As framework is based on Anderson and Billou's research (2007) on how best customers at the bottom of the economic pyramid in various industries could be served. Their research employed methodology based on enquiry, analysis and testing. It aimed to articulate best practices as companies deal with the challenges of serving low-income consumers in developing markets and in many instances explores strategies that are still evolving.

In their research they found that in the heart of all the organisations' success in serving the low-income consumer is the development of an approach that delivers the 4As namely: Availability, Affordability, Acceptability and Awareness (see Figure 1, in the literature review). The 4As framework has been endorsed by ATKearney, the global strategic management consulting firm (Pfeiffer, Massen and Bombka, 2007). Since its inception over the past two years it has been cited and referenced in a couple of academic articles, journals and peer reviewed publications; which are listed in the literature review (Chapter 2) section of this study.

In this research, the arguments and factors mentioned in different case studies of Anderson and Billou's research are examined to confirm whether from the consumers' perspective these conditions would really work or not. The author agrees with United Nations Development Programme (UNDP) (2008) report on the notion that "businesses know too little about poor people - what they prefer, what they can afford and what products and capabilities they have to offer as employees, producers and business owners". It is therefore critical that the consumer perspective is tested, hence this research. Whether or not this framework can help South Africa address the low-income market housing needs and whether or not it does work are aspects evaluated and discussed in this research.

1.4 RELEVANCE OF THIS RESEARCH TO SA BUSINESSES

The poor often do not share in the benefits of globalization, and there is growing awareness that traditional development solutions have not worked (Hammond and Prahalad, 2004). Hammond and Prahalad (2004) warn that if businesses ignore the bottom of the economic pyramid, they miss most of the market. In recent years, business and international development communities have become increasingly interested in creative new business models and strategies to engage low-income communities (also known as Bottom / Base of the Pyramid - BOP) (Jenkins, Ishikawa, Barthes and Giacomelli, 2008). The BOP appears to introduce a completely new international context with a unique set of new stakeholders; furthermore, it appears to require disruptive innovation in technologies, products, as well as business models (Prahalad and Hart, 2002). The phrase and concept of the "Bottom of the Pyramid" originated from the work of professors Stuart Hart and C.K. Prahalad in their seminal 2002 article "The Fortune at the Bottom of the Pyramid" (Prahalad and Hart, 2002).

The theory of disruptive innovation (Christensen, 1999) suggests that existing mainstream market are the wrong place to look for major new waves of growth. Essentially Prahalad and Hart propagate that this approach should be viewed as a viable market to do business with, thus advancing the profit objectives of Multinational Corporations (MNCs) and that of the BOP market. In particular, if SA businesses could identify potential indigenous market clusters in the BOP market; they can be a source of inter-organisational partnering between MNCs and local firms which are profitable. Global spanning networks could link local firms to skills and resources they often lack (e.g. financing, accounting, training, R&D, and branding) and connect MNCs to distinctive cultural resources and products high in perceived authenticity and even quality (Ger, 1999).

According to Christensen, Craig and Hart (2001) the poor stand to benefit in several ways when large companies target them as consumers. Access to new products, expanded choices and increased purchasing power would improve quality of life. Additional benefits such as new services and information that improve efficiency would help increase productivity and raise incomes among poor citizens.

"Savings are important in low-income housing finance for several reasons. While on the one hand they bring in the much-needed additional finances for home improvement, on the other hand consistent savings demonstrate affordability, not only of housing finance, but also of home ownership" (Mthweku and Tomlinson, 1999, p.14). It is through savings that individuals can fund their housing initiatives without the government and the private sector support. Omenya and Talukhaba (2005, p. 10) states "Recognition of small-scale continuous investment in low-cost housing could help in strengthening their self-help housing efforts and help the state achieve more with less effort".

Mexico's cement producer, CEMEX is a case in point where a payment system is offered, Patrimonio Hoy, which allows low-income families to purchase houses in instalments - giving those at the "bottom (or base) of the pyramid" (BOP) access to services, cement and other building materials through a group savings programme. Other examples of companies with multinational strategies are Unilever and BAT (Sharma and Hart, 2006). Unilever's Indian subsidiary, Hindustan Lever, for example, is seen by local consumers as an Indian company, run by Indians, with products tailored to Indian tastes.

There is a need for such strategic intervention for the low-income consumer in housing. It is such innovative strategies and a lot more that this research intends to explore in relation to the low-income consumer for housing. For most firms, business with the poor will not be business as usual. According to UNDP (2008) the greatest obstacle in

serving the poor is the lack of information about the poor. Maybe once all stakeholders know and are able to address the requirements of the poor, eradication of poverty and inequality could become reality where all South Africans live a better life.

1.5   MOTIVATION FOR THE RESEARCH

Generally, poverty is an economic, social, political and moral problem. Eradicating it or at least making attempts to alleviating it must be an ongoing and urgent challenge. For many decades, local governments, developed country governments, international organizations (such as the World Bank and the United Nations), aid foundations and non-governmental organizations have tried measures meant to address this challenge. The lack of resources discourages companies from providing the basic goods and services that would empower them and would improve their lives. Those who encourage market-based approaches argue that finding appropriate ways to satisfy the unmet needs of lower-income communities can bring enhanced opportunities for these communities, in terms of access to better products as well as employment (SadreGhazi, 2008).

Because of the limited economic opportunities, low-income communities have often been unable to contribute to or benefit from growing market economies. Furthermore, even when such opportunities do occur, the poor are generally unable to take advantage of these opportunities because of lack education and credit. Hart (2005, p. 143) states "If we can gain a better understanding of the constraints that influence the behaviour, we can construct new business models designed to remove these constraints and profit in the process". It has been widely argued by Prahalad (2005), Hart (2005) and Hammond *et al* (2007) that a large share of the world population i.e. those who live in the low-income communities of developing countries, are not adequately included in the global

economy and have limited access to products, markets and opportunities to develop themselves.

If the 4As framework approach of addressing low-income consumers that was developed by Anderson and Billou (2007) is going to help with better serving of their housing needs, there is a need therefore for assessment and testing of this framework. The 4As framework is the normative model, (i.e. can be used across the whole range of consumers, including the low-income consumer for housing).

This research seeks to assess and gain better understanding of the constraints that hamper progress into self-help housing for low-income consumers while testing the 4As framework. So far, the intellectual discourse has been largely in the fields of public policy and development economics. More recently, management experts and business schools have entered this arena. C.K. Prahalad has been one of the pioneers of this movement and is certainly the most prolific writer in this field to date. "Except for a few exceptions (e.g. Seelos and Mair, 2007; Anderson and Billou, 2007), most of current literature has not addressed how appropriate business and innovation strategies could be specifically devised and implemented to address low-income markets" (SadreGhazi, 2008, p.2).

1.6   RESEARCH OBJECTIVES

The objectives of the research can be summarised as follows:

- To assess the 4As framework in serving the low-income consumer's self-help housing needs.
- To identity the impact each of the A's has in serving the self-help housing needs.
- To make inferences and recommendations where necessary on what can be done to better serve the low-income consumers for housing.

The research will therefore test the assumptions embedded in the 4As approach for addressing the needs of the low-income consumers for housing.

1.7   RESEARCH SCOPE

When private sector organisations tap into the low-income consumers, this should stimulate commerce and development in low-income segments, and result in improved lives for the people, including the creation of a more stable and inclusive world (Sánchez, Ricart and Rodríguez, 2007). The specific communities targeted given their accessibility among other factors include low-income households sampled in the following informal settlements: (a) Alexandra; (b) Diepsloot and, (c) Ivory Park. These communities were chosen out of convenience and easy access given their location.

In line with the current limit for accessing government grant for housing, this study shall be confined to those household owners whose earnings are less than R3,500 per month. This is the target group in the scope of this study regarded as the low-income housing consumer and will be designated as 'poor' for purposes of this study. Most of the houses in the above targeted townships were built via the government's Reconstruction and Development Programme (RDP). Common to these communities are the levels of poverty, poor living conditions and low quality of life. The measure of success for this targeted population will be any structural modification/s or change/s in the house conducted by the owner using his/her own income in the past two years.

CHAPTER 2: LITERATURE REVIEW

Literature review will examine the behaviour of the BOP consumer positions and help place the study within the domain of academic research. The status quo with respect to South African Housing Policy will be discussed, followed by some challenges thereof. It will also cover the emergence of the self-help housing concept as a better alternative to housing the poor and the constraints standing on the way to serve the needs of the poor. The characteristics of the low-income market and the definition of the BOP for both the global context and the South African context will be discussed. Justification for the research to test the 4As framework amongst the low-income consumer for housing including the definition, development and supporting studies for the 4As framework will be discussed. In the conclusion, one looks at some of the points for and against the current BOP thinking.

2.1   SOUTH AFRICAN HOUSING POLICY

Housing delivery in the developing world is characterised by an extreme scarcity of resources and remains a challenge for any government. Housing delivery policies are aimed at providing quality products and services which ensure living standards conducive to the comprehensive development of previously marginalised recipients (Marais and Wessels, 2005). The quantity must be such that the majority of people living under precarious conditions in informal settlements are assisted as soon as possible. One school of thought is that the right to housing does not mean that governments are supposed to construct houses for the entire population but rather, is more concerned with the obligation of the state not to act in a way that will undermine the opportunity of households to gain access to housing (Marais and Wessels, 2005).

According to Marais and Wessels (2005); there can be very little doubt that the South African (SA) housing policy directly favours the poor. However, Liebenberg (2001) argues that policy in it self is not enough, and that policy development should include an implementation framework, as it is possible in practice for pro-poor policies not to reach the poor. The African National Congress (ANC) adopted an income-based capital subsidy scheme as the basis of its approach to low-cost housing in order to facilitate the realisation of this right. Over the years the ANC's housing policy has grown in complexity (Pottie, 2004).

The subsidy designed and implemented in 1994, used a strong targeting mechanism in which subsidy allocations were based on the household income, with the lowest earners accessing the full grant and those earning close to R3,500 accessing less. Since 2004, the housing policy has shifted to include households earning R3,501 to R7,000 in the credit-linked subsidies (DoH, 2004). In the current design of the housing subsidy, all eligible households earning below R3,500 qualify for the full subsidy that is meant to provide between 40-45 m^2 starter units (see Table 1 for the table on Government Subsidies).

***Table 1:* Government Subsidies**

The South African Housing Subsidy Scheme quantum amounts for the period 2008/9 in respect of a 40m^2 house only.

Individual and Project Linked Subsidies	Top Structure Funding Only	Own Contribution	Product Price
R0 – R 1 500	R 43 506.00	None	R 43 506.00
R 1 501 – R 3 500	R 41 027.00	R 2 479.00	R 43 506.00
Indigent: Aged, Disabled and Health Stricken R 0 – R 3 500	R 43 506.00	None	R 43 506.00
Institutional Subsidies			
R0 – R 3 500	R 41 027.00	Institution must add Capital	At least R 43 506.00
Consolidation Subsidies			
R0 – R 1 500	R 43 506.00	None	R 43 506.00
R1 501 – R3 500	R 41 027.00	R2 479.00	R 43 506.00
Indigent: Aged, Disabled and Health Stricken R 0 – R 3 500	R 43 506.00	None	R 43 506.00
Rural Subsidies			
R0 – R 3 500	R 43 506.00	None	R 43 506.00
People's housing process			
R0 – R 3 500	R 43 506.00	None	R 43 506.00

Source: Adapted from DoH-Department of Housing (2008)

2.1.1 <u>Subsidy Types (as adapted from DoH, 2008)</u>

a) **Consolidation Subsidy:** This housing subsidy mechanism was designed to afford previous beneficiaries of serviced stands, financed by the previous housing dispensation, the opportunity to acquire houses. A top up subsidy to construct a house is granted to beneficiaries with a household income not exceeding R3 500 per month, while beneficiaries with a household income of between R1 501 to R3 500 per month will be required to pay the contribution of R2 479.

b) **Individual Subsidy:** This provides qualifying beneficiaries with access to housing subsidies to acquire ownership of improved residential properties (stand and house) or to acquire a house building contract which is not part of approved housing subsidy projects.

c) **Project Linked Subsidy:** This housing subsidy mechanism enables a qualifying household to access a complete residential unit, which is developed within an approved project linked housing subsidy project for ownership by the beneficiary.

d) **Institutional Subsidy:** The Institutional Subsidy is available to qualifying institutions to enable them to create affordable housing stock for persons who qualify for housing subsidies.

e) **Rural Subsidy:** This housing subsidy is available to beneficiaries who only enjoy functional tenure rights to the land they occupy. This land belongs to the State and is governed by traditional authorities.

2.2 CHALLENGES FOR SOUTH AFRICAN HOUSING POLICY

South African housing policy has been frequently criticized for fostering urban sprawl by locating housing delivery on the peripheries of urban areas, thereby reinforcing the spatial tendencies of apartheid and locating the poor on the periphery (Huchzermeyer 2003a; Harrison *et al.* 2003; Mokoena and Marais, 2007). Tomlinson (1999, p. 292) notes that "evidence…suggests that residents of shack settlements on the urban peripheries, while now enjoying access to housing subsidies, have remained marginalized and impoverished.

The lack of economic opportunities means that huge numbers of families are in the same economic situation as before, even though with a housing option". Watson and McCarthy (1998, p. 52) observe that "the location of many ownership schemes, usually on cheaper land on the city outskirts, has meant that many poor households have had to choose between ownership in a peripheral settlement, far from work, or rental in a better located area".

The issue that is frequently brought to the fore in literature is the fact that the subsidy scheme is not suitable to be used for informal settlement upgrading (Huchzermeyer, 2002); that informal settlement upgrading is limited (Marais, 2003) and that the practice of informal settlement upgrading has serious shortcomings (Huchzermeyer, 2002; Mokoena and Marais, 2007).

Linked to the issue of the lack of informal settlement upgrading, the inappropriate nature of ownership in respect of the poor is problematic (Mokoena and Marais, 2007). In this regard, Mokoena and Marais (2007, p. 313) agree with Khan's (2003) argument that: "The key challenge for SA housing policy is the development of appropriate tenure arrangements/instruments for informal settlement upgrade, especially because informal land and housing delivery systems will for many decades remain the only alternative for the homeless poor."

According to De Soto (2000), the issue of titles and credit has always been very important in the housing arena. De Soto (2000, p. 5) explains that the current problem facing the poor is that: "Even in the poorest nations the poor save. The value of savings among the poor is, in fact, immense – forty times all the foreign aid received throughout the world since 1945… But they hold these resources in defective forms: houses built on land whose ownership rights are not adequately recorded, unincorporated businesses with undefined liability, industries located where financiers and investors cannot

adequately see them. Because the rights to these possessions are not adequately documented, these assets cannot readily be turned into capital, cannot be traded outside of narrow local circles where people know and trust each other, cannot be used as collateral for a loan, and cannot be used as a share against an investment."

South Africa's housing policy is based on a once-off housing subsidy. The purpose of this subsidy is to provide recipients with a site and basic services, coupled with a nuclear (starter) home that can be extended over time (Harris, 2003). Theoretically, self-help is thus entrenched in the South African policy. The self-help approach in the policy was officially called the People's Housing Process (PHP) and was implemented mainly through self-help groups called "Housing Support Centres" - a concept similar to that of housing cooperatives (Harris, 2003).

2.3   A CASE FOR SELF-HELP HOUSING CONCEPT

According to Marais, Van Rensburg and Botes (2003) the major areas of contention in the debate on appropriate low-income housing policies are the nature of the product to be supplied and the process to be followed. On one hand there are those who advocate supplying a smaller number of complete houses – *the conventional approach*. On the other there are those who argue for mass provision of basic starter homes which owners can expand over time – *the progressive approach*. In the latter approach, the point made being that a *progressive / incremental approach* to housing delivery is a more suitable strategy that contributes towards peri-urban upgrading in a more participatory manner (i.e. self-help housing). Conversely, conventional housing strategies have a bad reputation for neglecting the power of people's self-development (Botes, 1999; Marais *et al.* 2003).

In many cases, the idea of government support to enable families to build their own houses came from the people themselves, and not from governments or international experts (Harris, 1998; 2003). Various researchers have indicated that self-help has been a common phenomenon for centuries in a number of countries and that aided self-help was lobbied for, and practised, long before the rise of the ideas of Turner in the 1960s and 1970s (Harris, 1998). Thus, as pointed out by Harris (1998, 2003), the formulation of ideas on self-help may well be the result of western writers following, rather than leading, international trends.

An initiative to support self-help housing was launched by the government on a trial basis back in 1998 (Jenkins, 1999). This was called the "People's Housing Process (PHP)", and was on community "self-help" construction support workshops. The Government mechanisms for assistance to this were announced in April 1998, although some 24 pilot projects had been underway for some time previously and its policy position had been in development since late 1994. This programme was aimed at the poorer families who only had access to housing subsidies and wished to enhance on their subsidies by building or organising the building of their homes themselves (GoSA, 1998; Jenkins, 1999). PHP was meant as an improvement on the RDP programme by benefiting communities who would be involved at all levels of decision making and in the implementation of their projects. Communities would benefit directly from programmes in matters such as employment, training and award of contracts (Jenkins, 1999).

Although self-help in housing has been practised for centuries and a number of researchers have formulated ideas on the topic, the notion of self-help is commonly attributed to JFC Turner (Marais *et al.* 2003). Turner (1976) argued that houses that are built where people had the freedom to build are often superior to those built by governments. Turner argued that if you give individual families greater choice regarding

the location and design of their houses, their houses will match their needs more closely. When dwellers control the major decisions and are free to make their own contribution to the design, construction and management of their housing, both the process and the environment produced stimulate individual and social well-being (Turner, 1976). When people have no control or responsibility over key decisions in the housing process, dwelling environments may become a barrier to personal fulfilment and a burden on the economy (Turner, 1976).

Overall, three distinct forms of self-help can be differentiated. The first form of self-help is without government aid. This has been practised world-wide for centuries by low- and high-income households (Jenkins and Smith, 2001). The second form of self-help, which can be termed "aided self-help", comprises an approach in which site-and-service schemes play a crucial role (Laquian, 1983). The state assists to a large extent on creating an environment in which people build for themselves. The third form is the self-help implemented through institutional organisations and housing cooperatives.

Owing to a change in the housing needs of people over time as well as the different needs of people, Marais *et al* (2003) agreed with Turner on the notion that government and other large organisations inadequately address these needs. The main reason for the inability of large organisations to address the households housing needs is that these organisations usually have standardised procedures and products that do not adhere to the principles of variety and individual needs. As such, Turner emphasises the concept of freedom in the building environment. However, Turner does not argue that, by means of the freedom to build, everybody should build their own houses rather, he emphasises that individuals should be able to make decisions about their own housing (dweller control). He believes that when the beneficiary is able to make decisions about the

planning, construction and management of the house (irrespective of class), the housing problem would be addressed effectively.

2.3.1 Conclusion

In concluding, of the three forms of self-help described above, this study intends to look into the second form of self-help, where the state assists to a large extent in creating an environment in which people build for themselves. This can be done through control and regulatory policies by the state where private sector (large organisations) are compelled to put systems in place that will make it conducive (i.e. easy access to credit and reduced cost per unit of product) for the poor to build for themselves.

2.4 CONSTRAINTS STANDING ON THE WAY TO SERVE THE POOR

According to Mendoza and Thelen (2008), numerous barriers prevent the poor from participating more actively in markets, both as consumers and as producers.

In the UNDP (2008) report five general constraints that limit businesses from trying to engage the poor were identified. These were: *limited market information; Ineffective regulatory environments; inadequate physical infrastructure; missing knowledge and skills; restricted access to financial products and services*.

Limited market information: Businesses know too little about poor people - what they prefer, what they can afford and what products and capabilities they have to offer as employees, producers and business owners.

