

**THE IMPACT OF SMART CARDS ON SOUTH  
AFRICAN RURAL PENSIONERS' LIVES.**

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## EXECUTIVE SUMMARY

E-commerce technologies have many possible applications both in commercial and non-commercial operations. The development and implementation of these applications is on the increase especially by government and its agencies, for the delivery of services. Specific to this study is the distribution of old age pension benefits to recipients that reside in the rural areas of South Africa. Of importance to this study are the factors that promote and impinge on the development, implementation and acceptance of these applications.

A specific project, the Pension Biometric Project was implemented by the South African Post Office in line with the government's initiatives of improving service delivery, and in response to the encroaching digital economy. The research problem is to investigate the pensioners' perception and their experience of three areas of this project, its implementation, its acceptance and its uses and impact.

The research was conducted in the constructivist paradigm, using the case study research method. Three data collection methods were used, i.e. a document study of SAPO project documentation, on-site observations and interviews with pensioners.

It was found that despite problems in implementation, the pensioners were accepting of the new system, although they were ignorant of the functionalities of the smart card. Consequently, few pensioners were making use of the banking facilities of the card, or had changed their economic behaviour. The study has also found that two themes are overriding all findings of the study. These two themes are ignorance and dignity. Ignorance has had a causal effect on adoption of the smart cards and dignity has been found to be a result of the project.

The overriding implication of this study is that pensioners' ignorance around issues of service delivery by government and its agencies needs to be eradicated, otherwise there is no reliable way of measuring efforts against actual delivery. Also, the fact that dignity has emerged as an overriding theme needs to be deliberately strengthened, and maybe even driven as a specified objective of the Pension Biometric Project. Recommendations in this regard are provided as well as ideas for further research.

## **DEDICATION**

This document is dedicated to my late father Mteteli Mtyeku and to my mother Gamase Mtyeku. I am eternally grateful for your unconditional love, understanding and unwavering support throughout the years. To Gam, for being you, for walking the talk and for being a role model, THANK YOU!

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## CHAPTER 1 - INTRODUCTION

E-commerce in South Africa is faced with unique challenges in that in the same country one encounters pre-industrial, industrial and post-industrial or knowledge economies (Stavrou, May & Benjamin, 2000). This implies that the implementation of e-commerce solutions and innovations has to cater for all three types of economies, although ideally it is geared for a highly developed economy. It would seem that, the least developed economies will have the least access to these technologies because of lack of infrastructure, which is computers, networks and electricity, the lack of skills to use that infrastructure and the lack of monetary resources to pay for the services involved.

As a measure to address this situation the Electronic Communications and Transactions Act 25 of 2002 (ECT Act) was promulgated in parliament in July 2002. Some of its objectives that are relevant to this study are: "To recognise the importance of the information economy for the economic and social prosperity of the Republic. Promote universal access primarily in under-serviced areas. Remove and prevent barriers to electronic communications and transactions in the Republic. Promote e-government services, electronic communications and transactions with public bodies, private bodies, institutions and citizens. Develop a safe, secure and effective environment for the consumer, business and government to conduct and use electronic transactions. Promote the development of electronic transactions services which are responsive to the needs of consumers and users." (ECT Act 25 of 2002: section 2.1).

It is quite clear that the Act aims to be redistributive in its context because special emphasis is placed on under-serviced areas, rural areas being a part thereof. South African rural areas are barren of physical infrastructure such as electricity, access to computers whether in schools or public facilities, transport infrastructure like roads and public transport, communication networks of telephone, data-line and satellite variety, skilled people to operate this infrastructure and transfer skills to the locals and money to pay for these services (Stavrou *et al.*, 2000). Because e-commerce places these huge demands on physical infrastructure and skills training, it can quite easily result in a widening of the "digital divide". The digital divide exists between and within countries. It is a concept about the gap between those who have and those that do not have access

and ability to use information technology (Turban, King, Lee, Warkentin & Chung, 2002). The advantaged continue to benefit from the availability of resources and the advances of e-commerce and the opposite holds true for the disadvantaged.

Many categories of disadvantaged citizens exist in South Africa. Of interest to this study are pensioners who receive an old age pension grant from the government and reside in rural areas. These pensioners are currently faced by several challenges that can possibly be resolved by the use of e-commerce solutions (Leibbrandt & Woolard, 1999).

## **1.1 CONTEXT OF THE STUDY**

The context discusses issues that are pertinent to and surround the delivery of old age pension grants to South African beneficiaries. A broad historical perspective will address the history of how the non-contributory pension grant, one of very few in the world (Sagner, 1998) came about. A discussion of the ECT Act demonstrates how the government is attempting to address the challenges posed by delivering old age pension grants to beneficiaries, using information technology. The South African Post Office (SAPO) has collaborated with the Department of Social Development (DoSD) to deliver a grant payment solution which is smart card based. The project is called the Pension Biometric Project and it is the basis of this study. One of the features of this smart card is its operability as a savings bank account. The bank account feature is SAPO's way of addressing the issue of the country's unbanked citizens. Banking the unbanked citizens is discussed in the last part of the chapter.

### **1.1.1 Old Age Pensions in South Africa, A Historical Perspective**

In 1928 the state made provision for the elderly white population by passing the Social Pension Act (Sagner, 1998). Soon after this many groups including African organizations and parliamentary commissions started pressuring the government to extend the pension system to the African population (Sagner, 1998). For the first time in 1944, Africans were made beneficiaries of the state pension system under the Pension Laws Amendment Bill of 1944 (Sagner, 1998). Even though this bill

contained clauses that were discriminatory towards Africans it still marked a milestone for the development of pension policy for Africans. For example, the means test was used in many instances to keep the number of African beneficiaries to the minimum. The means test was originally intended to test the deservingness of pensioners by testing their “ability and opportunities to support themselves or to contribute towards their support by their own exertions” (Sagner, 1998: 11). The scheme was administered by the Native Affairs Department (Sagner, 1998). The state’s concept of this pension was “as an incentive to induce people to care for dependant relatives rather than as a fully-fledged social programme that would guarantee economic security for the elderly” (Sagner, 1998: 11).

In administrative circles popular belief was that African elderly should be cared for in their places of origin. That is to say away from the locations and townships and in the rural areas. But this would mean that those young Africans still living in the towns would have to support two households, which would be impossible considering the meager wages of those days. Another popular excuse was that traditionally, African children should care for their elderly therefore the state had no obligation towards them. In reality, there was an urgent need for a formal social security programme for the African elderly. This need was brought about by landlessness, dependence on wage labour, lack of livestock, inability to till land because young people migrated to towns, growing dependence on large scale agriculture, mounting industrialization and diminishing intergenerational transfers (Sagner, 1998).

In terms of the amended 1928 Social Pensions Act, qualifying Africans in rural areas were entitled to a pension of six Pounds per annum, translating to fifty shillings a month, and were subject to a means test of nine Pounds per annum.

Many African elderly interpreted the pension as a moral entitlement rather than a privilege, partly as compensation for life-course exploitation and social insecurities (Sagner, 1998). An inspector of Native Pensions in the Whittlesea area in the Eastern Cape is quoted in 1954 saying, “Natives in this district appear to regard the granting of a pension as a right” (Sagner, 1998: 13). This sense of entitlement was borne out of the traditional understanding that, political leaders are morally obliged to provide some material security against need.

### **1.1.2 Old Age Pension Grant Provisions**

Some of the priorities that have been identified as being in the current political agenda of the Republic of South Africa are the alleviation of poverty, the improvement of the quality of life of all citizens and focusing on visible service delivery (DoSD, 2003). “Batho Pele”, a Sesotho phrase meaning, “people first” is the name given to the government’s initiative to improve delivery in the public service (DoSD, 2003). The principles espoused by Batho Pele are aimed at helping the government to realize its obligations to citizens’ rights. These principles are: - setting of service standards so that citizens are informed of what level and quality of service they will receive so that they are aware of what to expect; increasing access to services so that all citizens have access to the services they are entitled to; ensuring courtesy to the public in order that citizens are treated with courtesy and consideration; providing more and better information so that citizens can be given full and accurate information of grants which they are entitled to; increasing openness and transparency so that citizens can be told how national and provincial departments are run, how much they cost and who is in charge; remedying mistakes and failures so that if the promised standard of service is not delivered citizens should be offered an apology, a full explanation and a speedy and effective remedy; getting the best for value the quality for money means the DoSD should be provided for economically and efficiently in order to give citizens the best possible value for money; consulting the users of the service about the service level and quality of the service they receive from the DoSD and where possible be given a choice as to the type of service that is offered (DoSD, 2003).

In July 2000 the Department of Social Welfare was renamed the Department of Social Development. The department has subsequently written a procedural manual that is aligned to the Social Assistance Act 59 of 1992 (DoSD, 2003). The manual has been designed with norms and standards that adhere to the Batho Pele principles. The vision of the Act is that of a self-reliant, content and caring society. Its mission is “to enable the poor, vulnerable and excluded of South African society to secure a better life for themselves in partnership with them and with all those who are committed to building a caring society” (Social Assistance Act 59 of 1992).

The government provides grants to its citizens in support of the mission to empower the poor and to secure a better life for all those in need. The grants are supposed to provide for basic necessities and sustain a minimum livelihood.

### **1.1.3 Old Age Pension Grant Procedure**

The old age grant is one of eight social grants supported by the DoSD (DoSD, 2003). It is intended for older persons who cannot support themselves financially. The grant is a monthly payment made to women of at least sixty years of age and men of at least sixty-five years of age (DoSD, 2003).

The process of applying for this grant involves four steps, application, verification, approval/rejection and payment/reconciliation. Certain requirements qualify potential beneficiaries when they apply for the grant. These are the possession of a bar-coded South African identity document, South African citizenship, residence in South Africa and that the applicant and their spouse must meet the means test. This test is meant to ensure that only the poorest benefit from the grant.

The means test specifies that in order to qualify for a grant, a single person must not receive a total annual income exceeding R16 920 per annum and a married person in combination with a spouse must not receive a total annual income exceeding R31 320 (DoSD, 2003). The means test disqualifies the applicant if the applicant is in prison, in a psychiatric hospital, in a state home or institution (DoSD, 2003).

Certain documents are required as part of the application for an old age grant (DoSD, 2003). They are proof of marital status where applicable, a bar-coded South African identity document, spouse's death certificate if spouse is deceased and proof of assets and income for applicant (and spouse if applicable).

Once the grant application form has been filled in, it is sent in to the relevant authority for example a provincial Department of Social Development, for finalisation. The applicant will receive a letter informing him/her whether the application has been approved or not. The waiting period as prescribed by new norms should not be longer than two days, a major departure from status quo. Currently pensioners wait for up to

six months for feedback, the only consolation being that once payment starts it is backdated to the date of application (DoSD, 2003).

On approval of the application the payment and reconciliation process begins. Grants are paid out using cash payouts, SAPO branch offices, direct bank transfers and other payment agencies. To ensure that money is paid out and to minimise fraud, reconciliation needs to be done immediately after payment every month. The process of reconciliation closes the books for a particular payment cycle by balancing the money available for payment with the money paid out plus the money not paid out. Ideally this process should take a month but in reality payment agencies struggle to meet this deadline resulting in reconciliation taking up to three months to complete (DoSD, 2003). This means pensioners who could not withdraw their grants in a particular cycle need to wait for three months before they can withdraw that missed cycle's funds. It remains the responsibility of the DoSD to ensure that payment to beneficiaries is made on time and at an accessible place (DoSD, 2003).

A fair amount of attention is paid to the subject of grant payments specifically the old age pension grant. The elderly sector of the population is viewed as being the most vulnerable and therefore government agencies, Non-Governmental Organisations (NGO's), the media, etc. pay much attention to it. Many problems, some of which will be covered in this study have been experienced.

The DoSD has highlighted good customer relations as being crucial for the success of the department (DoSD, 2003). In light of the public sector's poor public image, several guidelines have been drawn up to assist departmental officials and other agencies when dealing with their customers (DoSD, 2003). These are treating customers with respect; introducing one self to customers, talking to clients in a language that they understand, establishing and maintaining eye contact, dressing neatly to project a professional image and, listening to what the customer is saying.

#### **1.1.4 Old Age Pension Grant Problems**

The DoSD has identified several problems and challenges that hamper the delivery of old age pension grants to pensioners. These include fraud and corruption, the

processing of new applications, DoSD cash flow, power struggles between provincial and national government, public sentiments and problems related to SAPO.

Firstly, each pension cycle has two or three cash payout days. Pensions are paid out at specific community halls or venues. If a pensioner cannot make it to the hall on that day she will get that month's payout only three months later, after the reconciliation has been done. Reconciliation is a closing of the books for a particular payment cycle where after unpaid amounts will be reflected as such and made available for payment again.

Secondly, travelling to these designated venues is difficult. Pensioners sometimes walk for up to twenty kilometres whilst being exposed to the elements. In the halls they wait in very long queues, fainting from exhaustion, suffering from heat stroke, heart attacks and sometimes even dying (Moller, 1998).

Thirdly, illiteracy means the pensioner is vulnerable firstly to the payout official, to her or his family and to unscrupulous traders. A lack of banking infrastructure in the rural areas also means pensioners do all their transacting on a cash basis. This exposes pensioners to the risks of carrying cash because pension payout days are no secret in those communities and pensioners can easily get mugged, or simply even lose the cash.

Finally, the halls are very busy hubs of trade on pension days. Pensioners do most of their financial transacting on that day as some have already travelled substantially. The possibility of saving some money and catering for other needs during the rest of the month is minimal. These other needs like paying for transport, going to the doctor, medicine and school fees will further expose the pensioner to loan sharks (Moller and Sotshongaye, 1996).

*Fraud and corruption* is rife amongst both pensioners and departmental officials. Cheques that are mistakenly made out to deceased pensioners are claimed and cashed, leading to "ghost pensioners". Also, unclaimed cheques are not being returned by departmental officials to the DoSD but are instead being fraudulently cashed. About two thousand of these "ghost" pensioners were uncovered in the Eastern Cape alone (Daily Dispatch, 1997).

*New applications* can take up to six months to be processed. In extreme cases it can take up to two years (Moller, 1998). This results in the applicants accumulating much debt during the waiting period hoping for a lump sum payment back-dated to the date of application. In this time the applicants fall victim to “loan sharks” that charge exorbitant interest rates (Moller, 1998).

*Cash flow* is also a problem where the DoSD has started a financial year with an overdraft and has been overspent for the rest of the year. Financial institutions stop honouring the DoSD’s cheques and subsequently the department cannot meet its obligation of paying out grants. The elderly end up bearing the brunt of this problem.

*Central and provincial government power struggles* also lead to pensioners’ suffering. Central government sometimes refuses to bail out provincial welfare departments who are overspent, claiming that numbers of beneficiaries far exceed central government’s own estimates (Moller, 1998).

*Public sentiments* towards old age pension issues are very strong and are negative toward provincial and national government (Moller, 1998). Both central and provincial government are seen to wrong pensioners by neglecting to fulfill their obligations to pensioners’ constitutional right to social security. Central government is seen to be neglecting its right to intervene in the running of provinces if those provinces are not fulfilling their executive obligations. The view that pension money is household income for many families has strengthened (Moller, 1998). It is now accepted as a means to economic survival.

According to the DoSD, some of the identified constraints are that the incidence of fraud is high; coverage is limited specifically in rural areas and, reconciliation is labour intensive, difficult and takes too long (Moller, 1998). The problem of reconciliation has actually resulted in many provincial departments terminating their contracts with SAPO (Moller, 1998). This problem is directly linked to the aforementioned benefit of availability of grant monies over longer periods at SAPO branches. Whereas other cash payouts only have one or a few days of payment meaning that reconciliation can be done sooner, SAPO has the entire payment cycle month as available days on which beneficiaries can collect their grants. This means

that reconciliation can only be done at the end of the payment cycle and will always be a month behind (S.A. Post Office, 2003a).