Ineffective regulatory environments: The poor markets lack regulatory frameworks that allow business to work. Rules are not enforced. People lack access to the opportunities and protections afforded by a functioning legal system.

Inadequate physical infrastructure: Transportation is complicated by the lack of roads and supporting infrastructure. Water, electricity, sanitation and telecommunications networks are lacking.

Missing knowledge and skills: Consumers may not know the uses and benefits of particular products or may lack the skills to use them effectively. Suppliers, distributors and retailers may lack the knowledge and skills to deliver quality products and services consistently, on time and at a set cost.

Restricted access to financial products and services: Lacking credit, poor producers and consumers cannot finance investments or large purchases. Lacking insurance, they cannot protect what meagre assets and income they may have against shocks, such as illness, drought and theft. And lacking transactional banking services, they face insecure and expensive financial management.

2.5   CHARACTERISTICS OF LOW-INCOME MARKETS

The first step in addressing low-income markets in the developing world is to understand existing markets and their associated challenges and opportunities. SadreGhazi (2008) described the following as the most important characteristics of low-income markets:

2.5.1   Purchasing power

The most eminent characteristic of the communities at the base of the pyramid is the lower level of disposable income. The problem of low disposable income manifests itself mainly in two ways: (1) low purchasing power and (2) lack of access to credit (SadreGhazi, 2008).

The majority of the low-income communities have daily fluctuating as opposed to a constant monthly income. That makes it difficult for them to have high once-off payment for goods and services. In higher-income regions consumers have access to credit and can exercise higher purchase power. Banks on the other hand are reluctant to provide such credit facilities to those without a constant monthly income. As a result in many such low-income areas people pay very high interests to the informal money lenders to overcome the credibility problem (SadreGhazi, 2008).

Often low-income communities even have to pay a higher price for many of their basic goods and services – a phenomenon called *poverty penalty*. High-income consumers spend a much smaller percentage of their resources on the basic necessities of life, leaving them more money to purchase life enhancing items. While in most low-income consumers, more than 50% of the income is spent just on food (SadreGhazi, 2008; Subrahmanyan and Gomez-Arias, 2008).

Perhaps the classic example of such a business is the micro-credit model introduced by Muhammad Yunus and the Grameen Bank. The loans made to the poor through the bank lead directly to income generation through micro-entrepreneurship and other forms of local enterprise development (Yunus, 1999). In addition to providing credit, companies can develop technologies to raise BOP incomes and start businesses.

2.5.2 Location and diversity

The low-income market represents a more diverse cultural variety and geography. In the majority of low-income markets, the availability of logistics infrastructure can not be taken for granted (SadreGhazi, 2008) and that makes delivery, distribution and service of the product more difficult. In addition, limited access to media makes common ways of media advertisement less effective.

In order to access and educate consumers at the low-income end, a variety of approaches is needed ranging from simple methods such as billboards on walls and truck-mounted demonstrations to local communities spreading by word of mouth advertising (Anderson and Billou, 2007).

2.5.3 Skill and awareness

According to SadreGhazi (2008), a considerable share of low-income population is illiterate, almost one fifth of adults around the world are functionally illiterate. In addition, they have less experience working with technology-intensive products or devices that require some level of prior skill or knowledge to operate. Hence it is important to redesign the product functions to make it acceptable and easy to use for those who lack the skill or knowledge to use the product (SadreGhazi, 2008).

Educating the end-user can be a way to overcome the literacy problem. In lack of traditional channels for educating users, some companies have teamed up with Non Governmental Organizations (NGOs) and local groups to address this e.g. CEMEX, a leading global building solutions company based in Mexico offered not only affordable housing solutions through tailored business models, but also established a local network of trusted distributors to provide quality materials and education on how to build houses (Subrahmanyan and Gomez-Arias, 2008).

2.5.4 Institutions and infrastructure

Low-income markets have other characteristics that challenge the business practices developed in advanced markets. In addition to such corporate challenges, many countries in low-income markets face political instability, volatile exchange rates, and underdeveloped physical infrastructure that make business even more difficult (Prahalad and Hart, 2002).

Much of the physical infrastructure conditions that are taken for granted in advanced markets are not available or are rather weak in low-income markets. The low degree of penetration of information and communication services together with limited transportation and other logistics put some restrictions on the use of usual distribution models. The wide and scattered nature of low-income markets also requires extensive distribution networks that are viable at low volumes and low prices (SadreGhazi, 2008).

2.6 DEFINING THE BOP CONSUMER POPULACE

2.6.1 The BOP proposition - Globally

Prahalad and Hart (2002, p. 2) defined the bottom of the pyramid (BOP) as, "the 4 billion people in the world whose per capita income is less than $1,500 adjusted for purchasing power parity (PPP) in US dollars being the minimum considered necessary to sustain a decent life". They divided the world economy into a 4-tiered pyramid to represent the global distribution of wealth and the capacity to generate income. At the top of the pyramid (Tier 1) are the wealthy, with numerous opportunities for generating high levels of income. Tier 2 and tier 3 represent the economic middle class who consists of poor customers in the developed nations and the rising middle classes in the developing countries. Tier 4 (the bottom of the pyramid), on the other hand, is composed of over 4 billion people whose average per capita income is less than $1,500 per annum or less than $ 1 a day (see Figure 1, below).

Figure 1: **The World Economic Pyramid**
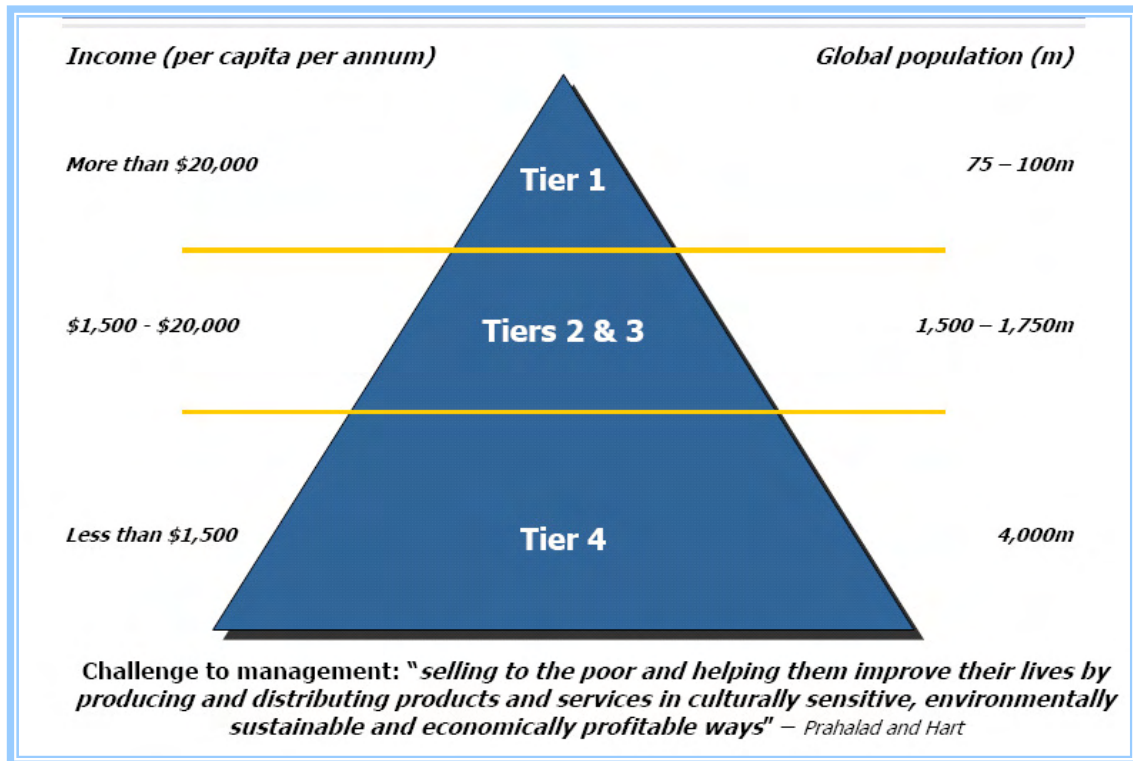
Source: The Fortune at the Bottom of the Pyramid by C.K. Prahalad and Stuart L. Hart, Strategy + business, Issue 26, 2002

In the bottom of the pyramid approach, the global population is divided into segments based on purchasing power parity (PPP). There is still no consensus about the proper way to define bottom of the pyramid population. Different authors on low-income markets have articulated different PPP lines, depending on the way they define low-income and bottom of the income pyramid. Different PPP lines have been articulated in the academic literature ranging from $1,500 - $3,000 per annum to $1 - $2 per day (WRI, 2007; Prahalad, 2005; Prahalad and Hart, 2002). This inconsistency in measuring the bottom of the income pyramid received some criticism from (Karnani, 2006).

Karnani (2006) argued that the real earnings varies between $6 and $16 per day for the cases referred to by Prahalad and Hart (2002) and goes on to state that the BOP proposition is inconsistent in its evidence. Gordon (2008) stated that there is a vast

difference in the standard of living between people earning less than a dollar a day versus those living on five dollars a day. It becomes evident that a more precise BOP definition is needed before any sustainable arguments for or against the BOP proposition can be made.

More recently, the World Resource Institute (2007) conducted a study to analyze the size and aggregate purchasing of the BOP (see Table 2 below).

Table 2: **BOP population and income**

	BOP population (millions)	BOP share of total population (%)	BOP income (PPP, US$)	BOP share of total income (%)
Africa	486	95.1	429,000	70.5
Asia	2858	83.4	3,470,000	41.7
Eastern Europe	254	63.8	458,000	36.0
Latin America and Carribbean	360	69.9	509,000	28.2
Total	**3,958**	**312.2**	**4,866,000**	**176.4**

Source: World Resources Institute (2007)

Perhaps the most comprehensive and in-depth studies that quantified expenditures and spending among the world's poor was that by Hammond, Kramer, Katz and Walker (2007), a co-publication by the World Resources Institute and the International Finance Corporation (WRI and IFC). According to their study, BOP is estimated to have 4 billion people with individual income of less than $8 per day in local purchasing power. BOP markets are predominantly rural with the majority in Africa, South Asia, Eastern Europe, Latin America and the Caribbean (Subrahmanyan and Gomez-Arias, 2008).

2.6.2 BOP IN SOUTH AFRICA

The Eighty20 consulting company compiled a BOP analysis research report entitled the "Bottom of the South African Pyramid" that used statistics from various sources such as Stats SA, SALDRU, AMPS, FinScope, Marketta Group, ComMark Trust and The Unilever Institute to put BOP into perspective for the South African market (Louw, 2008).

The report identified alienation from the community, food insecurity, crowded homes, use of basic forms of energy, lack of adequately paid jobs and fragmentation of the family as key measures that should be used to define poverty. The report further defined earnings income of R20 per day as the BOP sector in South Africa and gave the following breakdown of BOP (see Figure 2, below):

- ➢ 1.2 million households living on less than R5 per day;
- ➢ 2 million households living between R5 and R10 per day;
- ➢ 2 million households living between R10 and R20 per day;

The report commissioned by the ComMark Trust and written by the Centre for Development and Enterprise title "Accelerating Shared Growth: Making markets work for the poor in South Africa" explored ways to eradicate poverty in South Africa by analysing seven case studies (Louw, 2008).

The report identified the major barrier preventing people from breaking out of poverty as the problematic environment in which they are forced to pursue their livelihoods and not deprivation or poverty itself. According to the report, two routes out of poverty were recognised, namely: access to decent paying jobs and entrepreneurial opportunities. Both these routes depend on the involvement of markets and the private sector (Louw, 2008).

Figure 2: **South African Economic Pyramid**
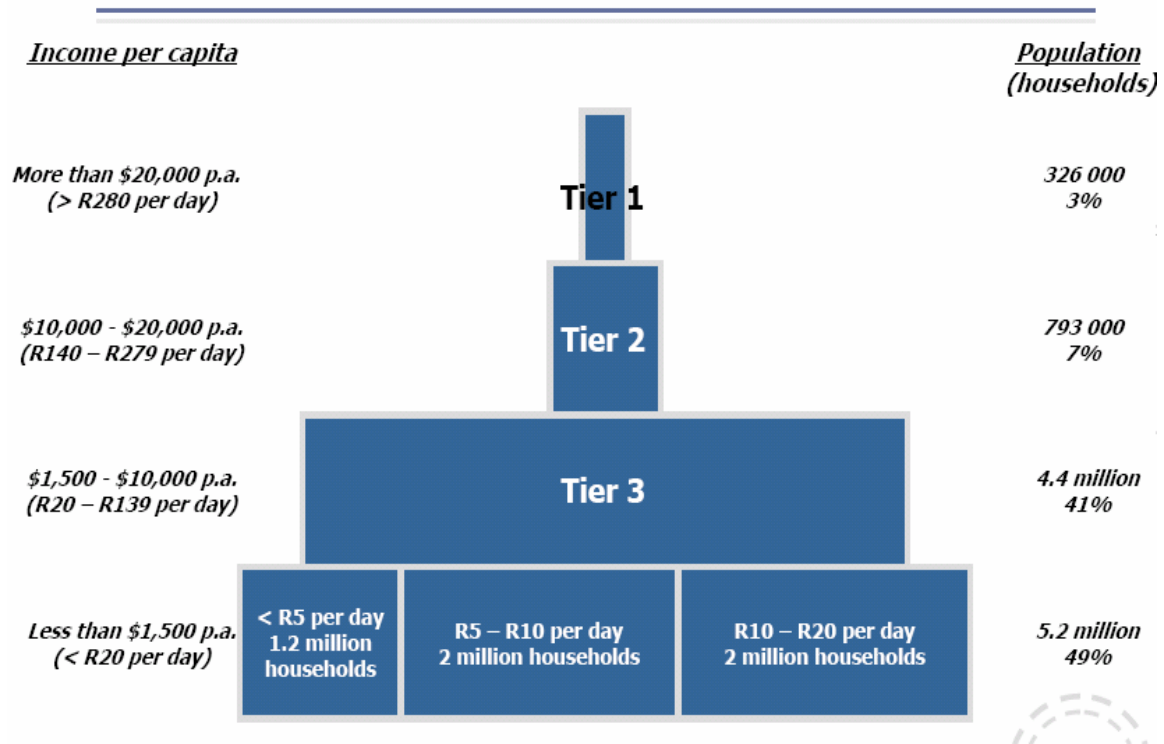
Source: AMPS 2005 RA, Eighty20 analysis

Note:

Per capita income is calculated using the midpoint of the household income bands provided by AMPS. Household size is adjusted for the number of children (children under 10 count as half and adult). Dollar amounts translated into using a PPP adjusted exchange rate of R5 to the Dollar.

2.6.3 Conclusion

There are some contrasting views with respect to the actual definition and size of the BOP consumer / household both globally and in South Africa. For the purpose of this study the BOP consumer / household earning less than R3,500 per month will be used. This is in line with the current limit for accessing government grant for housing and forms the basis for the target group in the scope of this study regarded as the low-income housing consumer and will be designated as 'poor' for purposes of this study. According to South African Economic Pyramid above, this will include Tier 3 and below population.

2.7 BOP CONSUMER BEHAVIOUR

According to Subrahmanyan and Gomez-Arias (2008) the poorest of the world, termed as being economically at the bottom of the pyramid (BOP), has an estimated purchasing power of $5 trillion. Because of difficult geography and dispersed locations, the rural poor are often more costly to reach both by public and private sectors. Not surprisingly, recent estimates show that the rural poor tend to have less access to public infrastructure and certain types of social services, compared with urban residents and/or the urban poor (Mendoza and Thelen, 2008).

In addition, the poor tend to have low literacy levels and may be unfamiliar with certain goods and services, such as new technologies or financial services which in turn might deter them from using such products (UNDP, 2007). An understanding of what and how much is spent on each category can be the starting point to examine where the need and innovation is. The various categories and their sizes as per the study by Subrahmanyan and Gomez-Arias (2008) are given in Figure 3 below.

2.7.1 Food

Although food purchases comprise about 60 percent of a household's income (Braun, 2008), BOP consumers still face poor quality and high prices of products. As a result there may be inadequate nutrition or balanced diet. BOP typically buys products at local or neighbourhood stores that charge higher prices. BOP consumers do not have the transportation luxury to do price comparisons. Also, having a regular relationship with a few neighbourhood retailers helps build trust and hence more likelihood of getting credit (Viswanathan, 2007).

Figure 3: **How poor consumers spend their money**
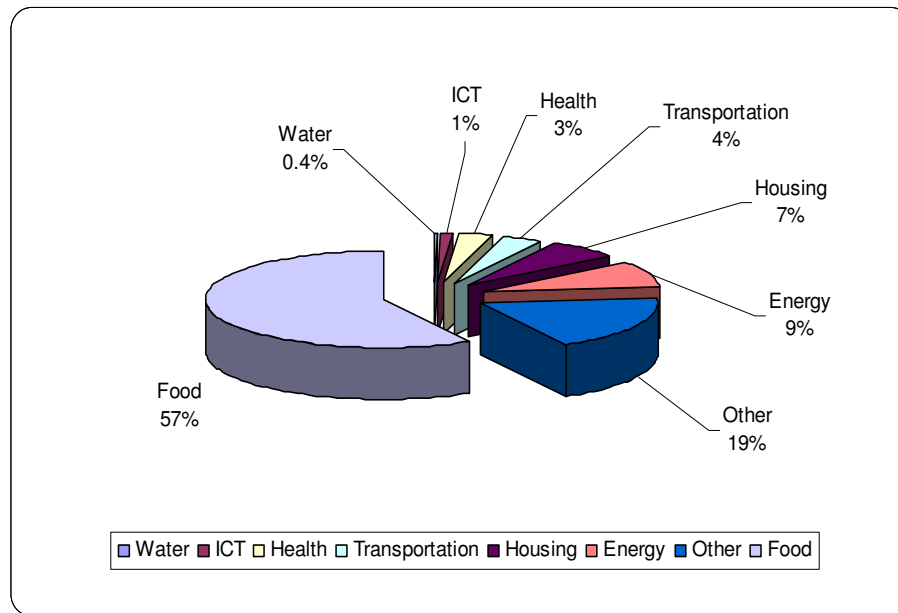
2.7.2   Housing

Much of the BOP consumers fall in the informal market as most of them lack legal titles. Access to mortgage financing is very limited. One of the successful cases here was that by CEMEX's Patrimonio Hoy programme (see explained below). So, the innovation in this category was in distribution, offering knowledge and mobilizing community or group efforts (Subrahmanyan and Gomez-Arias, 2008).

CEMEX's Patrimonio Hoy programme applies multiple strategies simultaneously, because it includes features such as a flexible payment scheme, complete product packaging (by including training along with access to building materials and financing) and tapping into 'soft' community networks by having community members hired to help market the programme (Mendoza and Thelen, 2008). This suggests that various business strategies could be used in tandem in order to overcome multiple obstacles that tend to marginalise the poor in many markets.

2.7.3 Energy

BOP consumers lack clean, affordable energy. They also face significant health challenges arising from using inefficient devices for cooking or lighting. Sellers of energy here are typically governments or large utility companies. BOP consumers often cannot afford payment and in some urban areas tap power illegally. One innovative solution by AES Corporation in Venezuela has been to recognize that the poor who live in the informal settlements could be willing to pay for uninterrupted power source.

By engaging the community and offering an integrated solution such as pre-paid meters, public lighting, installation and maintenance of collective meters, the illegal tapping was converted into a paying source of satisfied consumers and unpaid accounts also paid up (Gómez-Samper and Marquez, 2006; Subrahmanyan and Gomez-Arias, 2008). Innovation in this category needs active partnership with energy companies, aid agencies and communities. Innovation in the form of energy efficient devices is also needed.