*Other problems* that have been identified are: -

Under funding of the social security portion of the welfare budget, deficits in the social security budgets, which have been rolled over to the next financial year and actual expenditure on social security exceeding budgeted allocations (Moller, 1998).

### **1.1.5 DoSD Interventions**

In January 1998, the National Department of Social Welfare started an initiative to rationalize pension payouts nationally (Moller, 1998). The aims of this initiative were to create a database that was compatible throughout the provinces, weed out corruption and establish an accurate number of eligible beneficiaries. The then minister of Social Welfare Geraldine Frazer-Moleketi said although there was so much disruption caused by the rationalization it was justified by the existing problems with welfare payments. For example twenty percent of the three million beneficiaries nationwide were found to be irregular (Moller, 1998). In the Eastern Cape alone one hundred thousand beneficiaries were suspended due to the initiative (Moller, 1998). The rationalisation process resulted in significant savings for the department.

This rationalization initiative caused much hardship for many individuals. For example the re-registration process in the Eastern Cape resulted in the pension crisis of 1998 (Moller, 1998). Historically the province had inherited the beneficiaries of three administrations, the Cape Provincial Administration, the Ciskei and the Transkei. More than six pension databases had to be amalgamated (Daily Dispatch, 1997). Many beneficiaries were registered more than once and were possibly receiving multiple grants. The process proved to be quite time-consuming and the deadline had to be postponed several times.

Some measures that were introduced included the reduction of the number of pay points. This resulted in longer and slower moving queues. Deaths while waiting in queues were reported in East London and Mdantsane. New staff were employed that replaced more experienced staff that were on suspension pending allegations of

corruption. This caused delays in the payment process. The payment of back pay to new applicants was withdrawn resulting in increased indebtedness of pensioners. One pensioner brought an application to the Grahamstown High Court to have her back pay paid out despite the withdrawal and she won the case (Moller, 1998). The poor or absent communication about pay out dates resulted in some pensioners not being paid for over half a year. Pensioners would turn up at pay points only to be told it was not the correct pay out day.

In the aftermath of the crisis, there were a number of improvements.

*Pension Forums* were formed in an effort to empower pensioners. The role of these pension forums was to mobilise pensioners to fight for their rights and to work closely with the DoSD in combating fraud and inefficiency. Pensioner representatives, NGO's, social workers and pension officials constituted these forums (Moller, 1998). Examples are the Eastern Cape Pensioners' Association and the Uitenhage Pensioners' Association. Central and provincial governments made improvements to the social security system like outsourcing the payment process and retraining of staff.

#### **1.1.6 SAPO Pension Biometric Project**

New communication technologies such as the Internet, e-mail and cellular phones enable people to communicate more conveniently and cost effectively, often at the expense of SAPO's traditional business. SAPO income has been declining by approximately seven per cent per annum leading to extraordinary losses (S.A. Post Office, 2003a). The loss of all the country's welfare payment business, with the exception of the North West Province has contributed substantially to SAPO's declining revenues.

SAPO wanted this business back. The challenge was to harness the existing SAPO branch infrastructure, which is more widespread than that of any other organisation, the technology, the creative people, the trusted suppliers and SAPO's relationship with Government to address the problem of declining revenues. "*Paymaster to the Nation*" is a new concept that SAPO has introduced and it encompasses all projects in which SAPO is the paying agent, including the pension payment business (S. A. Post Office, 2003a). It has come about as a result of advances in technology, SAPO

initiative and pressure from government and welfare beneficiaries. Following a brainstorming indaba, a solution, which at first glance appeared far too radical to succeed, was identified: "Making sure that every social grant beneficiary can afford to have a bank account, and that they will be able to access that bank account at their leisure to manage their grants" (S.A. Post Office, 2003a: 2).

The North West Province government saw merit in the SAPO's idea, and the Pension Biometric Project – North West Province was born. On 31 March 2003, SAPO installed the proof-of-concept system, this was a trial run so that government officials could see what it looked like and what it does, at Brits Post Office. The North West Province officials were happy with what they saw (S. A. Post Office, 2003a).

This on-line, real-time system enables a pensioner to walk into a SAPO branch and be issued with a normal ATM plastic card with a magnetic stripe (enabling a Postbank account) and a smart card chip containing his/her pension number, identity document number and his/her electronically stored fingerprints. According to SAPO, this smart card lays the foundation for an improved quality of life for many. The beneficiary will find his/her welfare grant deposited automatically into the bank account on the payment date.

The pension biometric project had to integrate several aspects, namely physical infrastructure, the technology solution, application integration, industry standards - for example the Home Affairs National Identification System (HANIS), banking and user friendliness. For the model to function in a sustainable way it must foster interoperability between systems, bank-to-bank, point-of-sale to bank, bank to SAPO and SAPO to DoSD. It must promote the concept of "banking the unbanked" by making banking affordable and accessible to the poorest citizens (S. A. Post Office, 2003a). This concept of extending banking services to the unbanked population is discussed later in this chapter as an extension of the context under which the pension biometric project took place.

A secure and integrated solution was developed with which beneficiaries are registered using the latest biometrics and encryption technology (S. A. Post Office, 2003a). A basic banking account is opened with PostBank on-line and in real time. A

personalised banking card is issued that is interoperable with the current commercial banking network, and can be used on any automatic teller machine (ATM). DoSD transfers bulk funds to SAPO (S. A. Post Office, 2003a). The grant amount is then transferred by SAPO to each beneficiary's Postbank account. The funds are then available for withdrawal from any SAPO branch or any ATM. Additional functionalities that are available from the SAPO are the "I'm alive" confirmations and reconciliation (S. A. Post Office, 2003a). The confirmation is a requirement of the DoSD, which is done once a year. The beneficiary's fingerprint is compared to the fingerprint which is stored on the chip, and this constitutes an authentication that the beneficiary is still alive. This requirement is meant to reduce fraudulent claims. Reconciliation is done daily and full management reporting is available. All transactions for the day are reconciled from the different suppliers and systems and are used to update both SAPO and the DoSD databases.

Nine basic processes form the basis of this solution. They are: face to face registration and verification of beneficiaries, on-line real time opening of a banking account, issuing of an interoperable bank card, cash withdrawals from any SAPO branch or any fixed or mobile ATM, usability of card as a payment method, 'I'm alive verification', financial reconciliation between suppliers and systems, management information systems reporting, and maintenance of personal information. The standards being used are in line with those of the Department of Home Affairs' HANIS project.

*Some envisaged benefits* of this solution are that it will provide an opportunity for old age pension grants to be paid in a user-friendly way, away from community halls and in the typical banking hall environment of SAPO branches. The registration, the yearly re-registration and the use of Personal Identification Numbers (PIN) for doing transactions are a means of reducing fraud. The reconciliation process is made simpler because of the linkages with other banks and the DoSD. The use of the VSAT service, a satellite based data network will enable the rollout of this project to the furthest of rural areas, where there is currently no data-line services.

More envisaged benefits for paying out the old age grants through SAPO branches include, a wide network of infrastructure where the payments can be made; a longer

period when beneficiaries can collect their grants in a payment cycle; a notification procedure exists for deceased persons and SAPO offices can be used as collection points for new applications (S. A. Post Office, 2003a).

SAPO is confident that the sustainability of this innovation will be proven over time. The willingness of the pensioners to embrace the innovation has proven unmistakably that there was a need for the service. Certainly from a social perspective, it will improve people's lives, introducing a freedom of movement that replaces a previously inflexible system.

Economically, people may benefit, with people being able to save on travel costs, and having more time to better manage and plan their budgets (S. A. Post Office, 2003a). This could assist in the upliftment of our communities, especially the rural poor. This innovation addresses the needs and wishes of both clients and external stakeholders such as the government and the banking community.

Beneficiaries could save money by not travelling vast distances because SAPO has a wider network of branches where grants can now be collected. The trip to SAPO or an ATM to collect the grant can now be planned at a time that is most convenient, taking into consideration other business that needs to be attended to.

Beneficiaries could benefit by earning interest on the grant from the moment it is deposited into their bank account on the due date. North West Province alone pays out more than R800million a month in cash, of which very little was ever deposited in an interest-bearing account before (S A Post Office, 2003a).

### **1.1.7 Banking the Unbanked**

It is acknowledged that the banking system in South Africa is sophisticated and is comparable to the best in the world (S. A. Reserve Bank, 2004). South Africa is at the cutting edge of electronic banking and a stable banking system prevails. Most commercial banks are affiliated to the Banking Council of South Africa, a self-regulatory body that ensures fair dealing between banks and between banks and their customers (ILN Newsletter, 2004).

Despite this sophistication and advancement, an anomaly exists such that these banking services are inaccessible to many consumers. One of the topical issues in the banking and public domain currently is the extension of banking services to the unbanked and the under-banked sectors of the population (ILN Newsletter, 2004). They are called the unbanked or the under-banked because the level banking services available to them is either non-existent or is minimal. This is so especially in light of the many technological developments that can be applied as solutions to extend banking services to all South Africans.

Both government and the private banking sector recognize that the extension of banking services to the entire population as an economic imperative. Several initiatives have been implemented to this effect, for example the formalisation of the micro-lending industry; the establishment of the Micro Finance Regulatory Council; the extension of banking and financial services to rural communities; government's repositioning of Post Office's PostBank as the bank of choice for the unbanked; and the drawing up of the financial services charter one of whose pillars is the provision of banking services to the poor (ILN Newsletter, 2004).

Technological developments have brought about many changes in the banking sector. Amongst the most significant of these changes has been the move away from the use of traditional brick and mortar establishments to the use of electronic transactions. Another change has been the roll out of a fully electronic national payment system for the settlement of inter-bank transactions, making these transactions quicker and more efficient (ILN Newsletter, 2004).

*Challenges* - South African banks, under pressure to increase revenues have realized that they have to tap the unbanked market in order to increase their volumes. With the challenges posed by the market like increasing international competition, advances of e-commerce, competition from local specialized banks like Pep Bank, innovative business models must be used so that banks can improve the lot of those communities whilst also helping themselves. Another challenge is that services must be tailored for and be taken to people who need them. (Weiner, 2004) cites three examples namely:

- Amalgamates Banks of South Africa (ABSA) has special outlets called Self-Service Centres that offer ATM services as well as limited teller transactions in townships and rural areas; First National Bank (FNB) has pioneered the Portable Branch, a structure built out of prefabricated material at a fraction of the cost and time of a traditional brick and mortar structure and; an initiative spearheaded by ABSA is that ATM's will communicate in a choice of vernacular languages.

The products and services that banks provide must be easy enough to understand so that even unsophisticated clients can see the benefits of using banks as opposed to keeping money under their mattresses. Another issue for the unbanked is the affordability of services where consumers ask questions like, "Why must I pay the bank to keep my money in the bank?" The products that banks provide must have very clear value adding properties such as offering financial advice and financial education (Weiner, 2004).

The biggest hurdle that banks face when dealing with the unbanked is how to deal with credit (Weiner, 2004). Normal credit rating mechanisms cannot be applied to people who are not already banked. Accenture's Manuel Lopes da Costa proposes "credit risk to the unbanked can be minimized by lending money to interest groups rather than to individuals, so as to leverage the entire group's commitment not to default" (Weiner, 2004: 3). The Land Bank has introduced what is called the Step-Up scheme. The scheme allows farmers to borrow an initial sum of two hundred and fifty Rands. If they repay this amount in time they can borrow double the initial loan. The process can be repeated up to a maximum loan of eighteen thousand Rands, by which time that farmer has built himself a credible credit record. A credit record means that the farmer has become bankable (Sukazi, 2003). Jacko Maree, CE of Standard Bank says the bank is developing several sustainable offerings for the low-income and the previously unbanked customers (Standard Bank, 2003). Examples of these offerings are the E-Plan account which enables low-end customers to perform day to day transactions at affordable rates; extending the network of physical points of representation; introducing incentivised savings schemes for individuals and groups; and the development of a sustainable lending offering for the low-end market.

Teba, a bank that has its origins as a savings fund for mineworkers has been operating as a bank since 2000 and has recently installed IT systems to enable it to take banking to the unbanked mainstream especially in the rural areas and small towns (Stovin-Bradford, 2003). Teba Bank's emphasis is on creating a savings culture, encouraging customers to save first before taking out loans.

One might ask what the benefit will be to the banks. The biggest benefit is that the previously unbanked clients will become more sophisticated and will start buying other products and services from the banks thereby increasing transaction numbers and subsequently revenues. Secondly the banks will be proud that they are truly contributing to the betterment of many people's lives.

## **1.2 SUMMARY**

It is within the context of using e-commerce applications as tools to improve the lives of disadvantaged South-Africans, specifically the elderly who reside in rural South Africa, that this study is to be conducted.

Technology is a symbol of progress and its growth in the information age is inevitable. The purchase and implementation of computer-based technology without fully understanding its purpose and implications is common (Ely, 1995). Many private and government initiatives are implementing biometric smart cards for all manner of applications (Brekenridge, 2003). A better understanding of how this technology is incorporated into the lives of pensioners may assist payment agencies to apply the smart cards more effectively.

Pensioners' attitudes toward accepting and using smart cards, the availability of adequate information, support and training are important considerations in the effort to incorporate this technology into the lives of rural pensioners. Identifying the barriers rural pensioners face in their attempts to accept and use smart cards can help in developing solutions that at least take these barriers into account and at most overcome these barriers.

Whilst the government and its agencies believe that the introduction of smart cards will change the lives of rural pensioners for the better, it is the aim of this study to examine whether this indeed is the pensioners' experience.

In summary the context of this study examined the broader picture of technological advancement on the one hand and of the challenges posed by the South African environmental realities on the other hand. The ECT Act was highlighted as a government initiative to address these challenges using technology. Further the chapter looked at the history and current realities of pensions in South Africa. Most of the realities are problems and inadequacies of the current pension administration system. A solution spearheaded by SAPO, the Pension Biometric Project was then discussed together with its envisaged benefits. One envisaged benefit of this project is the introduction of banking services, which are linked to the smart cards. Lastly, the chapter discussed the concept of extending banking services to the previously unbanked population.

The aim of this chapter was to draw attention and focus to the broad areas that are contextually relevant to the pension biometric project. The next chapter will look at the theoretical framework of innovation diffusion in order to understand the variables that play a role when new innovations are introduced to societies.

## CHAPTER 2 - DIFFUSION OF INNOVATIONS

Literature on the diffusion of innovations is discussed in this chapter to develop a theoretical sensitivity to the realities that have been identified in the context of this study. This literature should help in identifying what can be done and how, in order to facilitate a faster rate of adoption of smart cards.

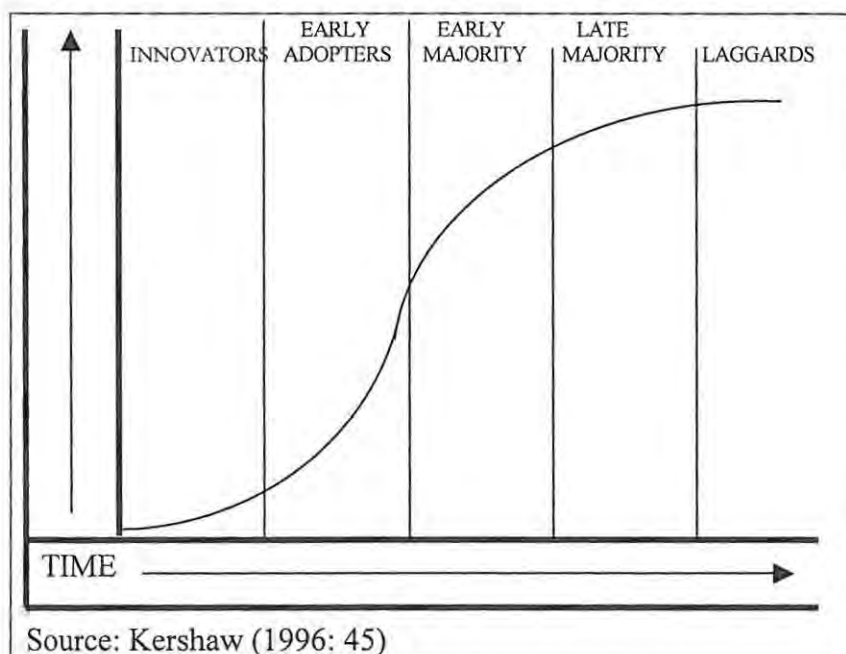
Diffusion of innovation is the process by which “an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 1983: 5). This communication implies a sharing of information, converging toward a common understanding of certain events. These events usually revolve around a new phenomenon; in the case of this study the phenomenon is the implementation of smart cards. Therefore diffusion is a “form of social change defined as the process by which alteration occurs in the social structure and function of a social system” (Rogers, 1983: 6). This study aims to investigate what the changes are that the smart cards have affected in the social system, specifically pensioners’ way of doing things.

Barnett (1953) makes a distinction between an idea originated in a society and accepted by members of that society as adoption, and its acceptance by members outside of that society as diffusion. This study is about diffusion because the smart card has originated outside of the societal group of pensioners. Cooper (1994) differentiates between the generation and the diffusion of innovations. Generation is concerned with the forces that determine the rate at which new technologies are created and the form they take. Diffusion on the other hand concerns the spread of these technologies, the conditions under which new innovations are made available to potential users, the supply and the demand side of innovations. This study is concerned with variables like the spread and the use of smart cards, the form and functionalities of smart cards, and the conditions under which SAPO makes these smart cards available to pensioners. It is not the aim of this study to look at how the innovation was generated. According to Schiffman and Kanuk (1978), diffusion is a macro phenomenon at societal level and adoption is a micro process at individual level. Each pensioner’s experience of the implementation and use of smart cards is a micro process at an individual level.

Schiffman and Kanuk (1978) also propose three approaches to defining innovations. They are the *product-oriented approach*, the *market-oriented approach* and the *consumer approach*. This study is following the product-oriented approach because the focus is on the perceived features of the smart cards. This approach also focuses on what the likely impact of these features will be on pensioners' established patterns of receiving their grants. It is likely that the impact will be continuous (Schiffman and Kanuk, 1978), that is the least disruption will be caused by the smart card implementation. Pensioners can hardly do without their grants, therefore any changes to the method of payment should pose the least disruption so that pensioners do not suffer the inconvenience of not being paid their grant.

As innovations gradually get accepted in societies, a certain pattern takes shape. This pattern is the form of an s-curve as illustrated in Figure 2.1. An s-shaped curve depicts the flow of innovation adoption by individuals through time and shows the adopters of an innovation on a cumulative basis (Rogers, 1983). The figure also depicts the different adopter categories and the time frames at which they adopt. Change agencies like SAPO need to realize the different strategies and actions that promote adoption at different stages along the time line.

**Figure 2.1 INNOVATION ACCEPTANCE CURVE.**



“Adopter categories are the classifications of members of a social system on the basis of innovativeness” (Rogers, 1983: 22). Rogers (1983) defines five adopter categories, innovators, early adopters, early majority, late majority and laggards.

Innovators are venturesome, control sufficient financial resources to absorb the possible loss from an unprofitable innovation are able to understand complex technical knowledge and are able to cope with a high degree of uncertainty.

Early adopters make up a more integrated part of the local social system, they have the greatest degree of opinion leadership, serve as role models for others in adopting innovations, must make judicious innovation decisions to maintain their status as role models and have a shorter innovation decision period than later adopters. Early adopters readily embrace change and are the primary targets of change agents. Rogers (1983) notes that the first individuals to adopt a new idea do so not only because they become aware of the innovation sooner than their peers, but also because they require less time to move from knowledge to decision.

Early majority interact frequently with their peers and are willing to adopt new innovations but seldom hold leadership positions.

Late majority adopt because of economic necessity and network pressure; they adopt after most others in the social system have done so, can be persuaded that an innovation is useful but only peer pressure will motivate them to adopt. The early and late majorities will need to be reassured that there is sufficient administrative and technical support available to them as they embark on the transformation process.

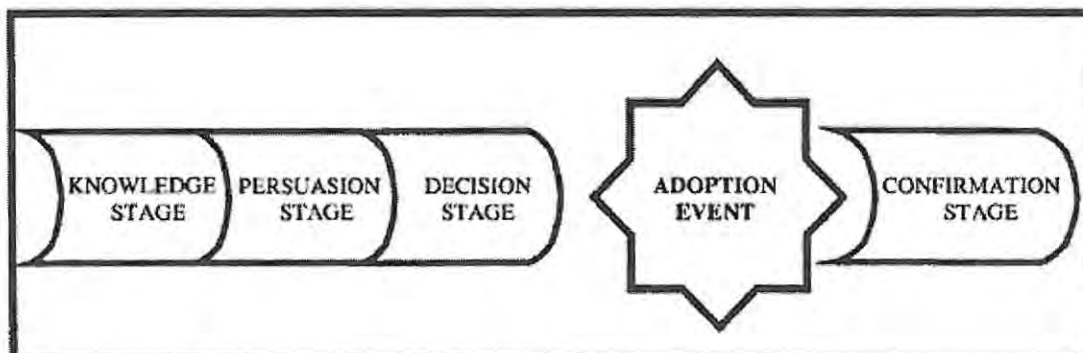
Laggards are the last to adopt an innovation; they possess almost no opinion leadership, their decisions are influenced by what has been done in the past and they tend to be suspicious of innovations and change agents. The laggards will not change. The laggards may progress to step two of the transformation process and accept the need to change, but in the end they do not change (Kershaw, 1996).

## 2.1 INNOVATION DECISION PROCESS

The innovation decision process is the mental process through which an individual progresses from knowing about an innovation to a making a decision to adopt or reject it (Rogers & Shoemaker, 1971). This process takes place at the individual's level as opposed to the social level. That is each pensioner goes through this mental process individually and not as a group of pensioners. Several stages comprise the innovation decision process. They are, knowledge, persuasion, decision and confirmation. Change agencies like SAPO should be aware of the innovation decision process, because it is a guide as to what efforts to make in the different stages to encourage potential adopters to adopt. Understanding the different stages means the needs of individuals can be catered for depending on the innovation decision stage that the individual is in. Figure 2.2 is an illustration of the chronological order of the innovation decision process stages and an explanation of these stages follows.

In the *knowledge stage* the individual is exposed to the innovation and gains some understanding of how it works. In the *persuasion stage* an attitude, favourable or unfavourable is formed toward the innovation. The *decision stage* is when the individual engages in activities that lead him or her to adopt or reject the innovation. The individual then seeks reinforcement for the innovation decision he or she has made in the *confirmation stage* (Rogers, 1983). All these stages have implications for change agents and change agencies in terms of specific strategies and actions that can be applied during each of the stages, in endeavoring to increase the rate of adoption.

Figure 2.2 STAGES OF INNOVATION DECISION PROCESS



Source: Drury and Farhoomand (1999: 138)

## 2.2 ROLE OF CHANGE AGENTS

A change agent is one who influences clients' innovation decisions in a direction deemed desirable by a change agency (Rogers, 1983). Change agents act as linkers between change agencies and potential adopters and facilitate a two-way flow of information between the two parties. In the absence of mass media types of communication, change agents play the role of spreading information. Ryan and Gross (1943 in Lin and Burt 2001) found that salesmen were effective in spreading information about hybrid seed corn, an agricultural innovation to farmers in Iowa.

It is important for change agencies to know the role change agents can play in innovation diffusion. This knowledge equips change agencies like SAPO with the wisdom of what needs to be done by their agents and when to promote innovation adoption. This information also equips change agencies with what it is that needs to be guarded against that can delay or discourage innovation adoption. Some strategies and actions that change agents use to promote adoption are discussed below.

### 2.2.1 Change Agent Steps

Change agents can use specific steps to promote innovation adoption. These steps which are discussed next are: - identifying the adopter's needs; establishing the information exchange relationship; translating the potential adopters' needs into actions; stabilising the adoption process and developing self-renewing behaviour.

The first step is to *determine the needs* of the potential adopter. Sometimes the awareness for the needs is not apparent and it becomes necessary to dramatise the problems in order to create awareness of the need. It requires much empathy and rapport from the change agent to assess what the needs are and thereafter to communicate the needs. The agent needs to create awareness that those clients need to change behaviour by pointing out new alternatives to existing problems. For example the previous grant payment method could have been fine in the pensioners' eyes, but when a change agent points out to them the dangers of carrying around an identity book, such as losing the identity book and somebody else using it to claim their

pension grant then the need for a system that does not require the carrying of the identity book becomes apparent.

The next step is to establish an *information exchange* relationship. The change agent needs to establish a rapport with the client system by being credible in her/his competence, trustworthiness and empathy towards the clients' needs and problems. The agent must be accepted before whatever she/he brings can be accepted. The agent needs to diagnose current problems and determine why current solutions are not solving the problems. Empathy with the clients' perspective is crucial for reaching a diagnostic conclusion. Creating a need to change in the client needs to be client centered and not innovation centered. In other words the focus must be on providing information that addressed the clients' needs. The agent needs to emphasize the benefits to the pensioner more than the benefits to SAPO.

In the next step *recommendations* based on the clients' needs must be *translated into actions*. The influence of opinion leaders on interpersonal networks is crucial for the success of this step. The change agent operates remotely at this stage and allows the opinion leaders to activate peer networks.

The next step is to *stabilize the adoption process* and to prevent discontinuances. This involves sending messages that reinforce the new behaviour, especially in the implementation and confirmation stages of the innovation decision process. Pensioners who have adopted the smart cards would have to be encouraged to use them for the broad spectrum of functionalities that they present so that there is no desire to ever go back to the old system.

The goal of the last step is to *develop self-renewing behaviour*. This allows the change agent to move out of the system assured that the client system will be able to maintain itself with the adopters acting as change agents and no longer relying on the change agents themselves. Pensioners who have adopted would at this stage act as change agents and encourage those pensioners who have not adopted to do so.

Other qualities that result in change agent success are: *Change agent effort*, or the amount of work that change agents put in toward the change agent steps. It is

positively linked to the adoption rate. *Change agency versus client orientation* considers the potential conflict between the needs of the clients and those of the change agencies. For example when promoting the diffusion of smart cards, agent orientation must be concentrated with why smart cards are a solution for the benefit of pensioners rather than why they are a method for SAPO to increase revenues. That orientation will promote compatibility with pensioners' needs rather than SAPO's needs and it will encourage the change agent to be empathetic towards the clients. When change agents display *competence* in what they are doing their credibility with clients is strengthened. Clients have more confidence in them and are more likely to adopt innovations (Rogers, 1983).

Change agents use certain strategies and actions in promoting innovation adoption. Of interest to this study are four categories namely: communication; profiling and targeting adopter categories; the innovativeness needs paradox and the provision of incentives.

### **2.2.2 Change Agent Actions**

#### Agent communication techniques

A change agent's role is to use communication techniques to promote the adoption of a new idea, usually to the benefit of the change agency involved. The newness of the idea is central to this communication. The change agent uses communication to spread information on the one hand and to exert a fair amount of influence over the potential adopter's decision (Rogers, 1983). Brown (1981) states that the adoption of an innovation is primarily the outcome of a communication process.

Three considerations are very important to the communication process. They are the individual who has knowledge and experience, the individual who has no knowledge and experience and their channel of communication. Rogers and Shoemaker (1971) categorise communication channels as either mass media, interpersonal, locally originated and externally originated. It is crucial to recognize which communication channels are appropriate for the different stages of the innovation decision process.

Another dimension is the relevance of the different communication channels for the development statuses of countries, societies and potential adopter groups. Lin and Burt (2001) offer that the functions of mass media and interpersonal channels do not hold for industrially underdeveloped areas, and that in these areas interpersonal channels serve to spread knowledge and to exert influence. The pensioners who are the targets of communication in this study are largely illiterate and reside in rural areas. Although radio is widely available in South Africa the power of interpersonal channels also needs to be recognised.

Mass media allows a few individuals to reach an audience of many very rapidly. It is most effective for creating knowledge and spreading information. Cosmopolite channels (agents from outside a social system) are also most beneficial during the knowledge stage. Examples of mass media are television, radio, newspapers, film and magazines (Rogers, 1983).

It would be beneficial to create knowledge and awareness about the pension biometric project to as wide a pensioner base as possible right at the knowledge stage. It would ensure that many more pensioners got to know about the new payment system and possibly came for registration.

Interpersonal channels on the other hand involve face-to-face exchanges between two or more individuals. This channel is more effective in persuading individuals to form or change strongly held attitudes and beliefs. Localite (agents within a social system) channels are very effective in the persuasion stage because influence rather than pure information promotes change of attitudes and beliefs (Rogers, 1983).

Establishing peer networks among those who have adopted the innovation will increase the rate of adoption. This is caused by a growing communication environment, which creates an important interrelationship between the rate of knowledge about an innovation and its adoption (Rogers, 1983).

Lin and Burt (2001) propose a third channel, which they name the local media. This proposed channel has many of the characteristics of mass media and those of interpersonal channels. According to them, this channel must reach a wide audience

much like mass media but it must also be able to tailor and customize messages for geographical areas or different groups, which would not be differentiated by mass media. Also, the manipulability of this channel can be taken advantage of by mobilizing the channel to seek out the disadvantaged and social periphery members of society. Advantages of local channels have been witnessed in the bare-foot doctors' health campaign in the Peoples' Republic of China (Chen, 1973 in Lin & Burt, 2001). Table 2.1 is a summary depicting a comparison of the three communication channels.

**Table 2.1 SUMMARY OF COMMUNICATION CHANNELS**

<b>Characteristics</b>	<b>Mass Media</b>	<b>Local Media</b>	<b>Interpersonal Sources</b>
Speed to large audience.	High	Moderate	Low
Uniform message to large audience.	High	Moderate	Low
Exposure to source.	Indirect	Direct	Direct
Ability to select audience.	Low	Moderate	High
Ease of feedback.	Low	Moderate	High
Customising message.	Low	High	High
Function in diffusion.	Information	Information and/or influence	Influence

Source: Lin & Burt (2001: 258)

#### Profiling and targeting adopter categories

Individual differences cause people to react differently to innovation. A logical explanation would be that anyone for whom an innovation has a functional benefit better than what is currently available is likely to adopt it. Conversely, people for whom innovations have no tangible benefit will not adopt it. Profiling and targeting the different adopter categories helps change agents and agencies to direct particular efforts to adopter categories effectively. Brown (1981) cites individuals' innovativeness and propensity to adopt as important in understanding resistance to adoption.

Adopter categories can also be profiled to determine which categories are most likely to discontinue using an innovation. A study by Parthasarathy and Bhattacharjee (1998) found that later adopters are more likely to discontinue than earlier adopters.

The implication for change agencies would be to target later adopters with special retention strategies to stop them from discontinuing.

### Innovativeness needs paradox

Those individuals in a society who most need the benefits of a new technological idea like the less educated and the poorer are generally the last to adopt that innovation (Rogers, 1983). This has the tendency to widen the socioeconomic gap in a society. In the South African context an example cited in the context of this study is the digital divide, where the benefits of technological advances are only being enjoyed by already advantaged and empowered South Africans. Change agents who follow a segmentation strategy of least resistance sometimes perpetuate this paradox. These change agents concentrate their efforts on those people who are most likely to adopt and neglect those who are least likely to adopt but need the innovation the most. A segmentation strategy of greatest resistance concentrates the change agent's efforts on the members of a society who are least likely to adopt. In the case of the smart cards, most of the pensioners have never used electronic transactions before, the change agent should therefore spend more time with that majority teaching them and allaying their fears about electronic transactions.