2.7.4 Finance services

Informal jobs and lack thereof for most of BOP make access to formal financial services both in terms of savings and borrowing difficult. Often payment is made in cash thereby making them susceptible to being robbed. For loans, BOP typically resorts to store credits, borrowing money from local money lenders at exorbitant rates (Hammond *et al.*, 2007). One of the most innovative services in this category is micro-financing popularized by Grameen Bank in Bangladesh (Hammond *et al.*, 2007; Subrahmanyan and Gomez-Arias, 2008).

Ways to improve the poor's purchasing power may include adjusting retail and pricing strategies - notably through joint consumption, flexible payment schemes, and tiered pricing - to better fit a large consumer base with individually low and volatile income streams (Mendoza and Thelen, 2008).

a) *Joint consumption*: Whereas traditional business strategies tend to focus on reaching single consumers, a number of business models geared to reaching the poor involve the provision of goods and services to groups (or even entire communities).

b) *Flexible payments*: The poor typically have low and variable income streams and are unable to undertake bulk purchases. Mendoza and Thelen (2008) advise that various flexible payment arrangements can help solve this cash-flow problem. Examples of flexible-payment innovations are micro-leasing and pay-as-you-go solutions. '*Purchasing through savings*' is another innovation which CEMEX uses in its Patrimonio Hoy programme in Mexico. Through a well-planned savings programme Patrimonio Hoy allows low-income families to obtain access to services such as cement and other building materials on credit (Segel and Meghji, 2005).

2.7.5   Water and sanitation

Access to clean drinking water is a critical need. BOP consumers often do whatever it takes to obtain water in any way. Private sector is often the last resort provider. Since water borne diseases are prevalent in many BOP areas, there are a range of products by private companies to treat water. Even poor communities are willing to pay both for treated water and for home delivery. In this sector, innovation has been in purification techniques and efficient delivery of water (Subrahmanyan and Gomez-Arias, 2008).

2.7.6   Transportation

BOP consumers in urban areas use public transportation and spend a large part of their income on transportation especially as they are likely to live far away from places of employment (WRI-IFC, 2007). According to the WRI-IFC report, BOP accounts for over 60 percent of the total Asian transportation market. Those in rural areas have fewer options such as walking, bicycling, animal-drawn carts, infrequent or expensive buses and trains. Due to these limitations, their economic potential is much reduced so much such that even medical care and education for children are foregone. In many developing countries, motorized two wheelers are popular and innovative adaptations by consumers have taken place (WordChanging Team, 2007; Subrahmanyan and Gomez-Arias, 2008).

2.8   JUSTIFICATION OF THE 4AS FRAMEWORK

2.8.1   Introduction

The 4As framework is based on research by Anderson and Billou (2007) on serving customers at the bottom of the economic pyramid in various industries. Their aim was to articulate best practices for companies dealing with the challenges of serving low-income consumers in developing markets and in many instances, explores strategies still evolving (Anderson and Billou, 2007). In their two-year research project they undertook to test the hypothesis that there were common challenges and approaches in serving BOP customers, and that these could be articulated and refined to get better business results. Their exploratory research found that in the heart of all the organisations' success in serving the low-income consumer is the development of an approach that delivers the 4As – availability, affordability, acceptability and awareness (see Figure 4)

Figure 4: **The 4As framework of addressing low-income consumers**
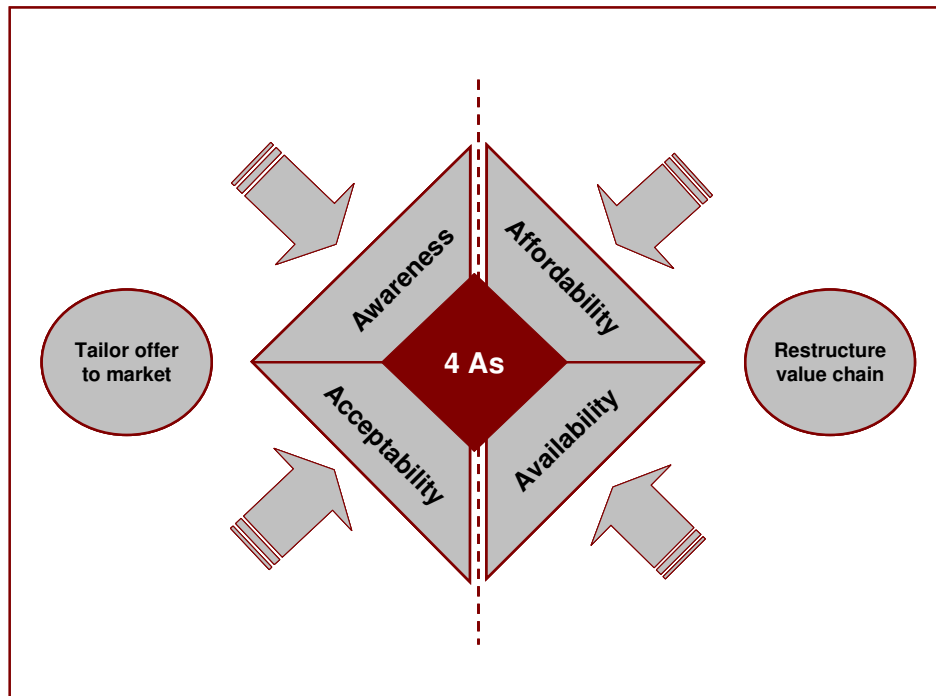
Source: Anderson and Billou (2007) Serving the World's Poor: Innovation at the Base of the Economic Pyramid. *Journal of Business Strategy*, 28(2), 14-21.

2.8.2   Defining the 4As (Anderson and Billou, 2007)

Affordability - The degree to which a firm's goods or services are affordable to BOP consumers.   Many low-income consumers in developing countries survive on daily wages, meaning that cash-flow can be a significant problem.   Companies need to be able to deliver offerings at a price point that enables consumption by even the poorest of consumers.

Acceptability - The extent to which consumers and others in the value chain are willing to consume, distribute or sell a product or service.   In BOP markets, there is often a need to offer products and services that are adapted to the unique needs of both customers and distributors.   Companies might need to respond to specific national or regional

cultural or socioeconomic aspects, or to address the unique requirements of local business practices.

Availability - The extent to which customers are able to readily acquire and use a product or service. Distribution channels in BOP markets can be fragmented or non-existent and the task of simply getting products to people can be a major hurdle to overcome. Companies need to explore alternative methods of delivering their products and services to even the most isolated BOP communities.

Awareness - The degree to which customers are aware of a product or service. Given that many BOP customers are 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 explore alternative communication channels.

2.8.3 Development of the 4As Framework

Work similar to the framework that Anderson and Billou derived has been conducted by Prahalad (2005) in his publication "Fortune at the Bottom of the Pyramid" and Prahalad & Hart (2002) in their article titled "The Fortune at the Bottom of the Pyramid, Strategy and Business". They emphasized that affordability and accessibility of products or services amongst the low-income consumers were the main barriers. Prahalad suggested the following model in addressing the needs of the BOP (see Figure 5 below).

Figure 5: **Solutions for the BOP**
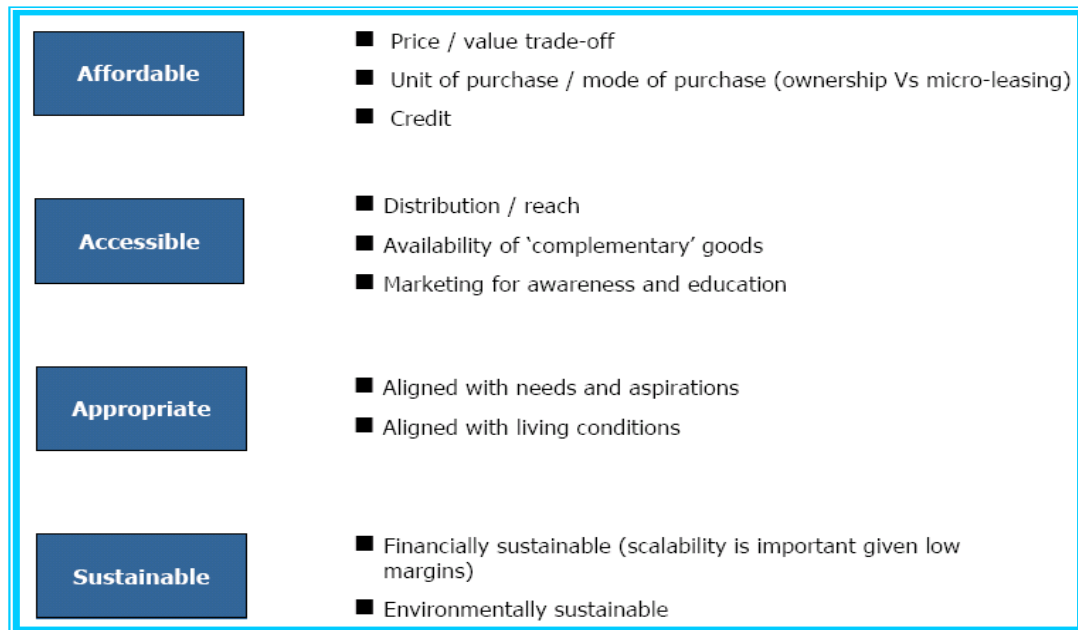
The 4As framework by Anderson and Billou is premised on research from serving customers at the bottom of the economic pyramid in industries such as fast moving consumer goods (FMCG), financial services, telecommunications, construction, health care and home appliances. The research used an action-based methodology, founded on enquiry, analysis and testing. It was aimed at articulating best practices for companies dealing with the challenges of serving low-income customers in developing markets and in many respects, explored strategies that are still evolving (Anderson and Billou, 2007).

The research project was undertaken over a two-year period to see if there were common challenges and approaches in serving BOP customers, and that these could be articulated and refined to get better business results. Field visits were made to China, Egypt, India, Mexico and the Philippines, and in depth interviews took place with companies that had succeeded in serving customers living in poverty. Companies were identified from the existing body of literature, observation and personal contact.

The 4As framework was refined during 2004-2005 in a reiterative process of application, testing and adaptation using academic literature, field visits, research and writing of case studies and hands on experience with managers. Through feedback from their academic colleagues, (C. K. Prahalad and Jagdish Sheth), classroom discussions and further interviews with executives involved in the application at companies; shared approaches to the 4As were identified and used to build theory and make the concepts generic enough so to be utilized by other managers (Anderson and Billou, 2007).

2.8.4 Further studies in support of the 4As framework approach

Since its inception over the past two years, the 4As framework has been cited in some of the academic articles, journals and reviews and has been endorsed by ATKearney, the global strategic management consulting firm (Pfeiffer, Massen and Bombka, 2007).

Reference to the work by Jamie Anderson has been mentioned in a paper titled "Teleuse@BOP3" compiled by Centre for Knowledge Societies (CKS) in their findings from a six-country qualitative study of teleuse at the bottom of the pyramid in Asia (CKS Consulting Pvt. Ltd. (2009) Teleuse@BOP3: A Qualitative Study. Colombo: LIRNEasia). None of the above listed authors' articles criticise or challenge the 4As framework by Anderson and Billou in their citations. For this reason, the framework is anticipated to work in serving the SA low-income consumers needs; hence for it to be assessed against their critical need namely, their housing need, through interviewing the actual household within the Gauteng informal settlements.

In his paper titled "Addressing low-income markets: Reframing Corporate Business Strategies" SadreGhazi (2008) summarises the main characteristics of low-income market and the way in which core activities of multinationals in terms of R&D, production and distribution/promotion need to be adapted to meet the challenges of those specific consumers.

The suggested corporate activities were compared to Anderson and Billou's 4As (see Table 3 below), and there was strong correlation between the 4As framework and SadreGhazi's model.

Table 3: Corporate strategies in response to low-income markets barriers

Corporate activity / Market barrier	R&D	Production	Distribution/Promotion	Equivalent 4A
Purchasing power	Focusing on functionality, improving price/performance	Smaller packages/sachets, Using local labor User/producer models	Combining financial services with the product Collective payment	Affordability
Location and variety	developing scaleable solutions Using local entrepreneurs	Partnering with local producers User/producer models Modular design	Partnering with civil communities and NGOs	Availability
Skill and awareness	Acknowledging endogenous solutions, Appropriate user interface	Robust production to work in hostile environments	Customer education and awareness programs Viral marketing	Awareness
Institutions and infrastructure	Local research labs Local entrepreneurs	Partner with local producers	Local immersion Creating dedicated distribution network Adapting to existing means of transport	Acceptability

Source: Adapted from SadreGhazi, S. (2008) Addressing low-income markets: Reframing Corporate Business Strategies.

Other journals and reviewed articles that have cited the work by Anderson and Billou are firstly by Anderson and Markides (2007) entitled "*Strategic Innovation at the Base of the Pyramid*". In their publication they emphasised the fact that innovation in developing markets has less to do with finding new customers than addressing issues of product acceptability, affordability, availability and awareness.

Secondly, the other recent paper was by Anderson and Kupp (2008) titled "*Serving the Poor: Drivers of Business Model Innovation in Mobile*". In their paper they explore the opportunities and challenges of serving low-income consumers in developing markets

with mobile telecommunications. Their paper also touched on the commonly held belief that "reaching low-income consumers is difficult due to two key challenges – affordability and availability".

Thirdly is the article by Mendoza and Thelen (2008) published titled "*Innovations to Make Markets More Inclusive for the Poor*". This article identified and made reference to Anderson and Billou's strategies and innovations used to make it easier for the poor to access product and services – availability.

Lastly but not least is the paper by SadreGhazi and Duysters (2008) titled "*Serving low-income markets: Rethinking Multinational Corporations' Strategies*". Their paper touched on a variety of approaches needed, as covered by Anderson and Billou (2007), in order to access and educate consumers at low-income markets.

2.9   CRITICS TO CURRENT BOP THINKING

Despite this congruence, Karnani (2006) criticised and questioned the fundamentals of the bottom of the pyramid proposition as espoused by Prahalad. Karnani (2006, p. 36) says: "The BOP proposition is characterized by much hyperbole and very weak research methodology. The fortune and glory at the bottom of the pyramid are a mirage. The fallacy of the BOP proposition is exacerbated by its hubris".

Karnani (2006) examines the propositions by Prahalad from 4 angles. Firstly is the issue of assumptions around the potential size of this market. Karnani believes that although Prahalad argues that 4 billion people fall into that category, according to the World Bank the numbers are closer to 2.7 billion. Secondly, he believes that Prahalad underestimated the high costs that would be borne by MNC seeking to serve this market hence the reason they have stayed away from investing in it, meaning a lack of

economies of scale. Thirdly, the costs of distribution are high because these consumers are geographically dispersed and there is poor infrastructure linking them. The target population of this study are a ladder up when it comes to distribution costs in that they are not necessarily geographically dispersed and their infrastructural challenges, for instance, there are roads but these are not properly maintained. Finally, he concludes that the poor are very price sensitive with limited disposable income and therefore with little or no potential for further consumption outside of basics like food, shelter and fuel.

Karnani (2006) further argues that the BOP proposition is at the best a harmless illusion and potentially a dangerous delusion. As a counter he puts forward this proposition:

Firstly, the only way to help the poor and alleviate poverty is to raise the real income of the poor.

Secondly, the cost per unit of product must be lowered in order to increase their effective income.

Thirdly and most profoundly, the poor should be viewed primarily as producers and not consumers.

Finally, governments have a critical role to play in uplifting the poor at the bottom of the pyramid as opposed to the private sector taking the lead.

Based on the inputs by mainly Prahalad & Stuart (2002); Hammond & Prahalad (2004); Hart (2005); Prahalad (2005); Hammond *et al* (2007); Sharma & Hart (2006); Anderson & Billou (2007) and Subrahmanyan & Gomez-Arias (2008), it was accepted that there is a bottom of the economic pyramid. For the purpose of this study the leading contribution by Prahalad and Hart (2002) is relied upon.

2.10 CONCLUSION OF LITERATURE REVIEW

The issue that has been touched on the literature review is the fact that informal settlement upgrading has serious short comings and the subsidy scheme is not suitable to be used for informal settlement upgrading.

The emergence of self-help housing concept by Marais *et al.* (2003) gives an interesting dimension to a more suitable strategy that would contribute towards peri-urban upgrading in a more plausible manner. Literature shows that both government and large organisations are unable to adequately address the poor housing needs owing to complications and general constraints, and there are major challenges faced by the low-income consumers for housing and major barriers preventing them from breaking out of poverty and deprivation. The literature suggests that a form of self-help housing where the state assist to a large extent in creating an environment where people build houses themselves through some regulatory policies is perhaps an alternative towards addressing housing delivery.

None disputably, the studies by Prahalad and Hart on how to better serve the BOP market back in 2002, were influential in Anderson and Billou's latest 4As framework. Notwithstanding the critics for the BOP model by the likes of Karnani, the urgency to address and improve housing delivery for the benefit of BOP in SA does exist. It is for this reason that the research was conducted, mainly in order to assess and test whether the 4As framework could be used to better serve the housing need of the low-income consumer.

CHAPTER 3: RESEARCH HYPOTHESES

The purpose of this study is to assess 4As framework in serving the low-income housing market using quantitative methodology and analyses. Descriptive research often helps segment and target markets or clusters of markets (Zikmund, 2003). This research is based on the theory that serving the low-income consumer can be improved by addressing the four As, namely: Affordability, Awareness, Acceptability and Availability. In literature review, extensive research has been conducted on how to serve consumers at Bottom of the Pyramid (BOP) though there may be other factors unaccounted for and unique to the low-income housing market.

This study was conducted on a sample of households whose earnings are less than R3,500 per month and located in the informal settlements of Alexandra, Diepsloot and Ivory Park townships of Johannesburg in Gauteng Province. Common to these communities are the levels of poverty, living conditions and quality of life. Apart from lack of adequate housing, access to electricity, water and sanitation these communities often have other issues to deal with such as high crime levels. The target group in the scope of this study is the low-income housing consumer in South Africa. The measure of success ($Succes\_M$) for this targeted population will be any structural modifications or extensions in the house conducted by the owner using his/her own effort and or income in the past two years. $Succes\_M$ is the response binary variable either coded $Success\_M_{No}$ (for no structural modification or extension) and $Success\_M_{Yes}$ otherwise.

3.1   RESEARCH HYPOTHESES

In statistical theory a hypothesis is an unproven proposition or supposition that tentatively explains certain factors or phenomenon (Zikmund, 2003). The hypotheses represent an assumption by the investigator of a view of the world. The benefit of statistical tools is that there is an opportunity to confirm whether or not the theoretical hypotheses are plausible by the empirical evidence (Zikmund, 2003) or with a certain degree of measurable statistical evidence.

The study included the households who had made and those who had not made structural modifications or extensions to their houses over the past twenty four months. Success was defined as those household that have done structural modification or change using their own income in the past two years and would have responded Yes under success measure section of the questionnaire otherwise measure of success was no. In statistical methodology, Anova is the tool used to detect if differences exist between such two (or more) groups and Kruskal-Wallis is the non parametric equivalent.

Hypothesis 1:

The null hypothesis states that there is no difference between exercising an approach that delivers <u>acceptability</u> and <u>success</u> amongst low-income consumer for self-help housing. The alternative hypothesis states that there is a difference between the two constructs, i.e.

H_0: on the Acceptability score, $Success\_M_{Yes} = Success\_M_{No}$

H_1: on the Acceptability score, $Success\_M_{Yes} \neq Success\_M_{No}$

Hypothesis 2:

The null hypothesis states that there is no difference between exercising an approach that delivers <u>availability</u> and <u>success</u> amongst low-income consumer for self-help housing. The alternative hypothesis states that there is a difference between the two constructs, i.e.

H_0: on the Availability score, Success_M_{Yes} = Success_M_{No}

H_1: on the Availability score, Success_M_{Yes} ≠ Success_M_{No}

Hypothesis 3:

The null hypothesis states that there is no difference between exercising an approach that delivers <u>affordability</u> and <u>success</u> amongst low-income consumer for self-help housing. The alternative hypothesis states that there is a difference between the two constructs, i.e.