One explanation of "*innovativeness needs paradox*" is the homophily principle, whereby the change agent is more similar with the more elite members of a society in terms of education, income, language and so forth (Rogers, 1983). The similarity facilitates more effective communication between the agent and the elites thereby promoting more adoption amongst the elites. The contrary holds true for the non-elite members of society who have more dissimilarity with the change agent and thereby less effective communication, resulting in fewer adoptions. Less privileged clients often cannot afford to adopt new innovations. So change agents assume it is pointless to spend time with the less privileged members of a society. Another explanation comes from change agents' interpretation of diffusion theory, which informs them that the less elite members of a society are least likely to adopt. They therefore use this as an excuse to spend less time and effort on them.

## Use Of Incentives

Sometimes change agents use incentives to speed up the rate of adoption (Rogers & Shoemaker, 1971). A classic case is the Chinese government, which offers subsidies to one-child families, in an effort to curb population growth and to promote small families (Chen, 1973 in Lin & Burt, 2001). Although incentives can result in consumers perceiving the incentive as separate from the intrinsic advantage of the innovation and thereby withdrawing from using the innovation once the incentive is removed, it is still a good way to ensure at least the trial use and hopefully subsequent adoption (Rogers, 1983).

## **2.3 CONSEQUENCES OF DIFFUSION**

Innovations have three intrinsic elements, form, function and meaning. Form is the recognisable feature of an innovation for example size and colour. Function is what the innovation is perceived to be useful for, for example a mirror is for looking at one's image.

Meaning is the subjective and sometimes unconscious perception of the innovation. Each new receiving culture attaches its own meaning that is applicable to that particular context. Cultural relativism becomes relevant, where different cultures must be judged on their own unique circumstances and needs. Social meaning is the most difficult for change agents to appreciate, resulting in their inability to predict innovation consequences to meaning in a society (Rogers, 1983).

The usual topics of diffusion research are the variables related to innovativeness and innovation adoption. An area that hardly receives any attention from diffusion researchers, involves the changes that occur to an individual or a social system as a result of the adoption or rejection of an innovation (Rogers, 1983). Change agents and agencies assume that adopted innovations will result only in desired outcomes, which are beneficial to the adopters and the agency. They seldom consider the full spectrum of social and economic consequences to an innovation, which fall into different categories. Kimberly (1981 in Abrahamson 1991) calls the presumption that

innovations will be beneficial to adopters, the pro-innovation bias. He further suggests that a more sceptical view on innovation will emerge. It may be very well that the topic of consequences of diffusion offers an emergent view on innovation diffusion, which is not necessarily pro-innovation but rather looks at the possible consequences as a measure of adoption or rejection.

The welfare of a social system should be maintained in order for the innovation to be advantageous (Rogers & Shoemaker, 1971). Some elements that are necessary for the survival of social systems include family bonds, respect for human life and property, maintenance of individual respect and dignity, appreciation of others and cultural values. Some innovations have the potential to destroy the environment, although they have many benefits for their users. For example refrigerators revolutionized the kitchen, but they emit gasses that destroy the ozone layer in the long term. Smart cards for example should not destroy the elements of group social survival by killing the sense of community and camaraderie among pensioners. With the smart cards pensioners will not be obliged to withdraw their grants on the same day, whereas before the community halls were points of congregation and socialising.

Several reasons explain why the consequences of innovation are seldom studied (Rogers, 1983). Firstly change agencies are normally the sponsors of innovation and for them the adoption of innovation is the primary concern. Secondly the usual survey methods of studying innovation diffusion are inappropriate for investigation into innovation consequences. Thirdly consequences are difficult to measure. Consequences of diffusion can be categorised firstly into desirable or undesirable consequences, secondly into direct or indirect consequences and the last category is equality as a consequence. These categories of diffusion consequences are discussed below.

#### Desirable versus undesirable

Undesirable consequences can have a negative impact for entire societies in the long run, changing the way of life for the worse. Sometimes it is difficult to separate the desirable from the undesirable consequences of an innovation. The assumption of separability of the two involves wanting the advantageous functionality without the

accompanying disfunctionality of an innovation. It is impossible to achieve, at least not without further innovation from the users themselves, sometimes called reinvention (Rogers, 1983).

#### Direct vs. indirect consequences

Direct consequences are in immediate response to the innovation (Rogers & Shoemaker, 1971). Indirect consequences occur as a result of the direct consequences, almost in the manner of a shock wave. Anticipated consequences, also called manifest consequences are those that are intended and recognised by the members of the social system. Unanticipated or latent consequences on the other hand are neither intended nor recognised by society members. For example a direct consequence of the smart cards might be that pensioners begin using the savings functionality for saving part of their grants. An indirect consequence would be that because the pensioners now have banking savvy, they start requesting other forms of banking like loans and better interest rates. Change agencies must be able anticipate such consequences and prepare themselves accordingly.

#### Equality as a consequence

Generally, innovation promotes inequality in societies by widening the socio-economic gap. This need not necessarily be so if certain strategies are used. Socio-economic equality has been the goal of many developmental efforts by national governments and other developmental agencies. Rogers (1983) cites greater equality, freedom, social and material advancement as indicators of societal development.

“How an innovation is introduced determines the degree to which it causes unequal consequences” (Rogers, 1983: 401). Social structure is also a determinant of unequal consequences in that an already unequal social structure may result in unequal consequences especially when costs are involved. Some of the strategies that promote equality are:-

Tailoring communication messages specifically for certain groups taking into account such factors as education, beliefs and communication habits (Rogers, 1983). For example the greater use of visual aids as a means of communication. Another example is the use of mass media for illiterate adopters.

Communication channels should be accessible to the intended audience, for example when radio and television is more accessible than print media. Small groups of peers can be used for learning and discussion purposes. Change agents should focus on the late majority and laggards as opposed to the innovators and early adopters.

Opinion leaders among the pensioners can be targeted and change agents can concentrate on them and rely on the activation of peer networks. Change agent aides who are homophilous with the client system can be used. In the case of the pension biometric project the aides would be of pensionable age, would live in the same villages and townships as the pensioners and would be proficient in the local language. Lastly, involving the target segment in the planning and execution stages of diffusion programs also promotes equality because everyone has the advantage of knowledge over a longer period of time.

## **2.4 INTERVENING VARIABLES**

Intervening variables play a mediating role in the adoption process, in that they either promote or discourage adoption. These variables are either inherent characteristics of the innovation itself, are characteristics of the potential adopters or are environmental factors. These variables that determine *rate of adoption* can be categorised into: - perceived attributes of innovations, the characteristics of adopters, type of innovation decision (whether it is optional, collective or an authority decision), the diffusion effect and change agency interest.

### **2.4.1 Perceived Attributes of Innovations**

It is important to study the attributes of an innovation, or more specifically how the potential adopter perceives these attributes, because that is a determinant of their

adoption decision. Rogers and Shoemaker (1971) suggest five attributes of innovations that affect its diffusion as: -relative advantage, compatibility, complexity, trialability and observability. They further suggest that these attributes are useful as predictors of future rate of adoption of an innovation. Moore and Benbasat (1991) who drew on the work of Rogers and Shoemaker suggest that it is not the characteristics of innovations that affect diffusion, but how potential adopters perceive these attributes. Their study further asserts that the perceived use of innovations is also a determinant of diffusion. As with this study, the focus is on the factors that influence the pensioners' perception of the smart card implementation, acceptance and use, and not so much on the inherent characteristics of the smart cards. Moore and Benbasat (1991) suggest eight perceived characteristics of innovation to be: voluntariness, relative advantage, compatibility, image, ease of use, result demonstrability, visibility and trialability.

*Voluntariness* is the degree to which the use of an innovation is perceived as being voluntary or of free will. The use of smart cards is not voluntary because the DoSD commissioned the pension biometric project. All pensioners registered on the system will be issued with smart cards. Voluntariness is relevant for the different uses of smart cards, where pensioners can either use them at SAPO branches or ATM's.

*Relative advantage* is how the innovation is viewed as being better than the idea it supersedes. It is an indication of the reward or punishment resulting from the adoption. Pensioners would have to see the smart cards as a better mechanism for receiving their grants than the identity document and voucher system. The rewards of adopting would have to be immediately recognizable.

*Compatibility* is the degree to which an innovation is perceived to be consistent with existing socio-cultural values, beliefs, past experiences and needs of the potential adopters. It is positively correlated to the rate of adoption. Schiffman and Kanuk (1978) define compatibility as consistency with present needs, values and practices. Compatibility with needs felt by customers, requires empathy and rapport with customers' feeling of the need. Congruence of the innovation with social, economic and psychological characteristics of the potential adopter is a determinant of acceptance (Brown, 1981).

*Image* is the degree to which using an innovation is perceived to enhance the adopter's image or status in a social system.

*Ease of use* is the degree to which using an innovation is perceived to be free of physical and mental effort. Rogers (1983) suggests that the perceived difficulty of understanding and using an innovation by members of a social system is negatively related to its rate of adoption. If pensioners perceive that using smart cards at ATM's is difficult then they will not use them at ATM's. So SAPO's responsibility is to demonstrate the ease of use of the smart cards.

*Result demonstrability* is the degree to which the results of using an innovation are perceived to be measurable, observable and communicable.

*Visibility* is the degree to which use of an innovation is perceived to be visible (Moore and Benbasat, 1991). It is the ease with which an innovation's results or benefits can be observed, imagined or described to potential adopters (Schiffman & Kanuk, 1978). It also has positive consequence to adoption especially if the results are good. Demonstrations of how easily and how fast it is to withdraw grant payments using smart cards would promote their use especially at ATM's.

*Trialability* is the degree to which an innovation can be tried by potential adopters on a limited basis before it is adopted (Schiffman & Kanuk, 1978). Mostly first adopters who regard experimenting with a new innovation as important (in the absence of precedence) are affected by trialability. This attribute allows the potential adopter to evaluate the innovation.

#### **2.4.2 Characteristics of Adopters**

Adopter characteristics are also contributory to the rate of adoption. These characteristics are not inherent to the adopter, but are variables that in conjunction with adopter categories influence either adoption or resistance to adoption.

### The social system

A social system is a physical, social and cultural environment to which people belong and within which they function (Schiffman & Kanuk, 1978). The elements of any social structure will affect diffusion and therefore need to be paid attention as they can facilitate or impede diffusion (Rogers: 1983). Examples of these elements are norms, opinion leaders, traditional or modern orientation, evaluative capability and socio-economic status. Rural pensioners live predominantly under a traditional orientation. Physically their lives are barren of luxuries so their lives are mostly about survival. They are therefore likely to adopt innovations that are flexible to these realities. For example, the smart card payment is sensitive to the fact that pensioners are poor so the first transaction on the card for every month is free.

### Socio-economic status

It can be assumed that individuals adopt innovations in direct proportion to their socioeconomic status (Rogers, 1983). A study conducted by Lin and Burt (2001) found results that reinforced this relationship between socioeconomic status and tendency to adopt. This socioeconomic status is determined by income, lifestyle, possessing wealth, occupational prestige and identification with a social class. This makes the relationship between innovativeness and socioeconomic status positively correlated, because lower socioeconomic status is averse to risks generally. To adopt new ideas is sometimes risky and poorer adopters cannot afford these risks and uncertainty (Rogers, 1983). On the other hand education, literacy and a more favourable attitude towards credit are positively related to innovation adoption (Rogers, 1983). Rural pensioners who earn a pension grant can be described as being of low economic status with little income, little education and possessing no wealth. Being aware of that means change agents and agencies cater for the reality that these people will most probably not adopt.

### Clients' evaluative capability

This is the ability of clients to evaluate innovations on their own (Rogers, 1983). Change agents who use their own technical competence to teach potential adopters innovation evaluation techniques usually promote and encourage clients' own evaluative capability. This endeavour of encouraging clients to develop their own evaluative capability has results that are more long range than short term because, clients learn to evaluate innovations themselves and will not need change agents to do that for them in the future. An example would be change agents teaching youth groups and school children to inculcate this capability, so that as they grew up they would be able to evaluate innovations on their own.

A change agent is sometimes effective only in the presence of a problem. When that problem no longer exists, clients who do not have evaluative capability forget why they are using an innovation in the first place (Rogers, 1983). They may subsequently stop using the innovation. If another innovation is introduced, the clients will need change agent effort to adopt or reject, whereas if the clients had evaluative capability very little change agent effort would be required. Therefore, for pensioners to recognise why they are using smart cards is beneficial to the long-term sustainability of the pension biometric project.

### **2.4.3 Centralised Innovation Decisions**

#### Centralized versus decentralized diffusion systems

Six characteristics differentiate these two types of systems. They are: -the degree of centralization in decision-making and power. The direction of diffusion, for example top down diffusion. Sources of innovations, they can be formal or informal. Who decides which innovations to diffuse? Is the approach innovation or client centered, how important are client's needs in driving diffusion. Lastly, how much local adaptation and reinvention has been effected by clients (Rogers, 1983).

The pension biometric project is a centralized diffusion system because it was a provincial government decision. The direction of diffusion is top-down. The source is formal in the form of SAPO. The adopters themselves made no input to which

innovation to diffuse, DoSD in conjunction with SAPO readily made the decision of the smart card, as the innovation to be diffused.

#### Authority Innovation-decisions

These decisions are those forced upon an individual by someone in a super-ordinate power position (Rogers & Shoemaker, 1971). There is no freedom on the part of the individual to adopt or reject the innovation. It is purely the decision of the individual who possesses more power and influence in that social setting. This type of innovation decision emphasizes the role of the social system and minimizes the individuals' participation in the decision-making. Making the decision and adopting the innovation are therefore done by two different entities, a departure from traditional innovation diffusion.

Much of what happens in the process of an authority innovation decision is quite similar although more complex than optional innovation decisions. The authority collects the knowledge, does the evaluation and decides if the potential adopter or client should adopt it. The decision is then communicated down to the adopting unit, which must then take action (Rogers and Shoemaker, 1971). The implementation of pension biometric project was an authority innovation decision because the DoSD made the decision. The acceptance and use of the smart cards is a normal innovation decision operating at individual level. The decision to use the cards, how and where to use them is an individual one.

#### Innovation dissonance

Innovation dissonance can result when an adopter's attitude toward an innovation is in conflict with their overt behaviour toward the innovation (Rogers & Shoemaker, 1971). It is common in authority innovation decision situations where decisions to adopt are forced down on individuals without their input or participation. Such individuals over time usually either change their attitude toward the innovation or discontinue or misuse the innovation. Sometimes subordinates comply simply to gain favour with their superiors, even though their attitudes have not changed. In the case of this study, the pensioners would be in the subordinated position and the paying

agent in the superior or authority position. It is therefore important for SAPO to make sure that pensioners understand the benefits of the smart cards and have bought into the concept because, although the project was an authority decision it is borne out of concern for pensioners' plight.

#### **2.4.4 The Diffusion Effect**

The diffusion effect is "the cumulative increasing effect of influence on individuals to accept or reject an innovation, as a result of the activation of peer networks in a social system" (Rogers 1983: 234). The diffusion effect is positively affected by a greater number of adopters (Rogers and Shoemaker, 1971). In other words a greater number of adopters helps to fuel further adoption because an increasing rate of knowledge about an innovation influences the adoption rate positively. Therefore the degree of a society's interconnectedness has a positive effect on adoption rate of innovations, because interconnectedness promotes the sharing of information.