H_0: on the Affordability score, Success_M_{Yes} = Success_M_{No}

H_1: on the Affordability score, Success_M_{Yes} ≠ Success_M_{No}

Hypothesis 4:

The null hypothesis states that there is no difference between exercising an approach that delivers <u>awareness</u> and <u>success</u> amongst low-income consumer for self-help housing. The alternative hypothesis states that there is a difference between the two constructs, i.e.

H_0: on the Awareness score, Success_M_{Yes} = Success_M_{No}

H_1: on the Awareness score, Success_M_{Yes} ≠ Success_M_{No}

CHAPTER 4: RESEARCH METHODOLOGY

4.1   INTRODUCTION

This chapter focuses on the research methodology and how it was applied to the research constructs covered in Chapter 1 and 3. Emphasis will be on the population, the sample size, and selection, the questionnaire design, data collection process, data analysis and research limitations.

4.2   RESEARCH METHOD

Quantitative research is employed when the researcher evaluates quantitative information. The main data collection tool used in this study was a survey questionnaire (see Annexure A). The 5-point numerical scale rating questionnaire was used to interview low-income households whose earnings were less than R3,500 per month from the area of Alexandra, Diepsloot and Ivory Park. The 5-point numerical scale was such that respondents were able to rate their attitudes by checking how they agree or disagree with carefully constructed positive statements (Zikmund, 2003). By assigning the scores or weights to the alternative responses, statistical analysis of data is enabled with probabilistic measure of a likelihood of generalisations (Zikmund, 2003).

The pilot study was also conducted to determine the validity of the questionnaire for data collection and it served as a guide on what was to be expected from the larger study and modifications that were necessary. Statistical analyses were done to data and conclusions drawn in respect of the above hypotheses.

4.3   POPULATION OF RELEVANCE

Blaikie (2004, p.160) explains that, "In order to apply a sampling technique, it is necessary to define the population (also called the target population, universe or sampling frame) from which the sample is drawn". A population can be defined as a complete group of entities (be it people, companies, stores etc.) that share a common set of characteristics (Zikmund, 2003). Taking into account this definition, the targeted population for the study will mainly be the people living in the informal settlements who earn less than R3,500 per month (falling in Tiers 3 and 4 of SA economic pyramid). For purposes of convenience and generalisability, households who earn less than R3,500 per month and living in the informal settlements of South Africa.

4.4   SAMPLING METHOD

Blaikie defines a sample as, "a selection of elements from a population and is used to make statements about the whole population" (Blaikie, 2004, p. 161). He further states that, "The ideal sample is one that provides a perfect representation of a population, with all relevant features of a population included in the sample in the same proportions. However, while this ideal can be approached, it is difficult to achieve fully in practice". In this particular study practicality with respect to easy access to the sample was a huge factor, in that whilst the study of the whole population would have been ideal, it was important that the study is not tedious and cost intensive. Consequently the study was limited to the geographical areas of Gauteng's three informal settlements as a matter of convenience.

Most of the houses in these townships i.e. Alexandra, Diepsloot and Ivory Park informal settlements, form the population of interest of households who earn less than R3,500 per month and had houses that were built via the government's Reconstruction and Development Programme (RDP). Common to these communities are the levels of poverty, living conditions and quality of life.

This study employed the use of stratified sampling, analysis of variance, cross tabulations and regression techniques as described below. Stratified sampling was an ideal sampling method since it enabled the classification of the population into subgroups (strata) that are more or less equal on some characteristics as mentioned above. In a stratified sampling a sub-sample is drawn utilising simple random sampling within each stratum (Zikmund, 2003). The other reason for choosing the stratified sampling procedure was because of the assurance that the sample will accurately reflect the population on the basis of the criterion or criteria used for stratification.

4.5   SAMPLE SIZE

With regards to sample size, the general rule is the bigger the better. However, Blaikie (2004, p. 166) points out that, "increasing the sample size is subject to 'law' of diminishing returns. A sample of 150 individual households who earn less than R3,500 per month from the informal settlements of Alexandra, Diepsloot and Ivory Park was initially planned to be surveyed. The three informal settlements were to be treated as strata with 50 household per stratum under the assumption that if there were any factors that impact on the low-income housing consumers these were similar across the strata, hence the strata would in fact be clusters.

After conducting the actual survey a sample of 142 households was only reached and this was utilised for this research (see Table 4 below). This was considered sufficient for generalising the findings to the rest of the population. There were obvious limitations to the generalisability in that the population was confined to Gauteng province. Although this maybe true, but the three communities surveyed in this study are strongly representative of the kind of informal settlements that you find in South Africa. Gauteng - Johannesburg was the best place to conduct this study given its rapid urbanisation, being the economic powerhouse South Africa with highly integrated and diversified population, and the place where most people are coming into to seek better life.

Table 4: Respondents breakdown

Community	Sample Frame	Number of respondents
Alexandra	Households	51
Diepsloot	Households	44
Ivory Park	Households	47
	Total sample	**142**

4.6   UNIT OF ANALYSIS

The unit of analysis for the study was the individual households that would have responded.

- Dependent variable is Success or No success, coded as 1 for success (structural additions) and 0 for no success (no structural additions).

- The predictor variables will be the 4As: Acceptability, Availability, Affordability and Awareness each measured as a sums score of the constructs under that domain on the questionnaire.

4.7 QUESTIONNAIRE DESIGN

The questionnaire was designed with the intention of collecting the data required to answer the research hypotheses in Chapter 3. In order to clearly describe the profile of the respondents the questionnaire comprised of nine questions relating to the biographical and socio-economic attributes of the respondents. These questions were namely: race, gender, age, source of income, monthly earning, ownership of a bank account, residence, success measure (whether done structural modification or not) and period taken to finish in addition to the constructs on Affordability, Availability, Acceptability and Awareness.

4.8 DATA COLLECTION METHOD

Zikmund (2003) highlights that the survey method can potentially provide quick, inexpensive, efficient, and accurate means of assessing information about the population. A face-to-face survey was conducted in order to ensure clarity on questions and partly to deal with any language issues through the use of the 5-point numerical scale survey questionnaire (see Appendix A). This was done by using the group of four data capturers, who had been trained and assessed by the author in ensuring that they were conversant with the questionnaire details. This approach was expected to yield minimally biased responses.

There were no personal or confidential issues on the instrument, though salary was generally regarded as conservative. However getting the sampling frame from a government RDP housing scheme, for those households staying in RDP houses, ensured a way around this complication since one must earn less that R3,500 to be granted a house.

4.9   DATA ANALYSIS

4.9.1 Cross Tabulation

In order to measure the existence / absence of a relationship between each of the variables and the significance thereof, the use of cross-tabulation and Chi-square test were employed.   According to Zikmund (2003), cross-tabulation is used to inspect differences among groups and to make comparisons. This form of analysis also helps determine the form of a relationship between two categorical variables.   Chi-square test allows for testing of the significance in the relationship, i.e. "it tests the goodness of fit" (Zikmund, 2003, p. 511).

4.9.2 Correlation Analysis

The most popular technique that indicates the relationship of one variable to another is simple correlation analysis" (Zikmund, 2003, p. 551). Simple correlation coefficient is a statistical measure of the association, between two variables. The correlation coefficient, r, ranges from +1.0 to -1.0. It indicates both the magnitude of the linear relationship and the direction of the relationship (Zikmund, 2003). The association between each of the 4As responses was conducted using the Pearson correlation and the significance of the relationship was determined by using the sig. (2-tailed).

4.9.3 Analysis of Variance (ANOVA)

Analysis of Variance (ANOVA) is a statistical procedure useful in comparing means of several groups of observations and is sometimes referred to as the test for significant difference between means (StatSoft, 2008). When mean of more than one groups or populations are to be compared, one-way Analysis of Variance (ANOVA) is the appropriate statistical tool to use (Zikmund, 2003). ANOVA was used to compare two

independent variables, those who had done structural modifications against those who had not (two levels of success), to their responses on each of the 4As score. In this regard an F-test was used to test the null hypothesis for the difference in means between Success versus No success groups. However, the test did not provide information about the magnitude of the difference - other statistical tests would need to be performed to quantify the magnitude. In this case, the null hypothesis was that the means of the two groups (Success versus No success) showed no difference across each of the 4As.

$$H_0: \mu_{Success} = \mu_{No\ success}$$

The alternative hypothesis, H_1 was that there is a difference between the two groups.

$$H_1: \mu_{Success} \neq \mu_{No\ success}$$

4.9.4 Kruskal-Wallis Test

Kruskal-Wallis test is appropriate when comparing three or more groups or populations and data are ordinal (Zikmund, 2003). According to Zikmund (2003), Kruskal-Wallis has similarities to ANOVA, however ANOVA is used for parametric test where else Kruskal-Wallis test can be applied in nonparametric testing (i.e. there is no distributional assumptions such as normality). The data must be ranked from lowest to highest or the original data be converted so that a numerical rank may be assigned to every observation (Zikmund, 2003).

Kruskal-Wallis test has been used in this research to ascertain exactly whether differences exist in the success measure (Yes or No responses). This test is very relevant in a study where the arbitrary scoring was used instead of the actual numbers (Zikmund, 2003) and that was the case in this research.

4.10   LIMITATIONS OF THE RESEARCH

One of the limitations for the research was that it looked at the informal settlement around the Gauteng urban region. The conclusion and inferences made from this research for the population of South Africa could be skewed as it will not have included the informal settlements in the urban rural and rural areas of South Africa more so as Gauteng has economic climate different to other provinces. This may require caution in generalising the results to the rest of the country, e.g. the application of weights. However, it is argued that the three communities survey, namely: Alexandra, Diepsloot and Ivory Park, were strongly representative of the kind of informal settlements that you find in South Africa. There is no better place in South Africa to conduct a representative study than in Gauteng - Johannesburg where most people are coming into. Given its rapid urbanisation and the fact that it is the economic powerhouse of South Africa with highly integrated and diversified population, it was deemed a better place to conduct a study of this nature.

The majority of the low-income consumer market is not fluent in English, therefore during the interviews clarity to questions and translation where necessary was given using one of the African languages, such as Zulu, Xhosa or Sotho. In addition there was a possibility that the original occupant (who did structural modifications) could have not been a sitting tenant and as such the study would attribute the success to the sitting tenant when clearly this was not so, however every effort was made to ensure that all respondents were real owners of the houses. This was mitigated by using multiple questioning and probing of the respondent during the completion of the questionnaire.

CHAPTER 5: RESULTS

5.1 INTRODUCTION

This chapter presents findings of the research hypotheses as set out in Chapter 3 beginning with results of socio-demographic and socio-economic variables up to the validity of different statistical techniques used for analyses. Finally, results relating to the hypotheses being tested are presented starting with hypothesis 1 to hypothesis 4 as set out in Chapter 3.

5.2 DESCRIPTION AND PROFILE OF RESPONDENTS

To clearly describe the profile of the respondents, the questionnaire comprised of certain questions relating to the biographical and socio-economic attributes of the respondents namely: race, gender, age, source of income, monthly earning, ownership of a bank account, residence, success measure and period taken to finish building.

To measure the significance in existence or absence of a relationship between two variables cross-tabulation tables with Chi-square test-statistics were employed. According to Zikmund (2003), cross-tabulation is useful to inspect differences among categorical groups and to make comparisons. Chi-square test allows for testing of significance in relationships, i.e. "it tests the goodness of fit" (Zikmund, 2003, p. 511). Although cross-tabulation relationships were not core to the study, the analyses were done to explore if there were any interesting relationships that would influence the 4As.

Table 5: **Gender versus Age cross-tabulation and Chi-Square test**

| | | | AGE | | | | |
			(25-34)	(35-44)	(45-49)	(50+)	Total
GENDER	Male	Count	7	19	30	17	73
		% within GENDER	9.6%	26.0%	41.1%	23.3%	100.0%
		% within AGE	70.0%	54.3%	52.6%	42.5%	51.4%
		% of Total	4.9%	13.4%	21.1%	12.0%	51.4%
	Female	Count	3	16	27	23	69
		% within GENDER	4.3%	23.2%	39.1%	33.3%	100.0%
		% within AGE	30.0%	45.7%	47.4%	57.5%	48.6%
		% of Total	2.1%	11.3%	19.0%	16.2%	48.6%
Total		Count	10	35	57	40	142
		% within GENDER	7.0%	24.6%	40.1%	28.2%	100.0%
		% within AGE	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	7.0%	24.6%	40.1%	28.2%	100.0%

Chi-Square Tests

	Value	df	p-value
Pearson Chi-Square	2.805a	3	.423
Likelihood Ratio	2.852	3	.415
Linear-by-Linear Association	2.408	1	.121
N of Valid Cases	142		

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 4.86.

From Table 5 above, of the 142 respondents, 73 were male and 69 were female. There were 7 females aged between 25-30 years, they constitute only 2.1% of the total sample and 3 males constitute 4.9% of the total sample. If we interpret all the remaining numbers in the first cell (row one column one), 9.6% is the 7 as a percentage of 73 (row percent) and 70% is simply 7 as a percentage of all people who are 25-34 i.e. 10 (column percent). It follows if we look at 50+ year's group that 57.5% of them are female and 42.5% are male. Of the females who are aged 50+ years, they constitute only 12.0% of the total sampled and male constitute 16.2% of the total sample. The majority

of the respondents were aged 45 years and above, constituting 68.3% of the total sample.

Comparing the p-value from the Chi-square test statistic to the level of significance set at 0.05 through out enables inferences about association between gender and age to be ascertained, the null hypothesis being that no relationship exists between gender and age. Should the null hypothesis be rejected i.e. when the p-value is less than the level of significance of 0.05, then the alternative hypothesis will be concluded that there is an association between gender and age. Failure to reject the null hypothesis in contrast does not give a definite conclusion but rather depicts that no evidence in support of or against a relationship could be ascertained. The cross tabulation hypotheses were:

H_0: No association exist between gender and age.

H_1: There is an association between gender and age.

From Table 5 above, Pearson Chi-Square test gave a p-value of 0.423, which is greater than 0.05. Therefore, since the p-value > 0.05, the H_0 will not be rejected which implies that no association exist between gender and age can be concluded.

Cross-tabulation of gender against source of income is shown in Table 6 below. From Table 6, it is observed that of the 142 total respondents, 46.5% was employed, 28.2% was self-employed and 25.4% was unemployed. Of the sixty six (66) employed respondents, 53% was male versus 47% female.

Using the Chi-square to test the level of association between gender and source of income suggests the following hypotheses:

H_0: No association exist between gender and source of income.

H_1: There is an association between gender and source of income.

From Table 6 below, Pearson Chi-Square test gave a p-value of 0.843, which is much greater than 0.05. Therefore, since the p-value > 0.05, the H_0 will not be rejected which implies that no association exist between gender and source of income can be concluded.

Table 6: Gender versus Source of income cross-tabulation and Chi-Square test

| | | | S_INCOME | | | |
			Employed	S_Employed	Unemployed	Total
GENDER	Male	Count	35	21	17	73
		% within GENDER	47.9%	28.8%	23.3%	100.0%
		% within S_INCOME	53.0%	52.5%	47.2%	51.4%
		% of Total	24.6%	14.8%	12.0%	51.4%
	Female	Count	31	19	19	69
		% within GENDER	44.9%	27.5%	27.5%	100.0%
		% within S_INCOME	47.0%	47.5%	52.8%	48.6%
		% of Total	21.8%	13.4%	13.4%	48.6%
Total		Count	66	40	36	142
		% within GENDER	46.5%	28.2%	25.4%	100.0%
		% within S_INCOME	100.0%	100.0%	100.0%	100.0%
		% of Total	46.5%	28.2%	25.4%	100.0%

Chi-Square Tests

	Value	df	p-value
Pearson Chi-Square	.341[a]	2	.843
Likelihood Ratio	.341	2	.843
Linear-by-Linear Association	.276	1	.599
N of Valid Cases	142		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.49.

Cross-tabulation of gender against monthly income is shown in Table 7 below. Using the Chi-square to test the level of association between gender and monthly income suggests the following hypotheses:

H_0: No association exist between gender and monthly income.

H_1: There is an association between gender and monthly income.

From Table 7 below, Pearson Chi-Square test gave a p-value of 0.221, which is greater than 0.05. Therefore, since the p-value > 0.05, the H_0 will not be rejected which implies that no association exist between gender and monthly income can be concluded. The salaries cannot be said to be dependant on gender.

Table 7: **Gender versus monthly income cross-tabulation and Chi-Square test**

				M_INCOME		
			<R1500	>R1500 <R2500	>R2500 <R3500	Total
GENDER	Male	Count	24	13	36	73
		% within GENDER	32.9%	17.8%	49.3%	100.0%
		% within M_INCOME	49.0%	40.6%	59.0%	51.4%
		% of Total	16.9%	9.2%	25.4%	51.4%
	Female	Count	25	19	25	69
		% within GENDER	36.2%	27.5%	36.2%	100.0%
		% within M_INCOME	51.0%	59.4%	41.0%	48.6%
		% of Total	17.6%	13.4%	17.6%	48.6%
Total		Count	49	32	61	142
		% within GENDER	34.5%	22.5%	43.0%	100.0%
		% within M_INCOME	100.0%	100.0%	100.0%	100.0%
		% of Total	34.5%	22.5%	43.0%	100.0%

Chi-Square Tests

	Value	df	p-value
Pearson Chi-Square	3.019[a]	2	.221
Likelihood Ratio	3.034	2	.219
Linear-by-Linear Association	1.240	1	.265
N of Valid Cases	142		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.55.

From Table 8 below, out of 73 male respondents, 67 (91.8%) of them have bank accounts and six (8.2%) have no bank accounts. And out of sixty nine (69) female respondents, 62 (89.9%) have bank accounts and 7 (10.1%) have no bank accounts. The Pearson Chi-Square test gave a p-value of 0.691, which is greater than 0.05. Therefore there is no association between gender and owning a bank account.

Table 8: **Gender vs. owning a bank account cross-tabulation and Chi-Square test**

| | | | BANK_ACC | | Total |
			Yes	No	
GENDER	Male	Count	67	6	73
		% within GENDER	91.8%	8.2%	100.0%
		% within BANK_ACC	51.9%	46.2%	51.4%
		% of Total	47.2%	4.2%	51.4%
	Female	Count	62	7	69
		% within GENDER	89.9%	10.1%	100.0%
		% within BANK_ACC	48.1%	53.8%	48.6%
		% of Total	43.7%	4.9%	48.6%
Total		Count	129	13	142
		% within GENDER	90.8%	9.2%	100.0%
		% within BANK_ACC	100.0%	100.0%	100.0%
		% of Total	90.8%	9.2%	100.0%

Chi-Square Tests

	Value	df	p-value	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.158[b]	1	.691		
Continuity Correction[a]	.011	1	.915		
Likelihood Ratio	.158	1	.691		
Fisher's Exact Test				.776	.457
Linear-by-Linear Association	.157	1	.692		
N of Valid Cases	142				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6. 32.

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From Table 9 below, out of seventy one (71) respondents who admitted to having done structural modifications / additions to their houses, 53.5% were female versus 46.5% male. Of the twenty eight (28) respondents who had done structural modification within a period of less than 18 months, 64.3% were female versus only 35.7% male. Of the (thirty) 30 respondents who had done structural modification / additions within a period of less than 24 months 66.7% were male versus only 33.3% female.