Pensioners' organizations and interest groups can help fuel the adoption of smart cards because these forums allow pensioners to interact with one another and share information. Examples of these organisations are pension forums, churches, and burial societies.

#### **2.4.5 Change Agency Interests**

Change agents are sometimes viewed suspiciously because clients believe them to have the interests of their employers at heart and not those of the clients. Examples of these interests would be market penetration, revenues and profit. That is why the flow back of information from clients to change agency is necessary so that appropriate innovations can be determined. Appropriate adjustments can also be made on the basis of previous failures and subsequent information sharing. This results in clients' belief that change agencies also have their interests at heart. In fact, SAPO is to benefit from this study in that it is a flow back of information from client to change agency.

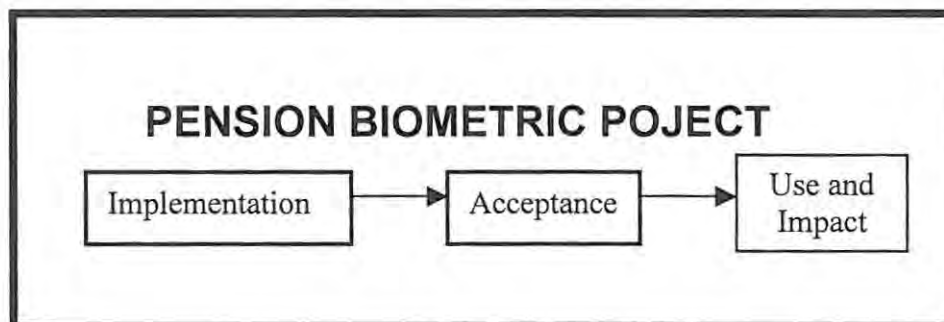
## 2.5 SUMMARY OF LITERATURE

This chapter reviews literature on diffusion of innovations and relates it to the pension biometric project's smart cards. Its purpose is to give a theoretical framework that later in the study will be used to illuminate the results. It will help to understand the pensioners' experience in an organized fashion.

This literature will also help the researcher to ask and answer a number of questions, which are: Firstly, how the pensioners experienced the process of implementation of the smart cards. Secondly, why or why not the smart cards are being used, how they are being used, what factors (e.g. attitude, beliefs and experience) play a role in the acceptance of the cards. Lastly, what the impact of the use of smart cards has been on pensioners' lives.

Given the current legislative imperatives, the need for the effective use of information technology in society has never been greater. It is therefore crucial to understand the factors that affect the diffusion of information technology innovations into societies. It is crucial because this understanding will lead to better processes of communication, of implementation and of the use of these technologies. This study will use these three areas of understanding as a framework to conduct the study (See figure 2.3 below).

**Figure 2.3 AN ILLUSTRATION OF THE AREAS OF THIS STUDY**



## **CHAPTER 3 - RESEARCH METHODOLOGY**

The chapter provides an overview of the strategy that was used to conduct the research and collect the data necessary to answer the research questions as outlined in Chapter Two.

### **3.1 RESEARCH AIMS AND GOALS**

The three main goals of the study are to investigate: -How the pensioners experienced the process of implementation of the smart cards. Why and why not the smart cards are being used, how they are being used, what factors (e.g. attitude, beliefs and experience) play a role in the acceptance of the cards. What the impact of the use of smart cards has been on pensioners' lives.

### **3.2 RESEARCH PARADIGM**

The study was conducted in the constructivist paradigm (Guba & Lincoln, 1994) because its main concern is the pensioners' experience of the implementation, acceptance and use of the smart cards. Therefore the emphasis is on the perspective of the pensioners about their experience, and the construction of the meaning of these experiences.

### **3.3 RESEARCHER'S ROLE**

As the researcher, I was very aware of the crucial role I had to play in the study. In the observation phase my intention was to play a neutral observer role, not participating in any way in the process being studied. But, in light of my being an employee of the Post Office Information Technology division, I had to intervene when I arrived on site to conduct observation and found that there were power and network connectivity problems. I spent some time troubleshooting the problems and as soon as registration could begin I began my observation. I recorded events by writing what I observed on a notepad. I was also aware of certain assumptions held by myself that might influence the findings. Examples of these assumptions are that the pension payout

business is viewed within the Post Office in terms of how much money can be made from each transaction and never from the pensioner's perspective and that this way of looking at the pension payout business is incorrect and; that pensioners are helpless and largely illiterate. I tried to record only what I saw, irrespective of my own assumptions.

In the interview phase I had to be open to the pensioners' experience to the extent of putting myself in their shoes. I was also aware of my own aforementioned assumptions, that they did not come out during the interviews and that I only stuck to the interview schedule and further probing questions. When introducing myself to the interviewees I had to clarify that my role was that of researcher and not that of a representative of the Post Office. I had to explain that I received their name and address details from the Post Office. All this was meant to assure the interviewees that their most honest answers were necessary and would not prejudice them in any way. I also had to make sure that I was always polite, courteous and sensitive during interviews, thanking the pensioners for their time and participation at the end of every interview.

### **3.4 RESEARCH METHOD**

The research method used for this study is in line with the case study research method. This is because a "limited number of units of analysis were studied and the investigations were conducted on the spot under natural circumstances" (Welman & Kruger, 2001:183). Leedy (1997) states that the case study research method involves the exploration of a phenomenon that seeks participants' point of view about their experience of the phenomenon and, that sometimes seeks to evaluate that phenomenon. Gall, Borg & Gall (1996 in Leedy 1997) cite the need to use evaluative case study methods when governments need to formally evaluate programs that receive government funding. Data collection procedures used were a document study of Post Office documentation on the Pension Biometric Project, systematic on-site observations and interviews with pensioners. Creswell (1994 in Leedy 1997) supports the use of a variety of data collection procedures to collect detailed information for the case study research method.

### 3.5 DATA COLLECTION METHODS

A *document study* involves the study and analysis of documentation pertaining to a specific phenomenon, which is the subject of and for the purpose of scientific research (Strydom, Fouché and Delpont, 2002). The document study of Post Office documentation on the Pension Biometric Project was used to gain an understanding of the background to the project, and of the procedures of the implementation, the registration and payment processes. The envisaged benefits to pensioners, from the Post Office point of view were also investigated.

I dealt with the validity and reliability of these documents by first reading them and then interviewing the Postmaster at Brits Post Office as someone who had been involved with the implementation at the pilot site.

*Systematic observations* were done at pension payout points when registrations were taking place. Some of the activities observed were the process of applying for smart cards and the method receiving of them. These observations allowed me to observe the actual implementation process first hand and equipped me with the ability to ask relevant questions during interviews. This increased the accuracy of recording and gave fine details of both the fun and frustrations of the registration process. Although my aim was to observe and not intervene in any way during observations, I ended up having to intervene on one occasion when there were power and network connectivity problems on site. This intervention was carried out purely on the basis of me being a Post Office employee and not as part of this study. The impact of the intervention was a facilitation of the registration process.

The registration sites also provided a natural setting for the phenomenon being studied. This is a key aspect of qualitative research (Welman & Kruger, 2001). The great advantage of the observation technique was that it provided a direct observation as opposed to reported behaviour. This removed some of the major causes of error in research e.g. memory loss, poor recall, and perceptions affected by experiences after the original experience. It also reduced error due to translation, and provided a richer dataset that includes non-verbal and physical behaviour. What is said can very often be

different from what is actually done, for a variety of reasons. Observational techniques are often of higher value than the cheaper self report methods, simply because they focus on actual behaviour (Welman & Kruger, 2001).

*The interview* technique was chosen because it is a powerful tool for obtaining in-depth understanding of another person's experience, as it does not exclude variables that a structured survey might do (Welman & Kruger, 2001). Also, the approach of the study was designed to be inductive. I moved from a premise that the smart cards were designed to improve the lives of the pensioners. The interview process was meant to inform me where exactly the improvements or deterioration had been, as experienced by the pensioners.

The interviews were semi-structured with mostly open-ended questions to enable me to identify the important variables in the pensioners' experience. Semi-structured interviews also allow interviewees' feelings, attitude, understanding and beliefs to emerge (Welman & Kruger, 2001). Other questions were allowed to emerge from the ongoing dialogue between researcher and interviewee. Pensioners were assured of anonymity and protection of privacy in my quest to solicit pensioners' views and perceptions of the smart cards.

The interviews were conducted with beneficiaries at their places of residence. The list of beneficiaries and their addresses was obtained from the Post Office's internal owner of the project, the New Ventures Division at head office in Pretoria.

I as the researcher appreciate the dilemma of conducting human behaviour research, where the researcher cannot completely detach her self from the research objects i.e. other human beings (Welman & Kruger, 2001). It is almost impossible not to be absorbed into the research situation, as a human being putting oneself in another human being's shoes. This aspect of qualitative research is quite controversial because complete neutrality is impossible.

Also, context plays a role in that human behaviour needs to be interpreted contextually, taking into account other variables like values and beliefs. Another limitation is that observation research does not explain events and behaviour; it only offers a setting for

the recording of events and behaviours. Researcher bias can affect data-collection and interpretation, negatively or positively and it needs to be acknowledged. Short-term observation also suffers from the difficulty of building trust between researcher and participants to facilitate more open and honest interaction.

**Table 3.1 Means of Data Collection**

<b>Phase 1 (Document Analysis)</b>	<b>Phase 2 (Observations)</b>	<b>Phase 3 (Interviews)</b>
<ul style="list-style-type: none"> <li>• Identify issues that are relevant to the implementation process.</li> <li>• Identify mechanisms of smart card usage.</li> <li>• Seek to understand SAPO objectives of improving pensioners' lives.</li> <li>• Use registration manual to describe the registration process.</li> </ul>	<ul style="list-style-type: none"> <li>• Observe the implementation process on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Interview pensioners to determine their experience of the implementation, acceptance and use of smart cards.</li> <li>• Determine impact of smart cards on lives of pensioners.</li> </ul>

The second and third phases will be described below using the following format: population and sample, research procedure and methods of data analysis.

### **3.6 POPULATION AND SAMPLE**

#### *(Observations)*

Two registration sites were visited i.e. Brits Post Office in the North West Province and Dordrecht Post Office in the Eastern Cape Province. At the time of conducting the research, Brits Post Office had been busy with the project for eight months and Dordrecht was busy with the initial registration process. Visiting the registration sites meant the research was taking place in the natural environment of the process being studied, in a manner that was non-intrusive and non-manipulatory.



A purposive sampling method (Welman & Kruger, 2001) was used in that the two offices are situated in towns that are largely rural. This is in line with the intention of the study to investigate the impact on the lives of rural pensioners. The retail division at the Post Office supplied me with the dates of old age pension grant payouts, on which registrations for the smart cards would also take place. Pensioners were therefore expected to be on site on those days. This made the registration process convenient in that pensioners were making one trip to get paid their normal grant and to register for the new system.

#### *(Interviews)*

The population was all pensioners from one of South Africa's predominantly rural provinces that is the North West Province, who are old age pension-grant beneficiaries, are registered on the smart card payment method and reside in the Brits area. The North West Province is poor and the majority of the citizens there are government grant beneficiaries, as its economic prosperity is amongst the lowest in the country (Leibrandt & Woolrad, 1999).

A purposive sampling method (Welman & Kruger, 2001) was used during the interview phase. A list was obtained from the E-Counter project team at the Post Office head office in Pretoria of all pensioners in Brits registered on the new system. The Brits Post Office has several villages/townships that fall under it and of these three were chosen namely Oukasie, Lethlabile and Damonsville. Systematic sampling was used to identify 30 potential interviewees at these three villages. Snowball sampling had to be applied when some pensioners were not present at their places of residence and the researcher ended up having to ask interviewees to refer other beneficiaries who were registered on the new smart card payment system.

Fifteen interviews were conducted in the end. More importantly the researcher aimed to conduct as many interviews as possible until a particular trend was recognizable in the responses. As soon as there were recognizable recurring patterns and consistent regularities in responses that would be an indication that enough interviews had been conducted. Males and females turned out to be almost equally represented. The sample only covered those pensioners who are already using the new payment system.

### 3.6 RESEARCH PROCEDURE

#### *(Observations)*

I spent two days at both sites observing the registration process without any communication with the beneficiaries. I tried to be as inconspicuous as possible so that my presence resulted in the least disruption or impact to the process that was being observed. I sat in a corner in the registration room and took notes of what I was observing whilst watching and listening. The beneficiaries were aware the process was being observed and some of them even ventured to ask what I was doing on site. I then said that I was an observer and that I was there to observe what was happening for the purposes of a study I was doing.

#### *(Interviews)*

In-depth interviews were conducted with pensioners as the next phase after observations to get more detailed information. Each interview lasted for about one hour. The interviews were meant to be informal and conversational in nature to facilitate the interviewees' freedom to visit as many factors as possible. An interpreter and myself first introduced us as independent researchers who were investigating the impact of the new smart card payment system used at the Post Office. The majority of pensioners speak seTswana and I speak isiXhosa and English. The interpreter was proficient in both seTswana and English, and would converse with me in English and to the pensioners in seTswana. The pensioners were also asked to introduce themselves purely for conversational purposes, as the interview was anonymous. Interviewees were asked for permission to record the interview for the sake of accuracy. Notes were also made as the interpreter was interpreting conversation.

All of the interviewees were quite keen to be interviewed but one. The particular interviewee later agreed to the interview, which had to be held outside his house in the yard because he would not let the interpreter and myself into his house.

The development of the interview schedule (see table 3.2) was based on earlier reviewed literature that is diffusion of innovations and also the context as covered in chapter one and chapter two of this study.

The interviews examined factors of implementation, acceptance, impact and use of the smart cards. This examination was used to measure current use and possible future use of the smart cards. The interview also examined the type of information that was made available to the beneficiaries and used it to test current and future usage of the smart cards. Table 3.2 is an illustration of the interview schedule with the intended points to be probed by each of the open-ended questions. It is drafted for three stages as informed by literature on diffusion of innovation. These are the implementation stage, the acceptance stage and lastly the use and impact of the smart cards.

**Table 3.2 The Interview Schedule**

<b>Stage</b>	<b>Question</b>	<b>Further Probing Questions</b>
<b>Implementation</b>	How were you introduced to the new payment system?	Who told you, where and how? How did the registration process go?
	What are your thoughts and feelings about the new system?	Do you like it, is it easier, is it more convenient, etc.?
	What should government have done differently?	Did you make any input to the new system's development?
<b>Acceptance</b>	How does the old compare to the new?	Do you prefer the old identity book system to the new card?
	Are you happy with the new? What are you happy/unhappy with?	Satisfaction level. Highlights and lowlights.
	What changes should be made to the new?	How can the system be made better for you?
<b>Use and Impact</b>	What difference has the smart card made to your life?	Has the manner of payment changed in terms of timing, amount and venue? How do feel about having to keep and use a pin?
	How are you using it?	Is the card being used at ATM's, more than once, at convenient times, other venues?

### **3.8 ETHICAL ISSUES**

Certain ethical issues arise in the kind of research methods used by this study because of the interaction between researcher and the subjects of the research. Miles and Huberman (1994 in Welman and Kruger, 2001) list some ethical issues that were taken into account. The issues should be taken into account before, during and after conducting research and when analysing data from this type of research. Some of these issues are: -

Participants should have full knowledge of what is involved, so their consent to do the interviews had to be on an informed basis. The pensioners must also be informed of the possibility of the research harming them, or any risk they may be exposed to because of the research, which in the case of this study was not applicable. The researcher must be truthful in presenting data. Honesty and trust are necessary. Intrusion into matters that might be deemed private, confidential and anonymous must be avoided. If the research participants had displayed or informed me of any illegal or harmful behaviour, I believe it would have been my duty to report it to the relevant authorities, whether it be to the Post Office or the police.

### **3.9 METHODS OF ANALYSIS**

#### *(Observations)*

The information recorded from observations was compared to the registration manual to test the manual against the reality, looking for any trend that was in agreement with or not in agreement with the manual. The value of the observation as compared to the written procedure was that it brought in the contextual content to the process, which would have been impossible to pick up from the procedural manual.

The observation reports were synthesized and developed into an understandable and informative text. Some of the analysis and interpretation was done during the observations and not necessarily at the end of the fieldwork. I reviewed that which was witnessed and synthesized it with the notes I had taken during the observation, keeping the registration manual as background. It was very important for this stage not to take the context out of the interpretation, as this is one of the benefits of doing observations. Key terms and dominant themes were identified and examined.

*(Interviews)*

The data collected from the interviews was transcribed from the recordings and the notes into Microsoft Word. Some of the benefits of Microsoft Word for purposes of analysing are, editing, coding, storage, ease of searching and retrieval, linking data segments and chapters, ability to write commentary on segments of data and analysis of content. The data was then analysed thematically. Themes were identified that were emerging from the interviews and also, issues that were pertinent to these themes were identified.

## CHAPTER 4 - RESULTS

The aim of this study is to investigate the factors that have influenced the diffusion of smart cards in the pensioner community of rural South Africa. A project was spearheaded by the South African Post Office to implement smart cards as a payment mechanism for old age pension grants. This project is called the Pension Biometric Project. It is owned by the E-Ventures division and is rolled out in conjunction with the Information Technology Division (Retail and Banking Section) within the South African Post Office.

Of interest to this study are three areas of the diffusion process. The first is the experience of the implementation process by the pensioners. As part of the implementation process, the study looks at the communication process that took place about the new system prior to and during registration. The study also looks at what actually took place during the registration for the smart card payment system.

The second area of interest to the study is the acceptance of the smart cards. What are the factors that have influenced the pensioners to accept or reject smart cards? The literature has shown that many possible influencers to this decision ranging from innovation characteristics to the role that change agents played. The study hopes to unearth what pensioners perceive to be influencers to their decision to accept or reject smart cards.

The third area of interest is the how the pensioners are using the smart cards and how this use is having an impact on their lives. The smart cards have functionalities that make them very different to the previous way of receiving the old age pension grant. The study aims to investigate if and how these functionalities are being used. It also aims to investigate what impact the use of these functionalities is having on the lives of the pensioners.

I did fieldwork in the form of observations at registration sites and also conducted interviews with the pensioners. This chapter is a discussion of the results of the fieldwork. The chapter will start with a background that addresses the infrastructure and registration process. This background is based on the registration manual as provided

by the E-Ventures Division (See Attachment A). The chapter further uses information from an analysis of the observation notes and the interview transcripts to identify a number of emerging themes. These themes are discussed under the already identified major focus areas of the study i.e. implementation, acceptance and use and impact. Communication, encompassing pre-implementation communication and communication during implementation will be discussed under implementation. The registration process, encompassing technical and infrastructure issues will also be discussed under implementation.

The acceptance theme covers both the forces of acceptance and restraining forces. Examples of driving forces, which have played a positive role in the acceptance of smart cards, are safety, perceptions of the S. A. Post Office as a service provider for the government, dignity, convenience, general satisfaction and the smoothness of the change from one system to another. IT illiteracy and some aspects of communication have been identified as restraining forces.

Banking is a major focus area that will be discussed under the use and impact theme. Other focus areas under the use and impact theme are saving and form of payment.

In summary, this chapter will deal with change management issues as they came up throughout the three major areas of the Biometric Pension Project.

## **4.1 IMPLEMENTATION**

### **4.1.1 Communication**

The majority of pensioners heard about the new system at the halls where they previously received their old age pension grants. Few heard about it from the Post Office branches where they were previously receiving their grants. A negligible number heard by word of mouth. The information received was that a new payment system was to be implemented at the Post Office that would eliminate the queuing at halls. Pensioners were informed that during the next grant payout date they would be required to register for the new system.

It also emerged that a lot of information about the capabilities of the smart cards was not supplied when the pensioners were registered and this new system introduced to them. Pensioners were supplied with different types and amounts of information. Some of them knew some of the functionalities, but not all of them knew all of the functionalities, which should be the case. The registration process should serve as a mechanism to communicate all the functionalities and capabilities of the smart cards. The pensioners should be told how the smart cards are different to the old way of receiving pensions and this did not happen.

#### **4.1.2 Infrastructure**

In Dordrecht pensioners were using the verandah outside the Postmaster's office as a waiting room. About thirty-five pensioners were waiting outside. Some were standing, some were sitting on the cement floor and some were milling around. All of them had walked from the surrounding villages, some for more than ten kilometers in temperatures as low as four degrees Celsius. They looked cold and uncomfortable. The Postmaster's office was converted into a registration room. There were four registration stations, each equipped registration equipment, a desk and a chair for the registering official. At any one time there were eight people in the room, four registering officials and four pensioners.

The electricity power supply in the town was apparently very unstable at the time and in the first three hours that I spent there the power in the office went off three times. In fact when I first arrived in the morning the electrical circuit to which the computer equipment was connected was down. This meant that the network equipment was also off, rendering the office offline. The registering officials were sitting and chatting to one another, huddled around a heater.

In Brits the registration venue is situated in the same building as the branch office although pensioners use a separate entrance to access it. The venue consists of two large rooms, one is used as a waiting room and the other is used as the registration room. The waiting room has thirty chairs where beneficiaries wait in a queue. The registration equipment, that is personal computers and peripherals are situated in the registration room. There are ten registration stations, each equipped with registration

equipment, a desk and two chairs, one for the registering official and one for the beneficiary.

On this first day of observations in Brits the temperature outside was forty-one degrees Celsius. The registration room, which had no windows, was not air-conditioned either. There was no water or other refreshments available for the pensioners. The pensioners looked very hot and uncomfortable in the heat, some were using pieces of paper and handkerchiefs as fans. About twenty pensioners were waiting in the waiting room and in the actual registration room ten pensioners were in the process of being registered. Computer and power cables were lying loosely on the floor. One of the walls in the room was not completely painted, the room looked like it was still under construction or renovation.

#### **4.1.3 Registration process**

Registration is a process that was used to get all the pensioners on a register for the new payment system. Registering also served as a verification and proof of identity mechanism.

*Dordrecht* - The 8<sup>th</sup> of September 2003 was the first day that pensioners in the rural Eastern Cape towns of Barkley East, Dordrecht and Lady Grey were registering for the Pension Biometric Project. I spent the day observing the registration process in Dordrecht. I drove in the early hours of the morning to be in Dordrecht at eight o'clock when registration started. About ten kilometers outside the town I noted some old people walking towards town in groups of two or three. I assumed that these old people were old age grant beneficiaries going into town for their pension grant payment and to register on the new system. Ten kilometers is a very long distance for a person of age sixty and more to walk. I also assumed that they were walking because there was no public transport to take them into town. If there was public transport available then perhaps they could not afford it. Either way this walking informed me life was not easy for these pensioners.

Pensioners were asked to come into the registration room in groups of four. They were asked to produce their identity documents and to verbally confirm that they were

current old age pension grant beneficiaries. The identity document barcode was scanned using the handheld scanner. Details like first name, surname and address that had been captured from the department of welfare's files would then appear on the screen. The registering official would then read the displayed information and ask the pensioner to confirm or correct it. After confirmation or/and correction the pensioner's ten fingerprints were all scanned into the system. After that the pensioner's photograph would be taken. Those who were wearing hats were asked to take the hats off before the photograph was taken. The pensioner would then be asked to provide four numbers that will be his private identification number (PIN), which he would use for all future transactions using the card. The printer then printed the personalized smart card, which was to be used for future old age pension grant payments.

The Postmaster was not in the office as she was attending to the hall where pensions were being paid on that particular day. The pensioners, after receiving their grants would then proceed to the Post Office to register for the new system. On my arrival I noted that there were two faults in the office, the electricity was off and the network was down. IT network infrastructure support was not on standby to monitor the network at the sites and to proactively act on any network problems even before the people on site picked them up.

I work for the IT Division within the Post Office, so I spent some time troubleshooting and resolved both faults. My original intention was only to observe and not to communicate or intervene in any way. This intervention on my part ended as soon as the problems were resolved and the registration process began.

After the power and network faults were resolved and the registration machines were switched on I asked one of the contractors to demonstrate one live transaction to make sure that the system was working and connecting on the network. I did this to test that the system was ready for registration. The contractor started the e-Counter Training application and when I asked her why she was starting the training application not the E-Counter she said that the trainer, who was not on site on that particular day told her for that particular personal computer she must work on the training module, for demonstration and for actual registration. The contractor was therefore getting ready

to register pensioners on the training module instead of the live module. This means the pensioners would have not been registered at all as the training application was purely for training. It also means that the training officer had not done a proper job of training the registering official and he was not even present to make sure the registering officials were doing a good job.

The entire process of registering was supposed to take seven minutes according to the registration procedure manual. During this entire period the pensioner was standing. The pensioner had to lean forward while all ten fingers were being scanned, each finger being pressed at least five times before the system accepted it and proceeding to scan the next finger. The process was taking approximately fifteen minutes at the minimum and the pensioners were clearly uncomfortable during this time.

Because of some problems the first day of registration ended with only five pensioners being successfully registered.

*Brits* – On the 9<sup>th</sup> of December 2003 I spent the day doing observation at Brits Post Office in the North West Province. This branch office is the first one where the new payment system was piloted in March 2003. The system has therefore been in operation there for nine months. Although different types of government grants are registered for at this registration venue my interest was only the old age pension grant registration.

The registration process went generally well for most of the pensioners. They were asked to produce their identification documents and after it was scanned were asked to confirm their details. Their fingers then were scanned using a biometric fingerprint scanner. They were then asked for a four-digit number that was to be their future secret number or PIN. Half of the fifteen interviewees were asked to verbalise this number and the other half were asked to punch it in. A photograph of their face was then taken. After this a personalised card was printed by the printer and issued to them.

A few pensioners experienced problems in that their cards did not print on the registration day. Those pensioners were told that they would get their smart cards when they came to withdraw their next old age pension grants and that they should bring their

identification documents. At the time of the interviews, a few of them had subsequently withdrawn their grants for a number of months using their identity documents although they were registered with the new system. Their smart cards had still not been delivered. One beneficiary even asked me to follow up his card on his behalf, to which I responded that it would be better for the pensioner to enquire at the Post Office next time he was at the Post Office because I was only doing a study and would not be able to follow up everyone's problems individually.

Some pensioners had to wait for hours because the registration transaction was not completing successfully and these pensioners do not know what the problem was. It emerged from the interviews that the registering officials never told them what the problem was that was causing them not to receive their cards on that day. They were just made to wait for the problems to be resolved.

#### **4.1.4 Technical Equipment Used and Difficulties Experienced**

Personal computers with several peripherals attached to each are used to register the pensioners. The peripherals are, a fingerprint reader, a handheld laser beam scanner, a camera and a smart card printer. The registering officials are temporary contract workers who have been employed and trained specifically for registering new beneficiaries on the new payment system.

On the day I was doing observation in Brits the contract workers informed me that they were not able to register any pensioners because they were experiencing network problems. According to the registration manual (see Attachment A), for each registration transaction the system connects to the PostBank system in Bloemfontein via the network to open a bank account. This happens before the smart card gets issued, which means if there is a problem with the network there won't be any smart cards issued. I had come across this very problem in Dordrecht three months before, where pensioners were not being registered because of technical problems. Thirty pensioners spent half the day waiting to register and were all registered by the end of the day.

## 4.2 ACCEPTANCE OF THE SMART CARDS

This area covers the factors that pensioners highlighted as being forces of acceptance, which are those forces that encouraged them to adopt. In contrast forces of restraint, that is those forces that discouraged and prevented them from adopting the smart cards.

### 4.2.1 Forces of Acceptance

*Safety* came up as one of the major concerns of pensioners. It is a concern in all three areas of the project namely implementation, acceptance and use and impact.

In the past safety was a concern when pensioners were getting paid in community halls. Pensioners said that they felt vulnerable because everyone knew that they were getting paid on a specific day and they also knew how much money they were getting paid. The halls were sometimes targets of armed robberies and this exposed them to gunfights between robbers and security personnel. Some pensioners were vulnerable to their own families, children and relatives who would take the pension grant money without pensioners' permission because they knew they had been paid on a particular day at the hall. When describing their experience of being paid the old age pension grant at the community halls, the pensioners used words like "suffering", "heat", "sweating", "pushing", "collapsing", "dying" and "fighting".

The majority of pensioners feel the Post Office is a safer place from which to collect cash. This is because people go there for many types of transactions, therefore people on the outside cannot tell for certain that a pensioner was withdrawing his or her grant. No one pushes in the queue and everyone waits his or her turn. One pensioner responded that, "I could never feel safe and secure when at the community halls like I do when withdrawing from the Post Office". Another pensioner reported that she felt her grant was secure as no one would ever be able to withdraw it unless she had given him or her the PIN.

*Restoring Dignity* back to the pensioners is one of the attributes that the pensioners use to describe this new system. They said getting paid at the Post Office as compared

to the halls made them feel more dignified. "I am a poor person and my dignity is one of the things I guard with my dear life, no one should take it away from me" were the words of a pensioner. The security guard who was at the Post Office ensuring order and safety also added to the feeling of dignity.

*Perception of S. A. Post Office.* Most of the pensioners were using their cards to receive their grants from Post Office branches. "The Post Office branch is more accessible because it is in the township", a pensioner said. One pensioner mentioned that she preferred receiving her grant at a particular Post Office branch because she was already familiar with the staff there, they knew who she was and she also knew who they were. She did not want to leave a place with which she was familiar and comfortable to start withdrawing from other Post Office branches or from ATM's. Interestingly she was one of only two pensioners who made any comment about Post Office staff, even amongst those who said they still prefer the Post Office to banks. I would have thought the Post Office staff played a much more significant role in drawing these pensioners to their branches, one that they would mention whenever they spoke about the Post Office.

Those few who had not received their cards were quite apprehensive that the cards should be delivered to them as soon as possible. The problem was that there had been no communication from the Post Office to say when delivery of the smart cards could be expected.

A few who were apprehensive about using the smart card at ATM's knew that they could always use the Post Office branch as an alternative. Many pensioners said at the Post Office there was always someone available to help with grant withdrawals. One pensioner mentioned that she was happy that at the Post Office they do not have to write anything as compared to the bank where one had to fill in forms. This particular pensioner had been paid her grant from a bank before converting to the new SAPO system.

*The feeling toward government* about the role government played in installing this new system was that "The government could not have done better". Some felt that

this was the best system they had ever been on ever since they started receiving the old age pension grant.

*Smooth Implementation.* All the pensioners said they had not experienced any problems receiving their grants since the new system was implemented. Things were going smoothly. Even those few whose smart cards did not print at registration did not have any problems receiving their grants as they used their identification documents and allocated bank account numbers to withdraw.

*General Satisfaction* was voiced about the new system. There was nothing that the pensioners wanted changed with the new system. The word satisfaction was used by many of the pensioners. A few even mentioned, “makes life easy”. There was definitely a higher satisfaction level with the new system as compared to the old. A lot of pensioners were happy they would never have to go back to a hall to receive their grant.

A few pensioners said they would like to revert back to the old identity document and voucher system. A few also mentioned that the amount of the grant was not sufficient to cater all for their needs, which was outside of the scope of this study. A few pensioners were unhappy with certain aspects of the new system. These aspects are covered under restraining forces in the next section of this chapter.