Table 9: Gender vs. Finishing period cross-tabulation and Chi-Square test

| | | | IF_FINISHED | | | | |
			< 6 m	< 12 m	< 18 m	< 24 m	Total
GENDER	Male	Count	1	2	10	20	33
		% within GENDER	3.0%	6.1%	30.3%	60.6%	100.0%
		% within IF_FINISHED	20.0%	25.0%	35.7%	66.7%	46.5%
		% of Total	1.4%	2.8%	14.1%	28.2%	46.5%
	Female	Count	4	6	18	10	38
		% within GENDER	10.5%	15.8%	47.4%	26.3%	100.0%
		% within IF_FINISHED	80.0%	75.0%	64.3%	33.3%	53.5%
		% of Total	5.6%	8.5%	25.4%	14.1%	53.5%
Total		Count	5	8	28	30	71
		% within GENDER	7.0%	11.3%	39.4%	42.3%	100.0%
		% within IF_FINISHED	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	7.0%	11.3%	39.4%	42.3%	100.0%

Chi-Square Tests

	Value	df	p-value
Pearson Chi-Square	9.112[a]	3	.028
Likelihood Ratio	9.384	3	.025
Linear-by-Linear Association	7.692	1	.006
N of Valid Cases	71		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is 2.32.

The Pearson Chi-Square test gave a p-value of 0.028, which is less than 0.05. Since the p-value < 0.05, this implies that there is an association between gender and period taken to finish building. This means that the two gender groups (men versus women) differ in period taken to finish building.

From Table 10 below the finishing period versus monthly income cross-tabulation is shown. Out of seventy one (71) respondents who admitted to having done structural modifications / additions to their houses, forty nine (49) earn between R2,500 and R3,500; eleven (11) earn between R1,500 and R2,500 and another eleven (11) earn less than R1,500 per month (see Table 10). Most of the people (43 out of 49) who earn between R2,500 and R3,500 per month have done structural modification longer than 12 months. The people who earn <R1,500 per month were uniformly distributed in terms of their project completion periods.

Table 10: Finishing period versus monthly income cross-tabulation

			M_INCOME			
			<R1500	>R1500 <R2500	>R2500 <R3500	Total
IF_FINISHED	< 6 m	Count	2	0	3	5
		% within IF_FINISHED	40.0%	.0%	60.0%	100.0%
		% within M_INCOME	18.2%	.0%	6.1%	7.0%
		% of Total	2.8%	.0%	4.2%	7.0%
	< 12 m	Count	3	2	3	8
		% within IF_FINISHED	37.5%	25.0%	37.5%	100.0%
		% within M_INCOME	27.3%	18.2%	6.1%	11.3%
		% of Total	4.2%	2.8%	4.2%	11.3%
	< 18 m	Count	1	5	22	28
		% within IF_FINISHED	3.6%	17.9%	78.6%	100.0%
		% within M_INCOME	9.1%	45.5%	44.9%	39.4%
		% of Total	1.4%	7.0%	31.0%	39.4%
	< 24 m	Count	5	4	21	30
		% within IF_FINISHED	16.7%	13.3%	70.0%	100.0%
		% within M_INCOME	45.5%	36.4%	42.9%	42.3%
		% of Total	7.0%	5.6%	29.6%	42.3%
Total		Count	11	11	49	71
		% within IF_FINISHED	15.5%	15.5%	69.0%	100.0%
		% within M_INCOME	100.0%	100.0%	100.0%	100.0%
		% of Total	15.5%	15.5%	69.0%	100.0%

Table 11 shows the finishing period versus owning a bank account cross-tabulation. Out of seventy one (71) respondents who admitted to having done structural modifications, there was only one (1) who had no bank account.

Table 11: Finishing period versus owning a bank account cross-tabulation

			BANK_ACC		
			Yes	No	Total
IF_ FINISHED	< 6 m	Count	5	0	5
		% within IF_FINISHED	100.0%	.0%	100.0%
		% within BANK_ACC	7.1%	.0%	7.0%
		% of Total	7.0%	.0%	7.0%
	< 12 m	Count	8	0	8
		% within IF_FINISHED	100.0%	.0%	100.0%
		% within BANK_ACC	11.4%	.0%	11.3%
		% of Total	11.3%	.0%	11.3%
	< 18 m	Count	28	0	28
		% within IF_FINISHED	100.0%	.0%	100.0%
		% within BANK_ACC	40.0%	.0%	39.4%
		% of Total	39.4%	.0%	39.4%
	< 24 m	Count	29	1	30
		% within IF_FINISHED	96.7%	3.3%	100.0%
		% within BANK_ACC	41.4%	100.0%	42.3%
		% of Total	40.8%	1.4%	42.3%
Total		Count	70	1	71
		% within IF_FINISHED	98.6%	1.4%	100.0%
		% within BANK_ACC	100.0%	100.0%	100.0%
		% of Total	98.6%	1.4%	100.0%

5.3 **CORRELATION ANALYSES OF THE 4AS**

5.3.1 Measurement scores

Acceptability: this was measured by using the sum score of the responses given for each of the 3 factors *(see appendix A)* with minimum = 3 and maximum = 15

Availability: this was measured by using the sum score of the responses given for each of the 4 factors *(see appendix A)* with minimum = 3 and maximum = 20

Affordability: this was measured by using the sum score of the responses given for each of the 6 factors *(see appendix A)* with minimum = 3 and maximum = 30

Awareness: this was measured by using the sum score of the responses given for each of the 3 factors *(see appendix A)* with minimum = 3 and maximum = 25

"The most popular technique that indicates the relationship of one variable to another is simple correlation analysis" (Zikmund, 2003, p. 551). Simple correlation coefficient is a statistical measure of the association, between two variables. The correlation coefficient, r, ranges from +1.0 to -1.0. It indicates both the magnitude of the linear relationship and the direction of the relationship (Zikmund, 2003). The association between each of the 4As responses was conducted using the Pearson correlation and the significance of the relationship was determined by using the sig. (2-tailed) (see Table 12 below).

Table 12: **4As - Correlation Analyses**

		Acceptability	Availability	Affordability	Awareness
Acceptability	Pearson Correlation	1	.682**	.666**	.582**
	Sig. (2-tailed)		.000	.000	.000
	N	142	142	142	142
Availability	Pearson Correlation	.682**	1	.835**	.800**
	Sig. (2-tailed)	.000		.000	.000
	N	142	142	142	142
Affordability	Pearson Correlation	.666**	.835**	1	.797**
	Sig. (2-tailed)	.000	.000		.000
	N	142	142	142	142
Awareness	Pearson Correlation	.582**	.800**	.797**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	142	142	142	142

**.· Correlation is significant at the 0.01 level (2-tailed).

From Table 12 above, all Pearson Correlations were found to be significant and were all less 0.01 levels (2-tailed). Of the 4As, Affordability and Availability had the highest correlation coefficient of 0.835. Judging from the correlation coefficient and p-value (Sig. 2-tailed) from the table 9 above there is strong evidence that the 4As have a significant correlation. This positively demonstrates that the 4As are linearly dependant and related to each other.

5.4 DESCRIPTIVE STATS OF THE 4AS AND THE MEASURE OF SUCCESS (SUCCESS_M)

The table of descriptive analysis of the 4As against success measure (see Table 13 below), shows that there were 71 respondents who answered "No" on the measure of success (Success_M) and 71 respondents who answered "Yes" based on whether they had conducted structural modifications on their houses or not. From the results the mean for "Yes" is greater than the mean for "No" for all of the 4As. Across all the 4As people who have done structural modifications (with Yes response) scored higher on average than those who have not (with No response). Looking at the Std. error and the

Std. deviation columns, those respondents who had responded "Yes" had lower Std. error and the Std. deviation than those who had responded "No" implying more consistence within the "Yes" group compared to the "No" group. Acceptability had the lowest Std. error and Std. deviation, for each of the 4As at 1.841 and 0.154 respectively. Across all 4As the "No" responses had the lowest minimum when compared to the "Yes" responses.

Table 13: Descriptive analysis of the 4As against Success measure

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
Availability	Yes	71	19.24	1.177	.140	18.96	19.52	16	20
	No	71	14.92	2.877	.341	14.23	15.60	9	20
	Total	142	17.08	3.083	.259	16.57	17.59	9	20
Acceptability	Yes	71	12.94	1.308	.155	12.63	13.25	9	15
	No	71	10.76	1.643	.195	10.37	11.15	4	14
	Total	142	11.85	1.841	.154	11.55	12.16	4	15
Affordability	Yes	71	28.42	1.215	.144	28.13	28.71	23	30
	No	71	21.03	3.884	.461	20.11	21.95	16	30
	Total	142	24.73	4.689	.394	23.95	25.50	16	30
Awareness	Yes	71	21.28	2.485	.295	20.69	21.87	14	25
	No	71	16.00	3.854	.457	15.09	16.91	10	25
	Total	142	18.64	4.179	.351	17.95	19.33	10	25

The descriptive Std. deviation and Std. error shows the level of consistency by each of the respondents in each of the 4As. Of the 4As, Acceptability had the lowest Std. error (0.154), this means that the responses for Acceptability had less variation within themselves than the other 3As, i.e. the responses were more consistent.

5.5   SUM SCORE PERCENTAGE (%) RATING FOR EACH OF THE 4AS QUESTIONS

The table in Appendix B shows the sum score % ratings for each of the 4As variables. Each of the variable comprised of items that were being rated on a 5-point numerical scale where "1" was for strongly disagree and "5" was for strongly agree. The highest sum score for acceptability which has 3 items would therefore be 15, (i.e. 3 x 5 = 15). Thus if a respondent had highly rated (strongly agreed) all acceptability questions, the sum score % rating would then be [((3 x 5)/15)*100] = 100%.

All respondents who answered "Yes" had their responses with aggregate sum score % rating above 85%, with the minimum sum score % rating of 86.3% and 85.1% for acceptability and awareness independent variables respectively. All respondents who answered "No" had their responses more than 70% except for the awareness independent variables that had the sum score % rating of 64.0%.

Under awareness independent variable, most of the "No" respondents had scored low on item 4(c): which was about exhibition on the use of building materials (sum score rating of 53.8%), and 4(d): which was about receiving training on how to use a particular building material (at 59.7%). The other individual low sum score rating below 60% was under affordability independent variable where most of the "No" respondents had scored low on item 3(a): which was about the reduced package size of building material helping with lowering the selling price and making building material affordable.

On average both the respondents who had "Yes" and those who had "No" response on success measure (Success_M) had sum score well above 60% for each of the 4As independent variables. This demonstrates the importance of each of the variables in enabling conditions for self-help building as per consumer perspective.

5.6   BAR CHART PLOTS FOR THE 4AS

5.6.1   Acceptability

Figure 6 below shows the bar chart plot for measure of success responses versus the score on Acceptability. On average those who have done structural modifications (Yes for Success_M) turn to peak at 13 on Acceptability score whereas those who have not done structural modifications (with "No" response for Success_M) turn to peak at 11 on Acceptability score.   People that have done structural modification had higher count frequency compared to those who have not. Clearly seen on the graph is the lagging effect visible between the two groups. Therefore on the average one would expect those people who have completed their structural modification to retain a higher Acceptability score than those who have not.

FIGURE 6: **Bar chart plot for Acceptability vs. Success Measure** (Yes and No)
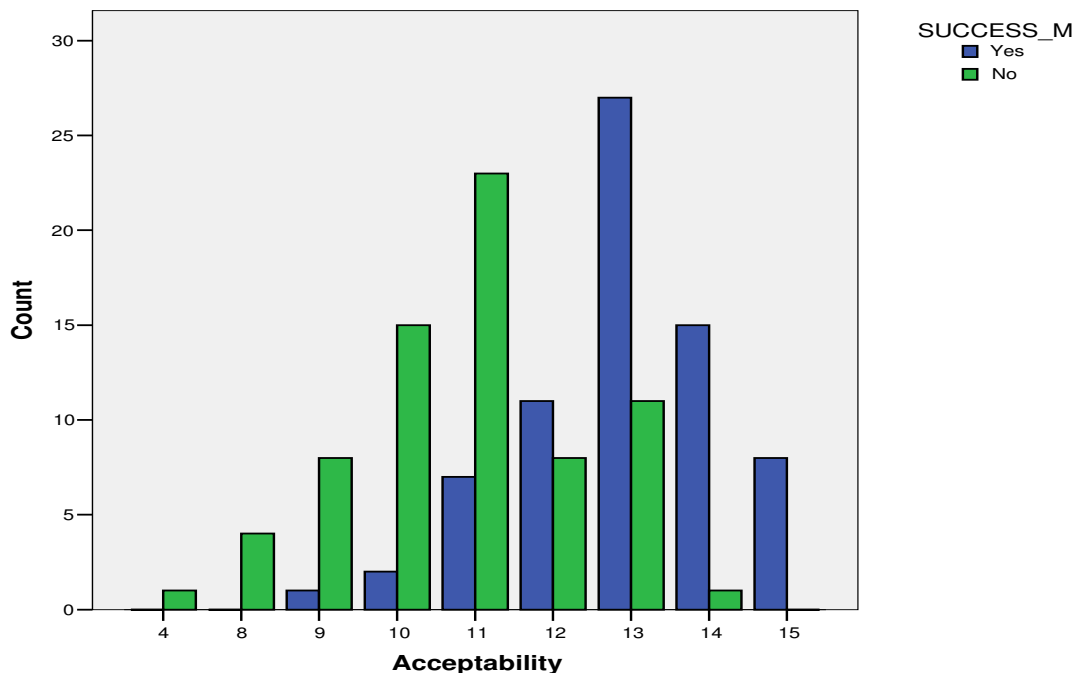
5.6.2 Availability

The bar chart for measure of success responses on Availability is shown in Figure 7. Optimally those who have not done any structural modification turn to peak at Availability score of 13 compared to those who have done structural modification who peak at Availability score of 20. Of significance is the frequency at which people that have done structural modification peak at 20 and the minimum or threshold score for those who have done structural modification is 16. From those people who had not done structural modification they mostly preferred giving responses that were sitting in the middle i.e. 3 in a scale of 1 to 5, hence their availability scoring came around 13 instead of a maximum score of 20.

FIGURE 7: **Bar chart plot for Availability vs. Success Measure** (Yes and No)
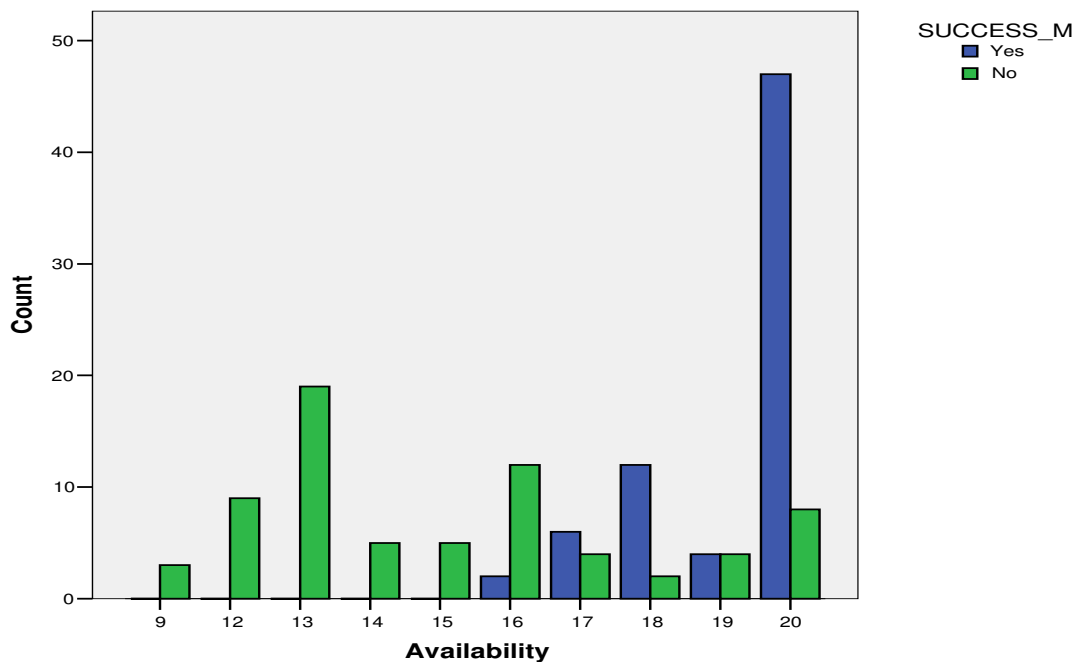
5.6.3 Affordability

With respect to Affordability, people who have done structural modifications scored higher on average than those who have done no structural modifications (see Figure 8 below). Those who have done no structural modifications turn to peak up lower at around 18 versus those who have done structural modification who optimally scored 29.

FIGURE 8: **Bar chart plot for Affordability vs. Success Measure** (Yes and No)
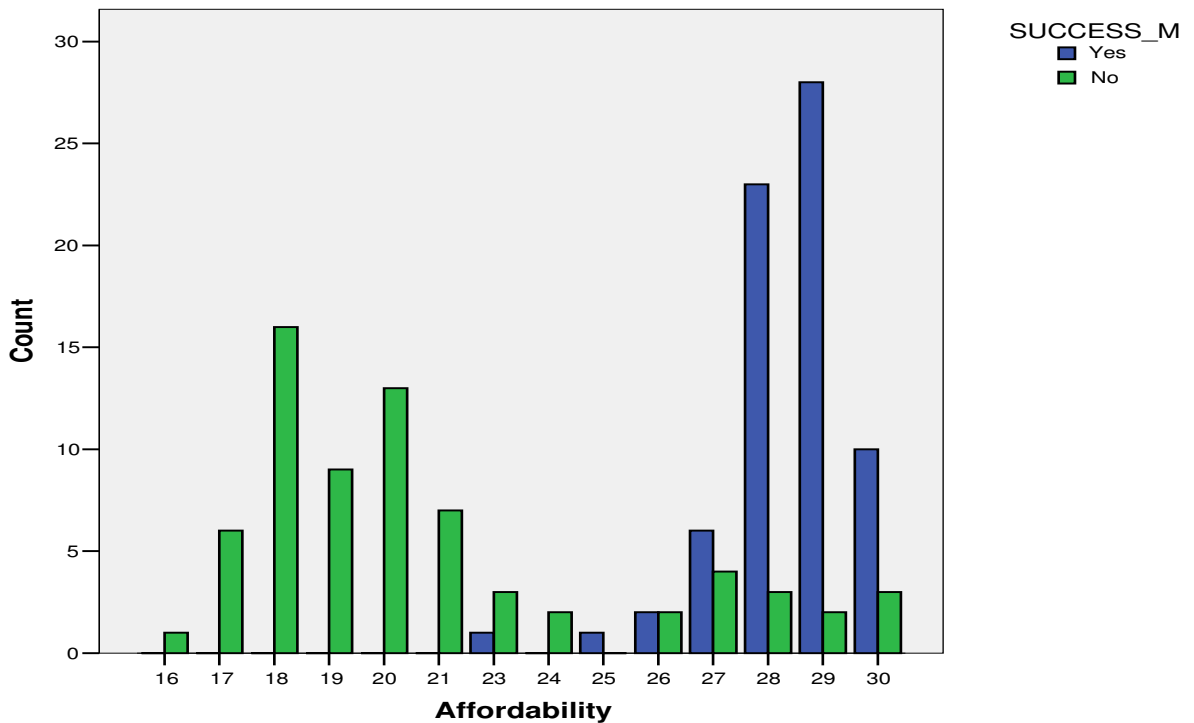
5.6.4 Awareness

A maximum score of 25 was expected for Awareness (see Figure 9 below). Most of the scores start rising at around 18 and peak at 22 for those who have done structural modification and only peak at around 13 for those who have not done structural modifications to their houses.

FIGURE 9: **Bar chart plot for Awareness vs. Success Measure** (Yes and No)
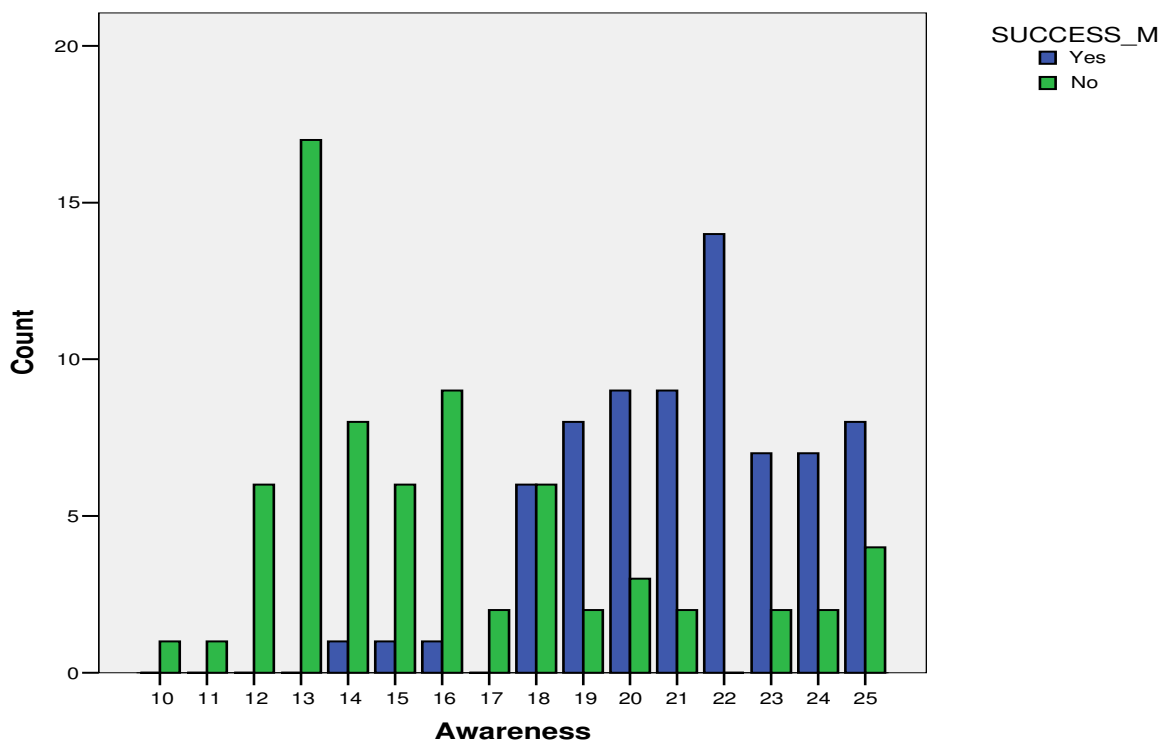
5.7   TESTING OF HYPOTHESES

5.7.1   ANOVA

To compare or test for a difference in means for two or more groups or populations, one-way Analysis of variance (ANOVA) is an appropriate statistical procedure (Zikmund, 2003). In this study, ANOVA was used to compare two independent groups (those who have done structural modifications against those who have not) to their responses on each of the 4As score (see Table 14 below).

Table 14: **Analysis of Variance (ANOVA) for the 4As responses**

		Sum of Squares	df	Mean Square	F	Sig. (p-value)
Availability	Between Groups (Combined)	663.725	1	663.725	137.372	.000
	Within Groups	676.423	140	4.832		
	Total	1340.148	141			
Acceptability	Between Groups (Combined)	169.190	1	169.190	76.729	.000
	Within Groups	308.704	140	2.205		
	Total	477.894	141			
Affordability	Between Groups (Combined)	1941.021	1	1941.021	243.409	.000
	Within Groups	1159.268	140	8.280		
	Total	3100.289	141			
Awareness	Between Groups (Combined)	990.317	1	990.317	94.164	.000
	Within Groups	1472.366	140	10.517		
	Total	2462.683	141			

Acceptability: If we have two levels of the independent variable, the null hypothesis for Acceptability is stated as follows:

H_0: on the Acceptability score, $Success\_M_{Yes} = Success\_M_{No}$

H_1: on the Acceptability score, $Success\_M_{Yes} \neq Success\_M_{No}$

Based on the p-value achieved which was significantly less than 0.05, reported to be 0.000, this implies that we reject the H_0 and conclude on H_1 i.e. $Success\_M_{Yes} \neq Success\_M_{No}$. This means that there is a significant difference in responses on Acceptability between the people who have done structural modification versus those who have not.

Availability: If we have two levels of the independent variable, the null hypothesis for Availability is stated as follows:

H_0: on the Availability score, $Success\_M_{Yes} = Success\_M_{No}$

H_1: on the Availability score, $Success\_M_{Yes} \neq Success\_M_{No}$

Based on the p-value achieved which was significantly less than 0.05, reported to be 0.000, this means that the null hypothesis, H_0 is rejected in favour of the alternative hypothesis, H_1, so $Success\_M_{Yes} \neq Success\_M_{No}$. This means that there is a significant difference in responses on Availability between the people who have done structural modification versus those who have not.

Affordability: If we have two levels of the independent variable, the null hypothesis for Affordability is stated as follows:

H_0: on the Affordability score, $Success\_M_{Yes} = Success\_M_{No}$

H_1: on the Affordability score, $Success\_M_{Yes} \neq Success\_M_{No}$

Based on the p-value achieved which was significantly less than 0.05, reported to be 0.000, this implies that we reject the H_0 and conclude on H_1 i.e. on the Affordability score, Success_M_{Yes} ≠ Success_M_{No}. This means that there is a significant difference in responses on Affordability between the people who have done structural modification versus those who have not.

Awareness: If we have two levels of the independent variable, the null hypothesis for Awareness is stated as follows:

H_0: on the Awareness score, Success_M_{Yes} = Success_M_{No}

H_1: on the Awareness score, Success_M_{Yes} ≠ Success_M_{No}

Based on the p-value achieved which was significantly less than 0.05, reported to be 0.000, this implies that we reject the H_0 and conclude on H_1, again on the Awareness score, Success_M_{Yes} ≠ Success_M_{No}. This means that there is a significant difference in responses on Awareness between the people who have done structural modification versus those who have not.

5.8   ANOVA FOR THE 4AS VERSUS EACH OF THE DESCRIPTIVE ELEMENTS

5.8.1 Acceptability

The Analysis of Variance (ANOVA) for each of the 4As as the independent variable against each of the descriptive elements is depicted in Appendix C (i). From Appendix C (i), it is seen that under Acceptability people with bank account had a p-value of 0.421 which is higher than 0.05. The Success_M and monthly income have the p-values < 0.05 at 0.00 for both descriptive elements.

Since the p-value of 0.421 is higher than 0.05, therefore one can conclude that there is no association between Acceptability and owning a bank account. This implies that

there is no difference in responses between people who have a bank account and those without a bank account when it comes to their responses under Acceptability. Therefore owning a bank account or not has no influence on how people would respond to Acceptability.

On the other hand Success_M and monthly income have the p-values < 0.05 at 0.00 for both descriptive elements. Therefore, there is an association / relationship between Acceptability and Success_M, which confirms the previous findings (i.e. Success_M$_{Yes}$ $\neq$ Success_M$_{No}$), and also there is an association between Acceptability and monthly income.

5.8.2 Availability

The table of results in Appendix C (ii) shows that of the eight descriptive elements looked at against Availability, five have their p-values <0.05, namely: residence (0.002); Success_M (0.000); source of income (0.037); monthly income (0.002) and age (0.001).

The results show evidence to suggest that Availability is associated to residence; Success_M; source of income; monthly income and age. Interestingly noticed is that Availability was associated with residence and age but not Acceptability.

5.8.3 Affordability

The table of results in Appendix C (iii) shows that of the eight descriptive elements looked at against Affordability, three have their p-values <0.05, namely: owning a Bank account (0.000); Success_M (0.000) and monthly income (0.001).

From the results, there is evidence to suggest that Affordability is associated to owning a bank account; Success_M and monthly income. Similar to Acceptability and Availability above, Affordability is also related / associated to Success_M and monthly income.

5.8.4 Awareness

The table of results in Appendix C (iv) shows that of the eight descriptive elements looked at against Awareness, four have their p-values <0.05, namely: residence (0.001); Success_M (0.000); period_finished (0.000) and monthly income (0.001).

From the results, there is evidence to suggest that Awareness is associated to residence; Success_M; period_finished and monthly income. Interesting to note is that monthly income and success measure were associated to all the 4As.

5.9 KRUSKAL-WALLIS TEST

Kruskal-Wallis test is appropriate when comparing three or more groups or populations and data are ordinal (Zikmund, 2003). According to Zikmund (2003), Kruskal-Wallis has similarities to ANOVA, however ANOVA is used for parametric test where else Kruskal-Wallis test can be applied in nonparametric testing (i.e. there is no distributional assumptions such as normality). The data must be ranked from lowest to highest or the original data be converted so that a numerical rank may be assigned to every observation (Zikmund, 2003).

Kruskal-Wallis test has been used in this research to ascertain exactly whether differences exist in the success measure (Yes or No responses). This test is very relevant in a study where the arbitrary scoring was used instead of the actual numbers (Zikmund, 2003) and this was the case in this research.

From the ranks Table 15 below, it is seen that those who had "Yes" responses on success measure (i.e. had done structural modifications) have a higher mean rank values across all the 4As.

The mean rankings were as follows:

- For Acceptability: 96.54 (Yes responses) and 46.46 (No responses)

- For Availability: 99.56 (Yes responses) and 43.44 (No responses)

- For Affordability: 101.45 (Yes responses) and 41.55 (No responses), and

- For Awareness: 96.85 (Yes responses) and 46.15 (No responses)

From the ranks Table, the mean rank for Affordability and Availability were the highest at 101.45 and 99.56 respectively.

Table 15: **Kruskal-Wallis Test for the 4As responses**

Ranks

	SUCCESS_M	N	Mean Rank
Acceptability	Yes	71	96.54
	No	71	46.46
	Total	142	
Availability	Yes	71	99.56
	No	71	43.44
	Total	142	
Affordability	Yes	71	101.45
	No	71	41.55
	Total	142	
Awareness	Yes	71	96.85
	No	71	46.15
	Total	142	

The greater mean rank values for those who had done structural modifications, depicted in Table 15 above, implies that in all of the 4As those who had done structural modifications have a greater mean rank values than those who had not done structural modifications, and this difference was significant through out. This further confirms the research hypothesis (H_1) that says: $Success\_M_{Yes} \neq Success\_M_{No}$

The mean ranks for Affordability and Availability that were the highest implies that of the 4As, Affordability and Availability have the significant influence and strong association to the level of success in conducting structural modifications (success measure) on their houses. Ultimately, all the 4As were highly significant in influencing the level of success in self-help housing amongst the respondents.

CHAPTER 6: DISCUSSION OF RESULTS

6.1   INTRODUCTION

This chapter expands on the results presented in Chapter 5. The interpretation of the results is facilitated by insights gained in literature review. The objective of this analysis of results is to provide plausible projections into the sample population and elaborate on the rejection of hypotheses 1 to 4 as presented in Chapter 5 or the failure to do so i.e. to reject.

6.2   DESCRIPTIONS OF THE SAMPLE POPULATION

6.2.1   Descriptive for gender and age

In terms of the sample size, the sample population is properly balanced (i.e. 71:71) between those respondents who have done structural modifications and those who have not done structural modifications to their houses. The results shown in Table 5 indicate that, the majority of the respondents were aged 45 years and above, constituting 68.3% of the total sample. The difference in home ownership between male and female (see Table 5) is more or less equally split between genders with 51.4% male and 48.6% female ownership.

6.2.2   Association between gender and monthly income

Testing the relationship between gender and monthly income, as shown in Table 7 of Chapter 5, suggests that no association exist between gender and monthly income. This implies that the salaries that we are going to see are not in anyway dependant on whether one is a male or female. Therefore there is no argument to suggest that women or man would be advantaged in doing structural modifications or extensions to their houses because of salary issues. Income levels are not differentiated by gender, i.e. if

there is any difference in income between male and female gender would not be the causative. For any argument in this study, income can therefore not be used as a source of evidence in influencing the success of female versus male and visa versa.

6.2.3 Association between gender and owning a bank account

The results shown in Table 8 of Chapter 5 suggest that, there is no relationship between gender and owning a bank account. Therefore, if there is a difference between people who have bank account versus those who have no bank account, causative effect of that can never be gender. This is obvious since for both male and female most of them clearly had the "Yes" response and very few "No" with respect to owning a bank account.

What is noticeable is that most of the respondent households (i.e. 90.8%) own bank accounts, with only 9.2% owning no bank account. SadreGhazi (2008, p. 7) argues that "Individual's limited access to or use of the formal banking services pervades many emerging markets". Even though 90.9% of respondents agreed to own a bank account, but their low level income limit them from accessing credit and most of them cannot therefore finance large investments or purchases. According to Mendoza and Thelen (2008) this results to restricted access to financial products and services amongst the poor, preventing them from participating more actively in housing market.

6.2.4 Association between gender and finishing period

From Table 9, the results show that the p-value is less than 0.05; this implies that there is an association between gender and period taken to finish building. Of the (thirty) 30 respondents who have done structural modification / additions within a period of less than 24 months 66.7% were male versus only 33.3% female. On average male respondents took much longer a period to finish their projects than female as evidenced by the Kruskal Wallis test. This could mean that women do not procrastinate or drag on things that would require investment on time or they are just better organisers than man.

This supports literature observation by Jenkins *et al* (2008, p.19) that "Companies have found time and time again that women are both more reliable and more entrepreneurial than men". Jenkins *et al* (2008) further argues that women have a great social network than men. Ndinda (2009) also confirms Jenkins *et al* observation when she argues that the success by women in housing is the result of the strategies the women employed, for instance they are good at lobbying.

Various studies suggest that the involvement of women in the planning, design and implementation of housing projects results in a higher success rate of projects than where women are excluded (Ndinda, 2009). Interesting to note is that, Government of South Africa has also particularly identified the need to support the role of women in the housing delivery process (DoH, 2007).

6.2.5 Association between finishing period and monthly income

Cross-tabulation results between finishing period and monthly income shown in Table 10 depicts that most of the people who earn between R2,500 and R3,500 per month have done structural modification took longer than 12 months, and people who earn <R1,500 per month were uniformly distributed in terms of their project completion periods.

Amongst the low-income earners, people who earn more would be expected to be the one who take less time to complete their projects than those who earn less, but this was not the case. This could be that people who earn more turn to procrastinate or possibly could have a lot to do with the size or scale of the structural modification project, which they embark upon, being large and hence taking longer.

6.2.6 Association between finishing period and owning a bank account

The table of results in Table 11 shows the finishing period versus owning a bank account cross-tabulation. Out of seventy one (71) respondents who conducted structural modifications, there was only one (1) who had no bank account. Table 8 shows that, out of 142 total respondents, thirteen (13) had no bank account, this means that out of seventy one (71) respondents who have not done structural modifications, there were twelve (12) with no bank account. This clearly demonstrate that ownership of a bank account is much more of the incentive (according to the scope of the study) leading to success in structural modification than not owning a bank account. This finding confirms Mendoza and Thelen (2008) view that restricted access to financial products and services amongst the poorer prevent them from participating more actively in housing market.

It is stated earlier in the literature review that compared to those with high-incomes, low-income people are much less likely to have bank accounts, less likely to save or invest and more susceptible to predatory lending practices (Hammond *et al.*, 2007; UNDP, 2007; Subrahmanyan and Gomez-Arias, 2008). Ownership of a bank account is an incentive; it enables easy access to credit and also allows for direct deposit of payroll transactions and bill payment (Mendoza and Thelen, 2008).

However, it must also be mentioned that lack of stable financial resources resulting from unemployment, could be the primary reason for not having a bank account. These results support the literature in that the majority of the respondents (i.e. 12 out of 13 respondents) who did not have bank accounts had not done any structural modifications to their homes.

6.3   RESEARCH HYPOTHESIS ONE (Acceptability versus Success)

Hypothesis one is the relationship between Acceptability and Success amongst low-income consumer for self-help housing.   The null hypothesis states that there is no difference between exercising an approach that delivers <u>acceptability</u> and <u>success</u> amongst low-income consumer for self-help housing.   The alternative hypothesis states that there is a difference between the two constructs, i.e.

H_0: on the Acceptability score, Success_M_{Yes} = Success_M_{No}

H_1: on the Acceptability score, Success_$M_{Yes} \neq$ Success_M_{No}

6.3.1   Discussion of findings on Hypothesis One

It is stated earlier on in the literature review (Chapter 2) that acceptability is the extent to which consumers and others in the value chain are willing to consume, distribute or sell a product or service (Anderson and Billou, 2007).   According to Segel and Meghji (2005) purchasing through savings is another innovation that low-income consumers can use to obtain access to services such as cement and other building materials on credit.   In the literature review De Soto (2000, p. 5) explained the fact that: "Even in the poorest nations the poor save.   The value of savings among the poor is, in fact, immense".

The section in the questionnaire on acceptability comprised 3 items (refer to appendix A).   Item 1(a) refers to the culture of saving money in a bank as a way of raising funds towards building.   The response categories for this item were such that "1" was for strongly disagree and "5" for strongly agree.   People who have done structural modifications rated item 1(a) at 88.7% and those who have not done structural modifications rated 1(a) at 75.2%.   Though there is a 13.5% difference in the rating, but both sum score percentage ratings were fairly high and falling between agreeing and strongly agreeing scale.   This confirms the notion by De Soto (2000) that low-income

consumers do believe in savings. What has to be acknowledged though is the fact that saving towards building is never adequate given the low disposable income amongst the poor.

The bar chart plot for measure of success responses versus the score on Acceptability (see Figure 6), shows that on average people who have done structural modification are on the higher frequency compared to those who have not. Therefore on the average one would expect those people who have completed their structural modification to retain a higher Acceptability score than those who have not (i.e. $Success\_M_{Yes} \neq Success\_M_{No}$). The results confirm the research hypothesis that there is a difference between exercising an approach that delivers acceptability and success amongst low-income consumer for self-help housing.

From the ANOVA results in Table 14, the p-value achieved was significantly less than 0.05, reported to be 0.000, this implies that the H_0 is rejected and conclude on H_1 (i.e. $Success\_M_{Yes} \neq Success\_M_{No}$). This further confirms the fact that there is a significant difference in responses on Acceptability between people who have done structural modification versus those who have not.

ANOVA for each of the 4As against each of the descriptive elements depicted in Appendix C (i) shows that Success_M and monthly income have the p-values < 0.05 at 0.00 for both descriptive elements. The association between Acceptability and Success_M confirms the previous findings (i.e. $Success\_M_{Yes} \neq Success\_M_{No}$). The association between acceptability and monthly income was to be expected since for people to can have a culture of saving they need to be earning some money and having disposable cash for saving.

6.4   RESEARCH HYPOTHESIS TWO (Availability versus Success)

Hypothesis two is the relationship between Availability and Success amongst low-income consumer for self-help housing. The null hypothesis states that there is no difference between exercising an approach that delivers <u>availability</u> and <u>success</u> amongst low-income consumer for self-help housing. The alternative hypothesis states that there is a difference between the two constructs, i.e.

H_0: on the Availability score, Success_M_{Yes} = Success_M_{No}

H_1: on the Availability score, Success_M_{Yes} ≠ Success_M_{No}

6.4.1   Discussion of findings on Hypothesis Two

From the literature review (Chapter 2) availability is the extent to which customers are able to readily acquire and use a product or service (Anderson and Billou, 2007). According to Marais and Wessels (2005) housing delivery in the developing world is characterised by an extreme scarcity of resources and remains a contentious issue for any government. One of the main constraints that limit businesses from engaging with the poor is inadequate physical infrastructure (Mendoza and Thelen, 2008). Transportation is complicated by the lack of roads and supporting infrastructure making it very difficult for the poor to access product and services (UNDP, 2008).