#### **4.2.2 Restraining Forces**

*IT illiteracy* has emerged as a concern from many pensioners. Most of the concerns raised were around the PIN, remembering it, forgetting it and using it. One pensioner said she was not happy with the new system, as she was too old to remember her PIN and to do electronic transactions. She said “I forget the PIN all the time”.

It also emerged that there was no training provided for them to be able to use ATM’s. This made them feel very unsure of themselves when having to do electronic transactions. One pensioner said she was afraid of automatic teller machines (ATM’s) and was more comfortable with the old identity document and voucher system.

## 4.3 USE AND IMPACT

### 4.3.1 Banking

Banking constitutes the basis of the smart card project and of this study. It is the determiner of whether the smart cards are having the desired effect of *improving the lives of the pensioners*.

Firstly, for every smart card that is issued to a pensioner a bank account is opened for that particular pensioner. The accounts are opened as part of the registration process with PostBank, a division of the South African Post Office. Supposedly, most of these citizens have never had a bank account before, hence the referral to them as the unbanked.

Quite surprisingly, most of the interviewees were not aware that the smart card meant that a bank account been opened for them. Most of the pensioners had never had a bank account before. They therefore had never had the opportunity to use a bank account as a savings mechanism. Although most said they needed the entire grant allocation to spend on food, electricity, bonds, groceries and school-fees for grandchildren, they welcomed the opportunity of having a bank account. They said they would like to save some money in the future for emergencies and grandchildren's education. A concern was raised around what the costs of doing banking transactions would be. The possibility of earning interest on savings was welcomed by most as attractive. A few interviewees said they had used bank accounts before and were aware of what a bank account meant. One pensioner said he withdrew his grant using his new card from an ATM machine and had never experienced any problems ever since his card was issued. He had previously used a banking card from another bank and this made him quite comfortable using an ATM. Another pensioner said she was not interested in saving any money because her children would fight over the money when she died.

Secondly, the introduction of smart cards has meant that pensioners can withdraw their grants at any time of the month after the payment date, when the grant monies get deposited into the savings accounts. Whereas before there were one or two dates in a

payment cycle on which grants could be withdrawn, there is now no limit to the number of days on which grants can be withdrawn. The grants are deposited into the bank accounts and pensioners can withdraw them at will.

Most of the interviewees reported not knowing that they could withdraw their grants at any time of the month after the payout date. They were still withdrawing on that date on which the money was deposited into the account. A few who said they knew they could withdraw on any date after the payout date said they had not yet done so as they had needed the money on that date urgently. Some said this convenience meant that they could postpone withdrawing their grant if something else urgent came up. For example, one pensioner said she was also receiving a child-care grant for her granddaughter. The flexibility of the grant withdrawal date meant that she could go into town once and withdraw both her old age pension and her granddaughter's child-care grant at the same time.

Thirdly, the amount of money withdrawn can vary according to the pensioner's needs. Before this system everyone had to withdraw their entire grant allocation, irrespective of whether they needed to or not. In this new system, pensioners can withdraw according to need and keep the rest in the savings account.

Most of the pensioners were not aware that they could withdraw whatever amount they required from their cards and not necessarily the entire grant amount as was the case with the old payment system. When informed about this functionality most of them voiced concern about the possible cost of doing more than one transaction a month. The Post Office has made a special provision such that the first transaction done on these new accounts every month is free, only subsequent transactions are charged. A few pensioners mentioned that they would prefer to withdraw their grant money in smaller portions at different times of the month. This response came especially from the male interviewees.

Lastly, the range of venues at which grant withdrawals can be made is much wider than before. Grants can now be withdrawn at any Post Office branch countrywide, whereas before each pensioner was allocated to a specific branch office or to a specific hall and could only withdraw from there. Also, grants can now be withdrawn from the

countrywide network of automatic teller machines (ATM's). These ATM's can belong to any bank.

About half of the interviewees were aware that they could withdraw their grants at any Post Office branch. They said this made their lives easier when they needed to travel to other places. They no longer needed to plan their lives around the payout date. Next to the move away from the halls, this was the most significant improvement to the pensioners' lives. Most were not aware that they could also withdraw from the ATM's of any bank. The other half that did not know about withdrawing from any Post Office branch said they would definitely make use of the facility in the future.

Of the three areas around Brits that I visited, it seemed residents from Oukasie knew the least about the functionalities of this new card payment system. Those from Lethlabile seemed most knowledgeable about the system and the residents from Dammonsville were a combination of those who knew a lot and those who knew very little. The trend that I picked up was that the information that the pensioners received about this card payment system was not uniform. Some were told that with the smart card they could withdraw from an ATM at any bank. Those pensioners who knew that the card could be used at ATM's had never been shown how to use an ATM. One pensioner said "How can I use the bank machines when I have never been shown how to use them?" Others were told that they could withdraw with this card at any Post Office branch. Very few knew that they could withdraw a portion of their grant and keep the rest in the savings account.

The fact that most of the pensioners were not aware of how this new card could be used in other ways meant that they had not had the opportunity to try using the card with ATM's. They all said these other functionalities that they did not know about would come in very handy in the future.

The majority of pensioners had no idea how other pensioners were using the smart cards. Most of them knew one or two other pensioners who were also using the smart cards but knew no details of where withdrawals were taking place, how often and what amounts were being withdrawn.

### **4.3.2 Savings**

Saving part of their grant did not emerge neither as a practice nor a priority. It seemed that the entire grant was going towards expenditure of one kind or another. Some of the expenditure items were fees for burial societies, school fees for grandchildren, groceries, rates and taxes and electricity. One pensioner said she was not interested in saving her grant money because her children would fight over it when she died. It has also emerged that most pensioners did not know that they could use the card as a savings facility. A few pensioners have said that they will use this savings facility in the future.

### **4.3.3 Form of payment**

Pensioners said they preferred being paid in cash rather than in vouchers. They were also not keen on the idea of their accounts being paid on their behalf. The Post Office and some banks are usually payment agencies for many other service providers like municipalities, Telkom, Eskom, etc. The question was based on a facility that would allow the pensioners to specify to the Post Office or bank the amount of money to be paid on their behalf into accounts that they hold with these service providers. They preferred withdrawing the cash and doing their own account payments.

## **CHAPTER 5 - DISCUSSION AND CONCLUSION**

The importance of technology in all spheres of life is undeniable. Technology is having a major impact on the delivery of services by government and its agencies to the population. South Africans especially the disadvantaged should be afforded opportunities to take advantage and make use of the advances of technology. Older citizens, the subjects of this research who earn an old age pension grant from government make up a reasonable part of the disadvantaged populace.

This chapter will provide a discussion on the findings of the research, in order to answer the research questions. It is the aim of this chapter to use the literature reviewed to illuminate the results and to test the results for consistency with theory.

The literature on the diffusion of innovations has shown the factors that influence the diffusion of innovations in societies. Chapter Three states that this study set out to investigate three areas: Firstly how the pensioners experienced the process of implementation of the smart cards. Secondly, why and why not the smart cards are being used, how they are being used, what factors play a role in the acceptance of the cards. Thirdly, what the impact of the use of smart cards has been on pensioners' lives. A discussion of the major findings of the study structured using the main areas of investigation follows.

### **5.1 IMPLEMENTATION**

In the opinion of the pensioners it appears that the process of implementation has gone fairly well. Very few complaints have emerged. This is so despite my observation that some factors of implementation can be improved. In my opinion communication or lack thereof has emerged as a shortcoming. The pensioners were not informed of the functionalities and benefits of the smart cards. They therefore do not know what the smart cards are capable of or how to use them fully. It is also quite clear that the infrastructure that is buildings and facilities that have been utilised for registration are not appropriate and are insufficient. Yet none of the pensioners have

complained about the facilities. It could be that the pensioners have very low expectations.

Out of the registration process the theme of waiting has emerged. Pensioners have spent much time waiting without any explanation being given to them as to why they were kept waiting. There has also been much discomfort caused by inadequate waiting and registration facilities.

My observation was that on the technical side the level of support for a project of this magnitude and significance was insufficient. It was insufficient from two perspectives. Firstly SAPO is a government agency and therefore should espouse the principles of “Batho Pele” (DoSD, 2003), one of which is to improve the quality and level of public service delivery. Secondly the pension business contributes a fair amount of revenue for SAPO therefore the Pension Biometric Project should be given high priority.

SAPO as the change agency could have done much better in terms of its actions and strategies for implementing smart cards, specifically communication.

## **5.2 ACCEPTANCE**

The pensioners have generally accepted the smart card payment system very well. The biggest driver of this acceptance has been the change of venue, moving away from community halls to Post Office branches.

The change of venue has contributed directly to feelings of safety. Pensioners no longer feel vulnerable. Feelings of dignity have also emerged as a result of the change of venue from community halls to SAPO branches. The order and safety in SAPO branches makes them to feel that their dignity has been restored.

Perceptions of smooth implementation have also emerged as a positive factor. Pensioners are glad that on changing from the voucher and identity book system to the smart cards they have not experienced any disruption in their grant payments.

The perceived relative advantages (Moore & Benbasat, 1971) of smart cards have played a big role in their acceptance as an innovation. Socio-economic status has not been a factor of adoption in this study, contrary to what the literature says. This could be because all pensioners who receive a government grant are of low socio-economic status in any case.

The factor of IT illiteracy has been a major restriction to acceptance. Pensioners cite it as a reason for not using their smart cards for electronic transactions. Moore and Benbasat (1991) in agreement with this finding cite perceived ease of use as positively related to acceptance. Rogers and Shoemaker (1971) are also in agreement with the findings, citing complexity as negatively related to acceptance.

### **5.3 USE AND IMPACT**

Whereas banking should be emerging as a major point of impact it has not. Lack of information about the banking functionalities has hampered the use of smart cards for banking. Linked to this is the fact that most pensioners prefer to transact in cash and would still want to pay their own accounts.

There is a fair amount of enthusiasm about the possibility of using the smart card savings facility. Even though many of these pensioners are poor they have welcomed this possibility. There is much focus on others as many want to save for the education of their grandchildren.

The use and impact has been difficult to study because of the lack of knowledge about smart card possibilities.

### **5.4 SUMMARY OF RESULTS**

It appears that two overriding themes have emerged from the results. The first one is ignorance and the second one is dignity.

Ignorance was underlying factor in all three research areas, in that there is a lot of information that the pensioners should have and do not have. Firstly these pensioners are not aware of the level and quality of service they should expect. It is therefore difficult for them to complain about service level received. Hence there are very few complaints regarding communication, facilities and the registration process. It could also be that pensioners have low levels of expectations. Gap Analysis (Berkowitz, Kerin, Hartley and Rudelius, 2000: 349) “measures the difference between consumer expectations and experiences”. When pensioners’ expectations are then measured against their experience there is no gap and therefore no need to complain.

The second overriding theme is dignity. Many pensioners feel this smart card method of payment has restored their dignity. A study by Sagner (1998) found that for many pensioners, receiving a grant renders them independent and respected. It gives pensioners a superior standing in their families. Factors that all contribute to a greater sense of dignity. Rogers and Shoemaker (1971) also name dignity as one of the social factors that innovations should not destroy. They cite dignity as necessary for the survival of social systems. As a consequence of smart card diffusion, the restoration of pensioners’ dignity has been found by this study to be a pleasant surprise. Perhaps what is even more surprising, was that the increased sense of dignity could largely be attributed to the change of venue for pension transactions, rather than the product innovation itself.

## **5.4 CONCLUSION AND RECOMMENDATIONS**

The study set out to investigate the pensioner’s experience of the implementation, acceptance and use and impact of the Pension Biometric Project’s smart cards. The questions that the study asked were: Firstly, how did pensioners experience the process of implementation of the smart cards? Secondly, why and why not the smart cards were being used, how they were being used, what factors played a role in the acceptance of the cards. Lastly, what the impact of the use of smart cards was on pensioners’ lives.

The study has answered the questions in that several factors both consistent and inconsistent with theory have emerged from the findings.

The next part of this chapter will make recommendations in terms of what the implications of this study are for management at SAPO and also in terms of further research.

#### **5.4.1 Managerial Implications**

Firstly, SAPO management needs to recognize that the smart card is a product innovation. The payment of pensions is nothing new but the smart card way of payment is what is new to SAPO. There are implications for the implementation of a product innovation that must be taken into account that revolve around the features of the smart card. For example, ease of use has been found by the study to be a restraining factor to adoption. Pensioners have complained about remembering PIN's and doing electronic transactions. A possible intervention would be the installation of biometric fingerprint readers at ATM's so that pensioners did not need to remember a PIN.

Secondly, an implementation plan needs to be drawn up that includes IT, Pensions, Marketing, Communication, Training, Properties and PostBank Divisions. These divisions all have a role to play to make sure a coordinated plan encompassing all relevant role players is produced. Certain standards need to be set and adhered to, for example for what a registration room should look like in terms of size, furniture, lighting, ventilation, refreshments, and ablution facilities. Other considerations like backup electricity, network connectivity, personnel on site and on standby also need to be clearly stated out as part of the implementation process.

An important part of this implementation plan should be a communications plan, whose aim will be to spread information about the Pension biometric Project so that amongst other things, the fears of pensioners about changing to an electronic kind of payment will be allayed.

Thirdly, the principles of "Batho Pele" need to be incorporated into this project, not only because the DoSD subscribes to these principles but also because SAPO needs to

raise the service level expectations of its customers. SAPO also needs to raise its level and quality of service to pensioners. An example would be a training program for pensioners who are IT illiterate. The pensioners would be trained on how to use smart cards for electronic transactions.

Lastly, the theme of dignity that emerged needs to be strengthened in line with the principles of “Batho Pele”. It is crucial for SAPO to have a clear understanding of the contributors to the pensioners’ feelings of dignity. This is so that many years from now SAPO payment venues do not deteriorate to what community halls mean to pensioners today.

#### **5.4.2 Recommendations for further study**

This study can be repeated on a much larger scale so that generalisations can be drawn for the larger South African population. Furthermore, an evaluative study can be done to evaluate the impact of communication on the same variables as investigated by this study. The implementation plan would have to be implemented and then measured against the results of this study.

A longitudinal study can be done as a follow-up to this study. This would be done after specific interventions had been implemented as recommended in managerial implications. Also, it would be done after the pensioners have had more time to begin to try out the functionalities offered by the cards.

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# ATTACHMENT A

**REGISTRATION**

**OF A**

**SOCIAL GRANT BENEFICIARY**

**AT AN E-COUNTER**



## INDEX

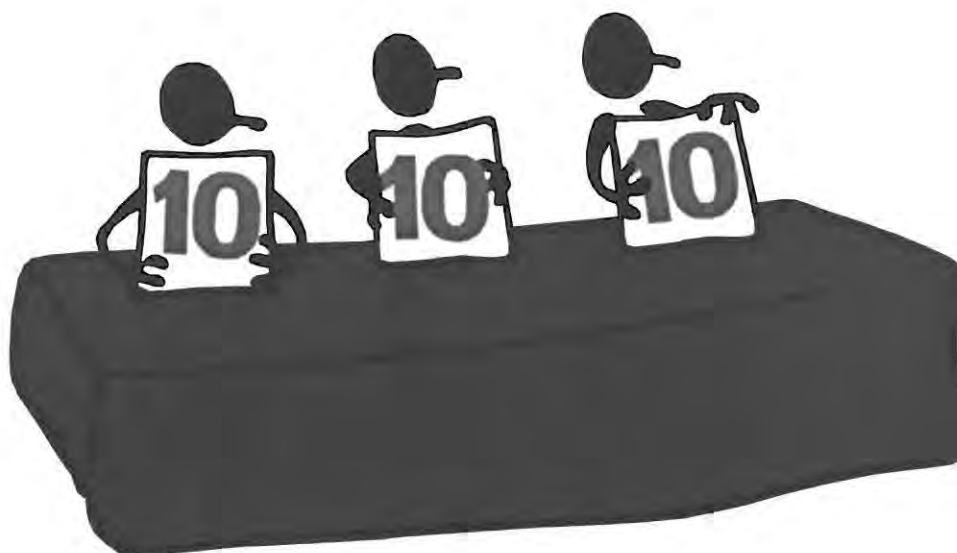
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## OBJECTIVES

At the end of this learning event, the learner will be able to:

- ✓ Explain why beneficiaries needs to be registered
- ✓ Register a Postmaster/Chief Teller and Teller
- ✓ Register a social grant beneficiary
- ✓ Capture a photo
- ✓ Issue a Postbank card with a pin code
- ✓ Use the smart card reader
- ✓ Use the printer
- ✓ Replace the ribbon on the printer
- ✓ Handle cards in the correct manner
- ✓ Load cards in the correct way into the printer
- ✓ Clean the print head
- ✓ Clean the roller cartridge
- ✓ Ensure the print quality is of high standard



## 1.0 BACKGROUND

It is a requirement of the Department of Welfare that all social grant beneficiaries must be biometrically registered. This is done by taking the beneficiaries fingerprints electronically and keeping a database there of. This ensures that the right person collects the grant and it prevents fraud within the social grant system.