In support of the above notion, SadreGhazi (2008, p. 8) states that "the low-income market represents a more diverse cultural variety and geography. In the majority of low-income markets, the availability of logistics infrastructure can not be taken for granted as it makes delivery and distribution of building material difficult". Viswanathan (2007) advises that since BOP consumers do not have the transportation luxury to do price comparisons, having a regular relationship with a few neighbourhood retailers helps build trust and hence more likelihood of getting credit. Ultimately having a small local

hardware shops nearby is convenient in sourcing building material (Subrahmanyan and Gomez-Arias, 2008).

The section in the questionnaire on availability comprised of 4 items (refer to appendix A). The questions referred to the convenience associated with having both the builder and supplier of building material located within the community as an enabler for self-help housing. The table of sum score percentage rating in appendix B shows that under availability independent variable, respondents who have not done structural modifications rated availability 20% lower than those who have done structural modifications, with their sum score percentage ratings at 74.6% and 96.2% respectively. Not withstanding the difference in rating between the two groups, the responses were positive for both groups of respondents, demonstrating that enabling conditions suggested under availability sections were well accepted and deemed important by both group of respondents. This confirms the notion by Viswanathan (2007) and Subrahmanyan & Gomez-Arias (2008) that accessibility to products and services is serious challenge for the BOP.

The bar chart plot for measure of success responses versus the score on Availability is given in Figure 7. What is of significance is the frequency at which people that have done structural modification peak at, for instance more than 46 respondents scored 20. From those people who were interviewed and have not done structural modification they mostly preferred giving responses that were sitting in the middle i.e. 3 in a scale of 1 to 5, hence their availability scoring came around 13 instead of a maximum score of 20. The results confirm that there is a difference in response between those who have done structural modification and those who have not done structural modification to their houses.

From the ANOVA results in Table 14, the p-value achieved was significantly less than 0.05, reported to be 0.000, this implies that the H_0 is rejected in favour of the alternative hypothesis, H_1 (i.e. on availability score, Success_M$_{Yes}$ ≠ Success_M$_{No}$). This further confirms the fact that there is a significant difference in responses on Availability between people who have done structural modification versus those who have not.

There is evidence from the table of results in Appendix C (ii) to suggest that Availability is associated to residence; Success_M; source of income; monthly income and age. Interesting to note is that Availability was associated with residence and age but not Acceptability. Similar to Acceptability variable, Availability is also associated / related to Succes_M and monthly income. Surely there must be a difference with respect to access to the suppliers of building materials between residents of Ivory Park, Alexandra and Diepsloot to suggest an association between availability and residence observed above. This finding aligns with what SadreGhazi (2008, p. 8) states in that "the low-income market represents a more diverse cultural variety and geography. In the majority of low-income markets, the availability of logistics infrastructure is always a challenge".

This is evident from the high availability scoring by those who have done structural modification; they must have felt the inconvenience causes by lack of building material suppliers within the vicinity where they stay. Availability of resources and infrastructure would thus make space for the time and effort required to serving the needs and concerns of consumer for housing both on the consumer and supplier perspective. In conclusion it has been demonstrated that there is a relationship between Availability and Success amongst low-income consumer for self-help housing.

6.5   RESEARCH HYPOTHESIS THREE (Affordability versus Success)

Hypothesis three is the relationship between Affordability and Success amongst low-income consumer for self-help housing. The null hypothesis states that there is no difference between exercising an approach that delivers <u>affordability</u> and <u>success</u> amongst low-income consumer for self-help housing. The alternative hypothesis states that there is a difference between the two constructs, i.e.

> H_0: on the Affordability score, Success_M_{Yes} = Success_M_{No}
>
> H_1: on the Affordability score, Success_M_{Yes} ≠ Success_M_{No}

6.5.1   Discussion of findings on Hypothesis Three

Anderson and Billou (2007, p. 15) defines affordability as "The degree to which a firm's goods or services are affordable to BOP consumers". They further state that, "… many low-income consumers in developing countries survive on daily wages, meaning that cash-flow can be a significant problem, thus companies need to be able to deliver offerings at a price point that enables consumption by even the poorest of consumers" (Anderson and Billou, 2007, p. 15).

From the literature review, Tomlinson (1999, p. 292) states: "evidence…suggests that residents of shack settlements on the urban peripheries, while now enjoying access to housing subsidies, have remained marginalized and impoverished". According to De Soto (2000), most of the poor households occupy land whose ownership rights are not adequately recorded and as a result cannot use these assets as collateral for a loan, and this scenario limits them from accessing credit.

The most eminent characteristic of the communities at the BOP is the lower level of disposable income (SadreGhazi, 2008). The problem of low disposable income

according to SadreGhazi manifests itself mainly in two ways: (1) low purchasing power and (2) lack of access to credit (SadreGhazi, 2008). Lacking credit simply mean that the poor consumer cannot finance large purchases like a house. Mendoza and Thelen (2008) suggest things such as a flexible payment scheme, complete product packaging (by including training along with access to building materials and financing) and tapping into 'soft' community networks by having community members hired to help market the programme, as possible innovative strategies that companies can employ in order to overcome obstacles that marginalise the poor in self-help housing.

Mendoza and Thelen (2008) further advise that, "There may be a number of ways to improve the poor's purchasing power by adjusting retail and pricing strategies - notably through joint consumption, flexible payment schemes, and tiered pricing - to better fit a large consumer base with individually low and volatile income streams". These and other strategies were put in a questionnaire items for affordability section in order to gather from the consumers perspective as to whether such strategies would improve their conditions for self-help housing or not.

The affordability section of the questionnaire comprised of 6 items (refer to appendix A). The questions referred to the above suggested strategies by Mendoza and Thelen (2008), Anderson and Billou (2007), and SadreGhazi (2008) on how to make building material affordable to the poor consumer for self-help housing. The table of sum score percentage rating in appendix B shows that under affordability independent variable, respondents who had not done structural modifications rated affordability 24% lower than those who had done structural modifications, with their sum score percentage ratings at 70.1% and 94.7% respectively. Again, not withstanding the difference in rating between the two groups, the responses were positive for both groups, demonstrating that

enabling conditions suggested under affordability sections were well accepted and deemed important by both group of respondents.

Of the 6 items under affordability section of the questionnaire, item 3(a), which was about "reducing the package size of building material to lower the selling price", was scored the lowest by both those who have done structural modifications and those who have not (see appendix B). What was interesting to note was that, though Mendoza and Thelen (2008) advocate for packaging of building material into smaller size to help lower building material cost per unit selling price, thus making it affordable, the poor consumers (based on the respondents) do not subscribe to this idea. But rather they prefer purchasing in bulk and agreed with the fact that buying in bulk and teaming up as a collective to purchase building material in bulk would save them money.

The bar chart plot for measure of success responses versus the score on Affordability is given in Figure 8. From the results, there is a clear distinction between people who have done structural modifications and those who have not done structural modifications on their houses. Those who have done structural modifications scored higher on average than those who have not. The positive thing is that the results confirm that with respect to affordability, there is a difference in response between those who have done structural modification and those who have not done structural modification to their houses.

From the ANOVA results in Table 14, the p-value achieved was significantly less than 0.05, reported to be 0.000, this implies that the H_0 is rejected in favour of the alternative hypothesis, H_1 (i.e. on affordability score, Success_M_{Yes} ≠ Success_M_{No}). This further confirms the fact that there is a significant difference in responses on Affordability between people who have done structural modification versus those who have not. This further confirms the notion by Karnani (2006) in that the majority of the poor people are very price sensitive given that they have limited disposable income, hence their biggest

obstacles affordability. He further suggests that the only way to help the poor and alleviate poverty is to raise their real income.

In the table of results Appendix C (iii), there is evidence to suggest that Affordability is associated to owning a bank account; Success_M and monthly income. Similar to Acceptability and Availability above, Affordability is also associated to Success_M and monthly income. Together with affordability is the issue of monthly income, the poor have little income as Karnani advises, hence there exist a strong association (p-value of 0.001 in appendix C (iii)) between affordability and income. The existence of an association between Affordability, owning a bank account and success in building is not surprising. It was expected that for a normal society, people who own bank accounts and earning slightly better income would use the accounts for saving some of their disposable income and this would then results in them being able to afford doing some extension / modifications to their houses.

Difference in response on affordability questions between those who have done structural modification and those who have not is probably due to the fact that those who have done structural modifications base their opinions and views from real experience unlike those who have not - who may speculate or choose to take the middle road when responding. Otherwise this stands to support the research hypothesis that there would be differences in responses between those who done structural modification and those who have not.

6.6   RESEARCH HYPOTHESIS FOUR (Awareness versus Success)

Hypothesis four is the relationship between Awareness and Success amongst low-income consumer for self-help housing. The null hypothesis states that there is no difference between exercising an approach that delivers <u>awareness</u> and <u>success</u> amongst low-income consumer for self-help housing. The alternative hypothesis states that there is a difference between the two constructs, i.e.

H_0: on the Awareness score, $Success\_M_{Yes} = Success\_M_{No}$

H_1: on the Awareness score, $Success\_M_{Yes} \neq Success\_M_{No}$

6.6.1   Discussion of findings on Hypothesis Four

Anderson and Billou (2007, p. 15) defines awareness as "The degree to which customers are aware of a product or service". Given that many BOP customers largely have no access to conventional advertising media, building awareness can be a significant challenge for companies wishing to serve low-income consumers in the developing world (Anderson and Billou, 2007).

According to SadreGhazi (2008), a considerable share of low-income population is illiterate; hence it is important to redesign the product functions to make it acceptable and easy to use for those who lack the skill or knowledge to use the product. The limited access to media by the low-income markets due to low degree of penetration of information and lack of communication services makes common ways of media advertisement less effective (SadreGhazi, 2008). Anderson and Billou (2007, p. 19) states that, "…with many BOP customers largely inaccessible to conventional advertising media, building awareness is another challenge for companies wishing to serve low-income consumers in the developing world".

To overcome these constraints, they recommend that companies invest heavily in billboards along roads and truck-mounted demonstrations, in urban areas and in rural communities, develop point-of-sale advertisement and even look into training their customers down the distribution channel on the use of products (Anderson and Billou, 2007).

The awareness section of the questionnaire comprised of 5 items (refer to appendix A) which are questions on above suggested strategies to help improve customer awareness and knowledge on building materials as per Anderson and Billou, 2007 and SadreGhazi, 2008 recommendations. The table of sum score percentage rating in appendix B shows that under awareness independent variable, respondents who had not done structural modifications rated awareness 21% lower than those who had done structural modifications, with their sum score percentage ratings at 64.0% and 85.1% respectively. Again, not withstanding the difference in rating between the two groups, the responses were positive for both groups, demonstrating that conditions suggested to help improve awareness amongst the poor on building materials were well accepted and deemed important by both group of respondents.

Of the 5 items under awareness section of the questionnaire, item 4(c), which is about "Exhibitions & shows on the use of building materials", was scored the lowest by both those who have done structural modifications and those who have not (see appendix B). This is again interesting, but also was to be expected given that most of the low-income consumers do not really pay much importance to exhibitions and shows. Unlike the lower middle and upper low-income consumers, they do not have the transportation luxury to do price comparisons or attend exhibition / shows (Viswanathan, 2007).

The bar chart plot for measure of success responses versus the score on Awareness is given in Figure 9. From the results, again a clear distinction between the two groups of respondents is seen. Those who have done structural modifications scored higher on average than those who have not, thus confirming that on awareness scoring, $Success\_M_{Yes} \neq Success\_M_{No}$. This implies that the null hypothesis is rejected in favour of the alternative hypothesis. The ANOVA results in Table 14 confirmed similar findings, the p-value achieved was significantly less than 0.05, reported to be 0.000. This implies that we can reject H_0 and conclude on H_1 (i.e. $Success\_M_{Yes} \neq Success\_M_{No}$). This means that there is a significant difference in responses on Awareness between the people who have done structural modification and those who have not.

From the table of results in Appendix C (iv), there is evidence to suggest that Awareness is associated to residence; success_M; period finished and monthly income. Interesting to note is that monthly income and success measure were associated with the 4As. This agrees with Karnani's (2006) proposition that the only way to help the poor and alleviate poverty is to raise their real income.

6.7 SUMMARY

In conclusion, based on ANOVA and Bar charts for each of the 4As above, there is strong evidence to suggest that responses obtained cut across all the 4As and this talks to the relevance of this study where one intended to test the 4As framework against the low-income consumer market for self-help housing. It is evident that each one of the 4As plays a unique role as they are addressing different elements / constituents of the demographics. None of these responses have a combination which one could have predicted.

For all the 4As their p-values were significantly lower than 0.05 (i.e. all reported at 0.000). This means that it is safe to conclude that there is a significant difference in responses between the people who have done structural modification versus those who have not for all 4As, i.e. Success_M$_{Yes}$ ≠ Success_M$_{No}$.

Further confirmation of the overall findings was conducted using Kruskal-Wallis test (see Table 15). The results show that those who had "Yes" responses on success measure (i.e. had done structural modifications) have a higher mean rank values across all the 4As. From the ranks Table, the mean rank for Affordability and Availability were the highest at 101.45 and 99.56 respectively. This implies that of the 4As, affordability and availability have the significant influence and strong association to the level of success (success measure) in conducting structural modifications on their houses. Ultimately, all the 4As were highly significant in influencing the level of success in self-help housing amongst the respondents.

The above finding affirms the original work by Prahalad and Hart (2002) in their article titled "The Fortune at the Bottom of the Pyramid, Strategy and Business". They strongly emphasised that affordability and accessibility or availability of products and services amongst the low-income consumers were the main barriers. This was further emphasised by Anderson and Kupp (2008) when they said, "…most businesses have failed to serve the poorest consumers due to the commonly held belief that reaching these consumers is difficult due to two key challenges - affordability and availability. By looking at the consumer perspective this notion has been affirmed.

CHAPTER 7: CONCLUSION

7.1 INTRODUCTION

Based on the findings pertaining to the hypotheses, this chapter looks at the conclusions that can be derived and these are suggested with respect to the relationship between the 4As model and success in self-help housing as depicted in Chapter 3. Recommendations based on the findings and the literature reviews are also made to both government and businesses. A possible model, adapted from Anderson and Billou framework, is also presented. The chapter finally explores some ideas for future research.

7.2 MAIN FINDINGS AND CONCLUSIONS

Hart (2005, p. 143) states "If we can gain a better understanding of the constraints that influence the behaviour, we can construct new business models designed to remove these constraints and profit in the process". Although the initial purpose of this research was to test the 4As model against the actual consumers for self-help housing, it also shed some insight into certain behavioural attributes of the consumers for self-help housing in Gauteng, South Africa. One thing that needs to be acknowledged from the onset is that Government alone cannot meet the housing demand. The onus to eradicate informal dwellings should not only be left to Government, but rather, should be a shared responsibility involving many other players such as NGOs, cooperate world and individuals etc.

The view by Mendoza and Thelen (2008) that, restricted access to financial products and services amongst the poor prevents them from participating more actively in housing market was evident in this study. The results of this research supported the literature in

that 92% of the respondents who did not have a bank account also had not done any structural modifications to their homes.

Another interesting finding was the fact that women were better investors and organisers than man when it came to housing modification initiatives. This is inline with Ndinda (2009)'s view that suggests that involvement of women in the planning, design and implementation of housing projects results in a higher success rate of projects than where women are excluded. Intuitively, it is accepted that women are hesitant and less prone to risky initiatives yet in all fairness of mind, women go the extra mile in taking that where the security of the future is guaranteed and a house is the ultimate summation of that security. Housing for many households around the world is both the largest expense and the most important asset and is also an important determinant of quality of life (Warnock and Warnock, 2008).

According to Mthweku and Tomlinson (1999), savings are important in low-income housing finance. De Soto (2000) is of the opinion that low-income consumers do not believe in savings. However, he warns against the fact that saving towards building is never adequate given the low disposable income amongst the poor. This research confirmed De Soto's view in that there was an overwhelming positive response by both respondent groups in rating savings as an important variable for housing finance.

This research was aimed at testing the 4As framework against the poor families who are legible for housing subsidies against their success in building or organising the building of their homes themselves. This research was premised on the fact that when people have control and responsibility over key decisions in their housing process, helps break the barrier or obstacles to alleviation of poverty and lack of reasonable housing initiatives. Self-help housing done under enabling conditions as set out by Anderson and

Billou (2007) in their 4As framework and provided that the poor consumers believe in it; help the poor meet their housing needs.

From the findings of the research study, the main conclusion is that the 4As framework by Anderson and Billou (2007) is applicable in the low-income consumer market for self-help housing needs. Although ultimately there was evidence to suggest that each one of the 4As has a unique role to play in addressing different needs of the low-income consumer for self-help housing. On the other objective of the research to quantify the individual impact of the four A's in serving the self-help housing needs, affordability and availability were identified as the highest rated by the low-income consumer for self-help housing and also implying the 4As do not all have the same measure of impact. Identification of these two as of a higher impact of the four A's was an affirmation of Prahalad and Hart (2002) and Anderson and Kupp (2008) studies where they all strongly emphasised that affordability and availability of products amongst the low-income consumers were the main barriers. A modified version of the framework for serving the low-income consumer for self-help housing, adapted from Anderson and Billou (2007) framework is proposed in section 7.3.

## 7.3   PROPOSED FRAMEWORK FOR SERVING LOW-INCOME CONSUMER FOR HOUSING

As observed, the 4As cannot be treated equally. It is proposed that when businesses, government institutions and all those involved in serving the low-income consumer for housing apply this framework; follow a quota like systematic approach. This means that a priority will be given in the following order of ranking from very important to important:

(1)   Affordability

(2)   Availability

(3)   Awareness

(4)   Acceptability.

It must however be mentioned that differences between each of the 4As level of impact, shown by ranking above were very marginal yet the impact of each is still necessary and required for a complete impact.

In applying a modified framework, businesses need to acknowledge and accept the challenges of serving the poor and have appreciation of the value that this model will add in making them remain profitable in serving the so called "difficult to serve" consumer segment. There are more positive reasons for businesses to do this, since it will without any doubt lead to success in self-help housing amongst the low-income consumers out there.

FIGURE 10: **Modified 4As framework for serving low-income consumer for housing**
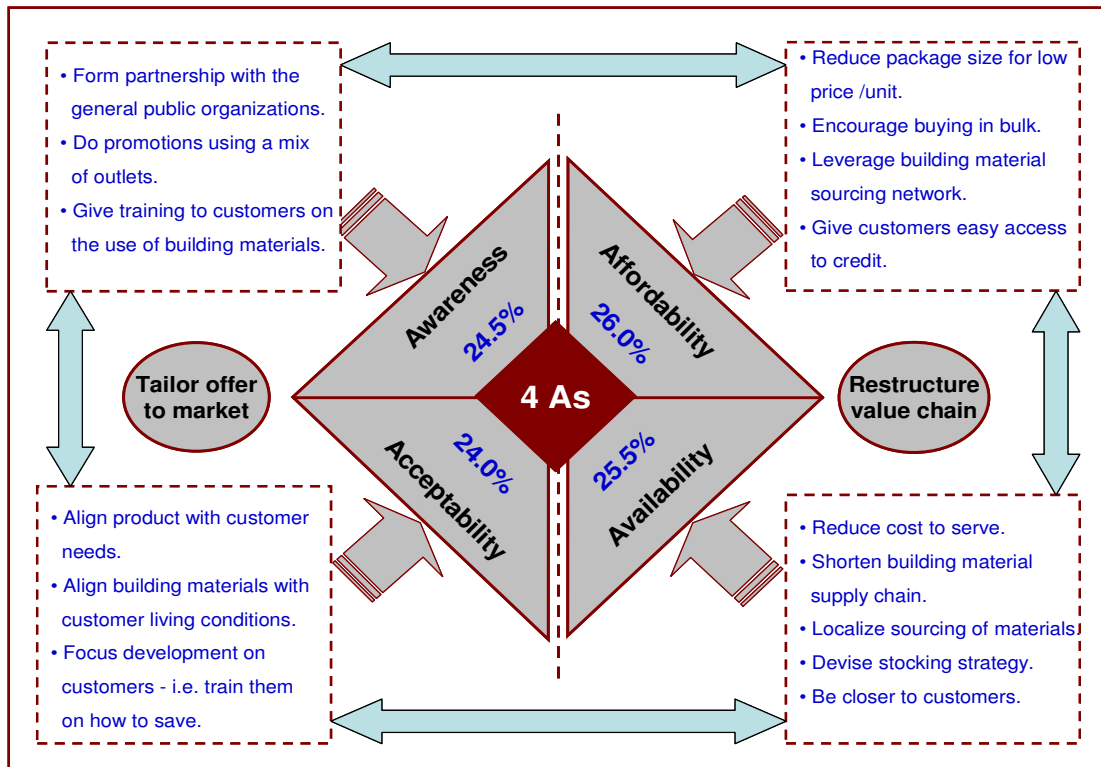
Source: Adapted and modified from Anderson and Billou (2007) Serving the World's Poor: Innovation at the Base of the Economic Pyramid. *Journal of Business Strategy*, 28(2), 14-21)

The modified framework above was derived from the literature study and has been customised specifically for low-income consumer self-help housing requirements.

Acceptability: With reference to the framework in figure 10 above, according to the work by Anderson & Billou (2007); Segel & Meghji (2005) and De Soto (2000), they support the notion that businesses need to align their products to the needs of the consumer. They need to focus on customers and encourage a culture of saving through product offerings that rewards savings culture amongst the poor.

Availability: Mendoza & Thelen (2008) and Viswanathan (2007) advise that having the building material supplier closer to the customer and knowing each other personally can help both parties in reducing the cost to serve and shortening building material supply chain. This will ultimately result in lowering cost of building material.

Affordability: Mendoza & Thelen (2008), Anderson & Billou (2007), and SadreGhazi (2008) advocate that businesses need to make products affordable to the poor consumer through allowing for flexible payment schemes, joint consumption and tiered pricing.

Awareness: Anderson & Billou (2007) and SadreGhazi (2008) advice that businesses should help bring product awareness amongst the poor through promotions, forming partnership with the general public organisations and training of customers on the use of the product.

7.4   RECOMMENDATIONS

These recommendations are based on the findings and the literature reviews and are directed mainly to businesses and government institutions. Businesses include multinational corporations (MNCs) or small and medium enterprises and all those involved in serving the low-income consumer for housing. Resolving the problem of housing in South Africa requires a joint effort from both public and private sector.

7.4.1   What should the government be doing?

The 4As has revealed that it is imperative that the Government creates a policy framework that will encourage businesses to practice strategies that are inclusive of the poor as per the 4As framework proposed above.

The role played by women in self-help housing cannot be undermined. To guarantee greater success, when government or businesses channel funds to low-income consumers for housing, they must ensure that these funds are channelled through those societies or organisations that have representation of women.

Acceptability: Huchzermeyer, M. (2003b, p. 605) states that, "…in SA though most of the consumers for self-help housing are eager and capable of house construction via their savings and credit mechanism, they have learnt from disappointing experience that permanent construction must await formal government approval and intervention, which may take several years".   Therefore it is critical for government to come up with pragmatic strategies within their structures which can be implemented to eliminate blockages of this nature in the delivery of houses.

During the research study in the three communities and sharing discussions with some of the households; there was a sense that people are sitting back and waiting for the government to provide housing. This waiting mentality by the poor weakens community organisation and their ability to play a role in the ongoing development and management of settlements. They have lost confidence and trust in the local municipalities' capability to deliver on housing.   Structures like PHP and other community driven building initiatives have to be encouraged by the government.   Government should look into having a competition amongst the local municipalities where those municipalities who built more houses, through involving the local community members instead of hiring a building contractor, are rewarded.

Availability: The road infrastructure, especially in Diepsloot, was deplorable. It was not conducive for a normal delivery truck to access some of the communities owing to either roads being too narrow or having been eroded by floods. Conditions such as these make it impossible for people and businesses to access each other for trade of building materials. People in the informal settlements survey have to drive or commute long distances to access hardware. This ends up being expensive for them to afford buying and transporting building materials and probably as a result they end up choosing not to build. Government's institutions should strengthen their collaboration with the private sector and form public private partnerships targeted at creating building depots in the townships for convenient sourcing of building materials.

Affordability: The state can also try to direct credit to the poor, by offering subsidised credit, such as through government lending agencies. However Mendoza and Thelen (2008, p. 446) warn that, "…*there is also the possibility of government failure, such as those resulting from politicisation of the allocation of credit. The experience of many countries with state-directed credit seems to indicate high default rates and ineffectiveness in reaching the poor*". Therefore in implementing this strategy the government will have to guard against such failures.

The other approach would be to have a subsidy mechanism where government channel funding through local churches and women governed local structures. This will help reduce default rates and ineffectiveness in reaching the poor.

Awareness: In the cement industry they hold on the annual basis the Young Cement Sculpture Awards ceremony – which is a competition organised by the Cement and Concrete Institute (C&CI) sponsored by SA cement producers in conjunction with Universities. This is aimed at increasing awareness amongst young professionals on the use of cement and its application. It is initiatives similar to these that we need to

increase awareness amongst the poor on the use of building materials. Government should encourage private sector to sponsor an award or price giving initiatives to those households who build durable houses through self-help mechanisms to encourage competition amongst them with respect to self-help housing. These incentives should be significant enough to motivate serious effort to be put into self-help housing by the household owner.

7.4.2   What should be the role of businesses?

Government alone cannot resolve the housing problem. Businesses need to continuously innovate and come up with products that are more suited to the low-income consumer for housing. They should learn from strategies such as those adopted by the likes of CEMEX, Unilever and others, e.g. flexible payment schemes and complete product repackaging.

Businesses should focus on those initiatives that will improve access by the poor to markets for building materials and services, or even the markets where the poor might be able to participate on the supply side rather than being a consumer.

Karnani is correct in arguing that the only way for businesses to help the poor and alleviate poverty is to raise the real income of the poor (Karnani, 2006). In addition to providing credit, companies can develop technologies to raise BOP incomes and start their own businesses.

Acceptability: Financial institutions will have to make policies that accommodate lending to low-income consumers for their house improvement and new house building, rather than being biased toward completed owner-occupied housing.   They can encourage saving amongst the poor by issuing higher interest on savings and low service fees to those who save towards building. This can be monitored by ensuring that

such monies can only be accessed by submitting a quotation from the supplier of building materials or hardware and the payment is also directly made to the supplier. By doing this the bank would have ensured that the money is not abused and as a result will indirectly encourage a culture of saving amongst the poor.

Availability: Big business should establish warehouses for building materials supply in the townships and where possible set up small local hardwares that are owned and run by the locals. Businesses can extend their collaborative networks by setting up small enterprises that will manufacture bricks in the townships using local resources with a view to supply that local market. The benefits are both to the community as these would be within reach and minimal transport costs and for the companies the products have a ready market, a situation that will create employment and further ensure that low-income people are not only consumers but they are also suppliers of building materials.

Affordability: What must be acknowledged is the fact that most of the low-income market consumers for building cannot afford the cost of building material. Financial institutions should make it easier for the poor to get a housing loan with lesser restrictions on collateral requirements. Supplier of building materials should help by allowing the poor to pay for their building material on instalments and give discounts for bulk purchases.

Awareness: Most people in the informal communities are limited in terms of technology and information. Therefore for purposes of advertising and promotion of products, businesses should in addition, use billboards on the streets and on delivery trucks to increase level of awareness and communicate information about building materials. Businesses should also look into setting up transparent community organisations, such as township or village representatives that will facilitate dialogue and information sharing between community and business.

7.5 FUTURE RESEARCH IDEAS

The future research ideas are based on a combination of research limitations of this study and some of the insights gained from the literature review and findings. The following research ideas can be pursued:

- Many MNCs still consider doing business with the BOP consumer not to be profitable at all. The big question one may ask is how ready and willing are South Africa's MNCs in putting up strategies that will ensure that needs of the low-income consumer for housing are addressed? Future research to conduct a quantitative survey with respect to SA's businesses readiness to applying 4As framework in addressing low-income consumer housing needs is recommended.

- Literature review states that, "…the rural poor tend to have less access to public infrastructure and certain types of social services, compared with urban residents" (Mendoza and Thelen (2008, p. 432). The informal settlements that this study looked at were in the Gauteng metropolitan / urban areas. It would be interesting to see what the response would be for households living out of the Gauteng province in the rural areas. It is therefore recommended that additional studies be carried out using similar framework but with low-income consumers for housing in rural areas out of Gauteng province.

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9.   APPENDICES

*APPENDIX A***:** Questionnaire

Testing the 4A's framework in serving the low-income consumer housing needs

Thank you for participating in this research. This research is a prerequisite for the interviewer (Bheki Mthembu) to attain the degree of Master in Business Administration (MBA). Please note that this survey is anonymous, so there is no need to enter your name. Please indicate that your consent for use of the data collected in this survey for research purposes.

*By ticking **(X)** in this box I give my consent for use of this data for the research purposes* ☐ .

RESPONDENT DETAILS:

Race (Tick X)	Asian		Black		Coloured		White	

Gender (Tick X)	Male		Female	

Age (years)	18 - 24		25 - 34		35 -44		45-49		50+	

Source on income (Tick X)	Employed		Self-employed		Unemployed	

Monthly earning (Tick X)	<R1500		>R1500 <R2500		>R2500 <R3500	

Do you own a bank account?	Yes		No	

Residence (Tick X)	Alexandra		Diepsloot		Ivory Park	

Success measure	Is there any structural addition / change to the house	Yes	No

If finished building (indicate when):	< 6 months		< 12 months		< 18 months		< 24 months	

In your opinion with respect to enabling conditions for building a house, how would you rate the following statements in a scale of 1 to 5 where 1 is strongly disagree up to 5 which is strongly agree. Use (X) to indicate your selected appropriate rating.

Acceptability …	Strongly Disagree				Strongly Agree
1(a) Saving money in a bank is a way of raising funds towards building.	1	2	3	4	5
1(b) Using original building materials results into long-lasting house.	1	2	3	4	5
1(c) It is better to build a house myself using small bucky builder than hiring a contractor.	1	2	3	4	5

Availability…	Strongly Disagree				Strongly Agree
2(a) Having retailers nearby helps me finish building quicker.	1	2	3	4	5
2(b) Having small local hardware shops nearby is convenient in sourcing building materials.	1	2	3	4	5
2(c) Having retailers and local hardware that stock most of the building materials makes building material sourcing easy.	1	2	3	4	5
2d) Having builders residing and being part of the local community makes it convenient for building.	1	2	3	4	5

Affordability…	Strongly Disagree				Strongly Agree
3(a) Reducing the package size of building material lowers the selling price and makes it more affordable to me.	1	2	3	4	5
3(b) Buying building material in bulks saves me money.	1	2	3	4	5
3(c) Easy access to finance and loans from the bank makes building less stressful and easier.	1	2	3	4	5
3(d) Teaming of communities and acquiring materials in bulk makes building material more affordable.	1	2	3	4	5
3(e) Participating in (self-build communities)* helps me afford the purchase of building materials.	1	2	3	4	5
3(f) Negotiating as a collective helps getting discounts from the suppliers (retailers and builders).	1	2	3	4	5

Awareness…	Strongly Disagree				Strongly Agree
4(a) Reading newspaper adverts on "building materials and suppliers" helps keep me informed about where to buy reasonable building materials.	1	2	3	4	5
4(b) Listening to radios and TV adverts on "building materials and suppliers" helps keep me informed about where to buy reasonable building materials.	1	2	3	4	5
4(c) Exhibitions & shows on the use of building materials help keep me informed of my building solution.	1	2	3	4	5
4(d) Receiving training on how to use particular building materials makes me more knowledgeable and effective in building.	1	2	3	4	5
4(e) Receiving training on how to acquire building loan enables me to have easy access to funding.	1	2	3	4	5

*(Self-build communities) = when community members jointly save and buy each other building materials on rotation

APPENDIX B: Sum score percentage (%) rating

Q #	Description	Sum score (% rating)		
		Succes_M		
		Yes	No	Combined
	Acceptability …	86.3	71.7	79.0
1a	Saving money in a bank is a way of raising funds towards building.	88.7	75.2	82.0
1b	Using original building materials results into long-lasting house.	95.5	80.0	87.7
1c	It is better to build a house myself using small bucky builder than hiring a contractor.	74.6	60.0	67.3
	Availability…	96.2	74.6	85.4
2a	Having retailers nearby helps me finish building quicker.	95.5	74.4	84.9
2b	Having small local hardware shops nearby is convenient in sourcing building materials.	95.5	74.4	84.9
2c	Having retailers and local hardware that stock most of the building materials makes building material sourcing easy.	96.6	72.7	84.6
2d	Having builders residing and being part of the local community makes it convenient for building.	97.2	76.9	87.0
	Affordability…	94.7	70.1	82.4
3a	Reducing the package size of building material lowers the selling price and makes it more affordable to me.	77.5	58.6	68.0
3b	Buying building material in bulk saves me money.	99.7	83.1	91.4
3c	Easy access to finance and loans from the bank makes building less stressful and easier.	96.3	74.1	85.2
3d	Teaming of communities and acquiring materials in bulk makes building material more affordable.	98.0	67.0	82.5
3e	Participating in (self-build communities)* helps me afford the purchase of building materials.	98.0	67.6	82.8
3f	Negotiating as a collective helps getting discounts from the suppliers (retailers and builders).	98.9	70.1	84.5
	Awareness…	85.1	64.0	74.6
4a	Reading newspaper adverts on "building materials and suppliers" helps keep me informed about where to buy reasonable building materials.	87.3	69.6	78.5
4b	Listening to radios and TV adverts on "building materials and suppliers" helps keep me informed about where to buy reasonable building materials.	84.2	64.2	74.2
4c	Exhibitions & shows on the use of building materials help keep me informed of my building solution.	74.9	53.8	64.4
4d	Receiving training on how to use particular building materials makes me more knowledgeable and effective in building.	87.0	59.7	73.4
4e	Receiving training on how to acquire building loan enables me to have easy access to funding.	92.1	72.7	82.4

APPENDIX C: ANOVA for each of the 4As responses versus each Descriptive Element

(i) Acceptability

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
BANK_ACC * Acceptability	Between Groups	(Combined)	.685	8	.086	1.024	.421
	Within Groups		11.125	133	.084		
	Total		11.810	141			
RESIDENCE * Acceptability	Between Groups	(Combined)	8.435	8	1.054	1.568	.140
	Within Groups		89.452	133	.673		
	Total		97.887	141			
SUCCESS_M * Acceptability	Between Groups	(Combined)	14.095	8	1.762	10.947	.000
	Within Groups		21.405	133	.161		
	Total		35.500	141			
IF_FINISHED * Acceptability	Between Groups	(Combined)	8.179	6	1.363	1.826	.108
	Within Groups		47.792	64	.747		
	Total		55.972	70			
S_INCOME * Acceptability	Between Groups	(Combined)	7.949	8	.994	1.507	.161
	Within Groups		87.713	133	.659		
	Total		95.662	141			
M_INCOME * Acceptability	Between Groups	(Combined)	26.993	8	3.374	5.473	.000
	Within Groups		81.992	133	.616		
	Total		108.986	141			
AGE * Acceptability	Between Groups	(Combined)	3.140	8	.392	.473	.873
	Within Groups		110.276	133	.829		
	Total		113.415	141			
GENDER * Acceptability	Between Groups	(Combined)	1.759	8	.220	.867	.546
	Within Groups		33.713	133	.253		
	Total		35.472	141			

(ii) Availability

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
BANK_ACC * Availability	Between Groups	(Combined)	.886	9	.098	1.189	.307
	Within Groups		10.924	132	.083		
	Total		11.810	141			
RESIDENCE * Availability	Between Groups	(Combined)	17.244	9	1.916	3.136	.002
	Within Groups		80.643	132	.611		
	Total		97.887	141			
SUCCESS_M * Availability	Between Groups	(Combined)	20.835	9	2.315	20.838	.000
	Within Groups		14.665	132	.111		
	Total		35.500	141			
IF_FINISHED * Availability	Between Groups	(Combined)	4.493	4	1.123	1.440	.231
	Within Groups		51.479	66	.780		
	Total		55.972	70			
S_INCOME * Availability	Between Groups	(Combined)	11.827	9	1.314	2.069	.037
	Within Groups		83.835	132	.635		
	Total		95.662	141			
M_INCOME * Availability	Between Groups	(Combined)	19.240	9	2.138	3.144	.002
	Within Groups		89.746	132	.680		
	Total		108.986	141			
AGE * Availability	Between Groups	(Combined)	22.001	9	2.445	3.530	.001
	Within Groups		91.415	132	.693		
	Total		113.415	141			
GENDER * Availability	Between Groups	(Combined)	2.481	9	.276	1.103	.365
	Within Groups		32.991	132	.250		
	Total		35.472	141			

(iii) Affordability

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
BANK_ACC * Affordability	Between Groups	(Combined)	3.073	13	.236	3.463	.000
	Within Groups		8.737	128	.068		
	Total		11.810	141			
RESIDENCE * Affordability	Between Groups	(Combined)	13.328	13	1.025	1.552	.108
	Within Groups		84.559	128	.661		
	Total		97.887	141			
SUCCESS_M * Affordability	Between Groups	(Combined)	24.522	13	1.886	21.993	.000
	Within Groups		10.978	128	.086		
	Total		35.500	141			
IF_FINISHED * Affordability	Between Groups	(Combined)	5.024	6	.837	1.052	.401
	Within Groups		50.948	64	.796		
	Total		55.972	70			
S_INCOME * Affordability	Between Groups	(Combined)	11.820	13	.909	1.388	.174
	Within Groups		83.842	128	.655		
	Total		95.662	141			
M_INCOME * Affordability	Between Groups	(Combined)	25.382	13	1.952	2.989	.001
	Within Groups		83.604	128	.653		
	Total		108.986	141			
AGE * Affordability	Between Groups	(Combined)	10.064	13	.774	.959	.495
	Within Groups		103.351	128	.807		
	Total		113.415	141			
GENDER * Affordability	Between Groups	(Combined)	2.648	13	.204	.794	.665
	Within Groups		32.824	128	.256		
	Total		35.472	141			

(iv) Awareness

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
BANK_ACC * Awareness	Between Groups	(Combined)	1.783	15	.119	1.494	.117
	Within Groups		10.027	126	.080		
	Total		11.810	141			
RESIDENCE * Awareness	Between Groups	(Combined)	24.165	15	1.611	2.753	.001
	Within Groups		73.723	126	.585		
	Total		97.887	141			
SUCCESS_M * Awareness	Between Groups	(Combined)	18.590	15	1.239	9.234	.000
	Within Groups		16.910	126	.134		
	Total		35.500	141			
IF_FINISHED * Awareness	Between Groups	(Combined)	25.289	10	2.529	4.945	.000
	Within Groups		30.683	60	.511		
	Total		55.972	70			
S_INCOME * Awareness	Between Groups	(Combined)	10.569	15	.705	1.043	.416
	Within Groups		85.093	126	.675		
	Total		95.662	141			
M_INCOME * Awareness	Between Groups	(Combined)	27.962	15	1.864	2.899	.001
	Within Groups		81.024	126	.643		
	Total		108.986	141			
AGE * Awareness	Between Groups	(Combined)	13.351	15	.890	1.121	.345
	Within Groups		100.064	126	.794		
	Total		113.415	141			
GENDER * Awareness	Between Groups	(Combined)	4.217	15	.281	1.133	.334
	Within Groups		31.255	126	.248		
	Total		35.472	141			

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