Each Postmaster, Chief Teller and Teller must be registered as an operator, before the system will allow him/her to register any beneficiary.

The South African Post Office is therefore authorised to register all social grant beneficiaries and to update their payment details and residential information.

It is therefore the responsibility of all Branch Managers, Supervisors and Area Managers to ensure that all the personal particulars and fingerprints are captured accurately, that the process is performed orderly and to assist with all operational problems.

The registration of all social grant beneficiaries will only be available at the e-counter



## 2.0 GAINING ACCESS TO THE SYSTEM

Open the registration screen by double clicking on the shortcut to E-Counter icon

*Please note that all the Post Office staff needs to be registered on the system before any registration can take place.*

### 2.1 OPERATOR LOGON SCREEN

Select an option by clicking on the scroll arrow

- Register Postmaster
- Register Teller
- Register Supervisor

SAPO eCounter - Operator Logon

Post Office

Version 3.0.0

Logon

Touch finger to reader once for verification.

Exit

Forward

Click on **forward** to continue



## REGISTER POSTMASTER – CAPTURE DETAILS

The Postmaster needs to enter his salary reference number and press TAB  
The Postmaster needs to type in his SURNAME and NAME (please note the order)

Click on **Forward** to continue

SAPD eCounter - Register Postmaster - Capture Details

**Postmaster Details**

**SALARY REFERENCE NUMBER**  
1234567

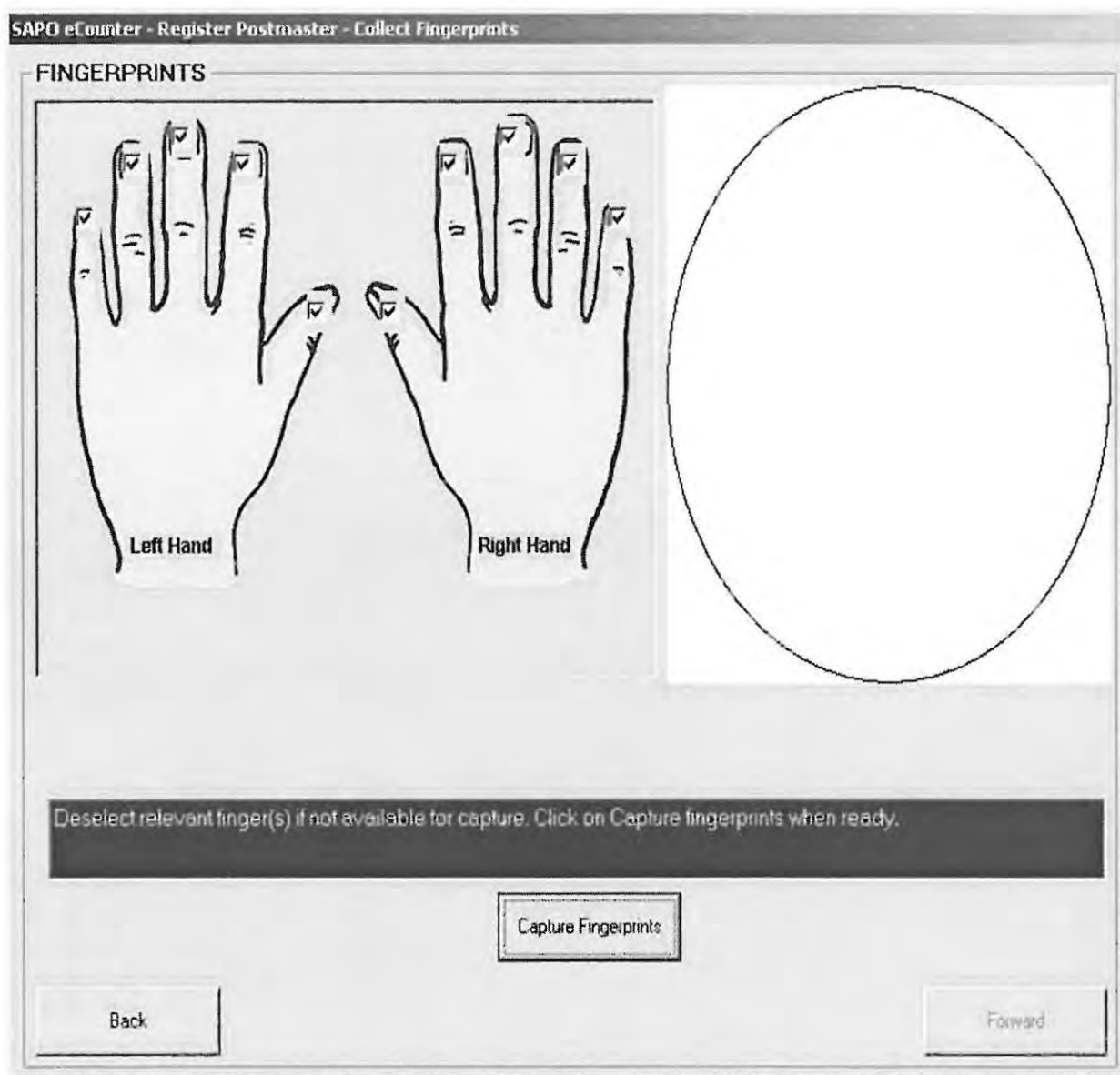
**SURNAME, NAME**  
SMITH JOE

Type in your salary reference number, your name, and click on Forward to continue.

Back Forward



## 2.2 REGISTER POSTMASTER – COLLECT FINGERPRINTS SCREEN



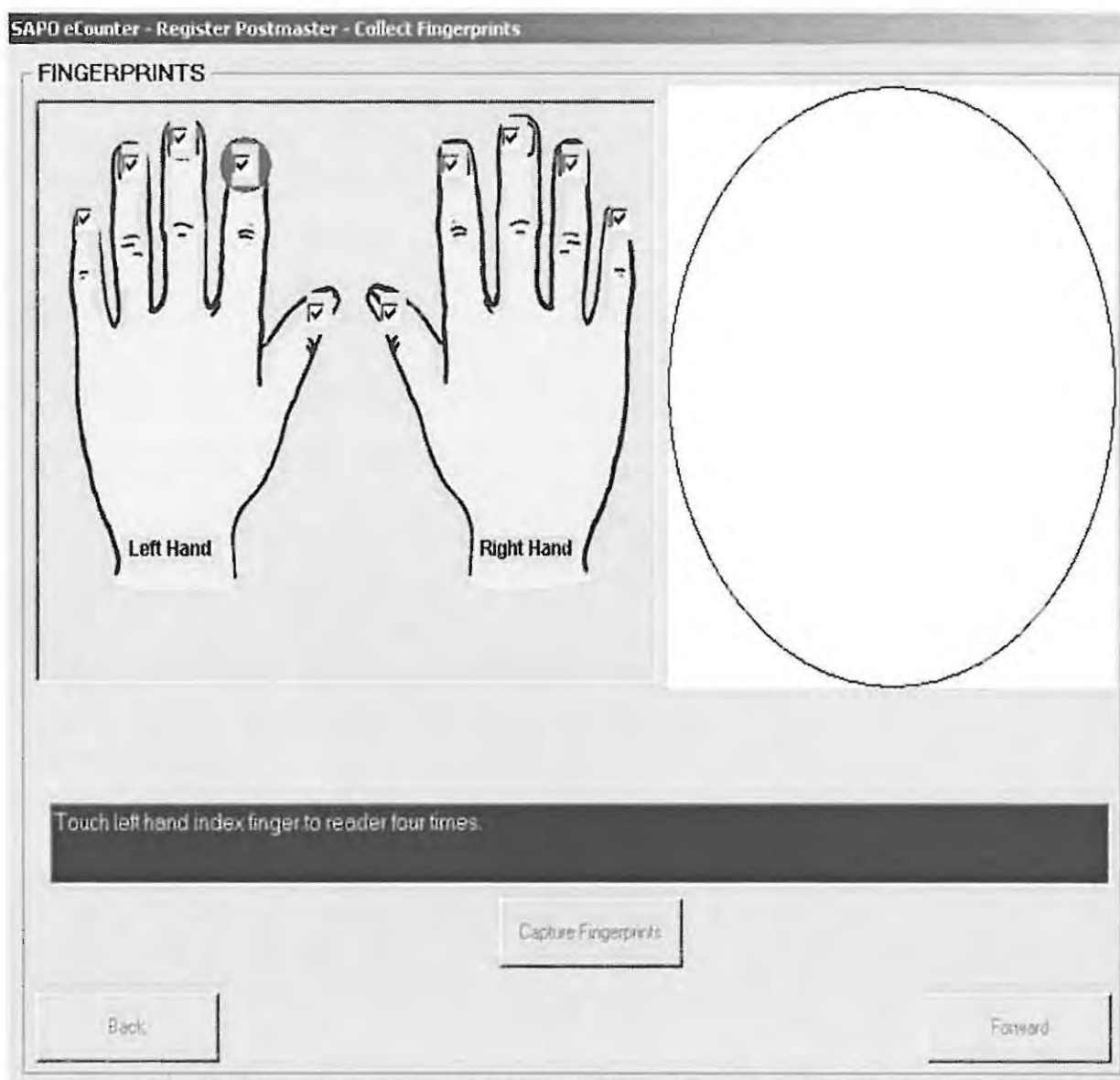
Deselect the relevant finger(s) by clicking on that specific finger that is not available for capture.

Once done, click on **Capture fingerprints**, when ready

The relevant Postmasters details will be inserted into the database



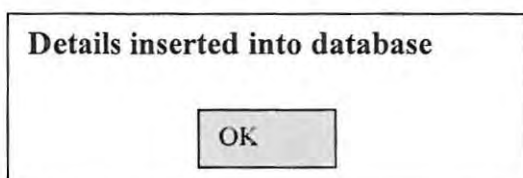
## 2.3 REGISTER POSTMASTER – COLLECT FINGERPRINTS



The system will prompt the Postmaster to place his index finger on the fingerprint device four / 4 times to register the relevant finger print.

A green circle will appear around the finger to register. Once done, the circle will move on to the next finger to be registered.

Click on **forward** to continue a dialogue box will appear stating:



Click on **OK**



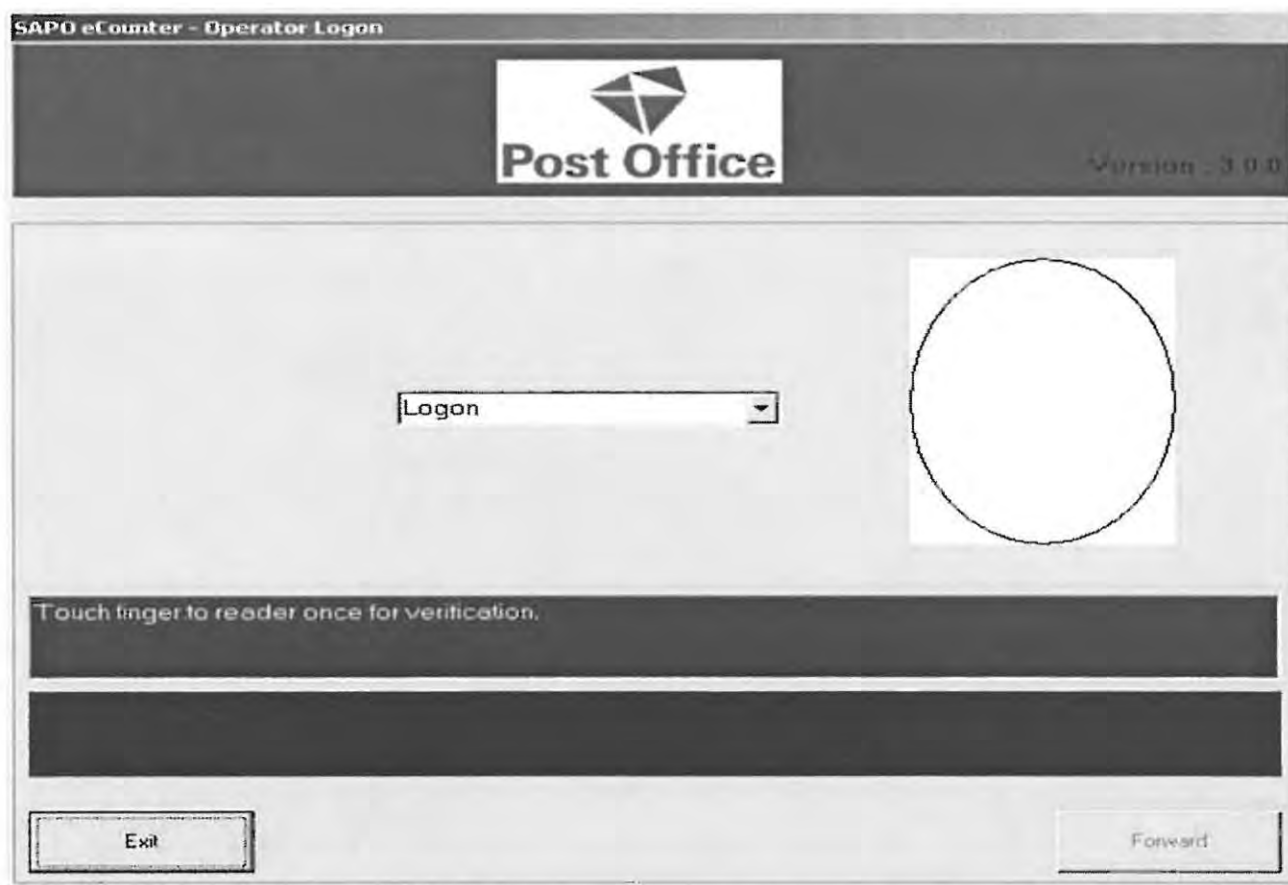
### 3.0 OPERATOR LOGON

The Logon screen will appear again

Other Supervisors and Tellers can be registered following the same procedure.

If only the Postmaster needs to be registered on the system, click on **forward**

The system will prompt him to touch a finger to the reader once for verification.



The Postmaster will now be logged on to the system and registration of social grant beneficiaries can take place by touching his/her finger once to the biometric reader for verification



### 3.1 MAIN MENU

The **MAIN MENU** screen will appear.

In the top left hand corner the name of the person logged onto the system will be indicated

**3.1.1 In the menu dialogue box, one of the following options can be selected:**

- Social Grants – Registration
- Social Grants – Lost Card
- Social Grants – Forgot Pin
- Social Grants – I'm alive
- ID documents – Application - For child
- ID documents – Application - For adult
- Passport - Application - For child
- Passport - Application - For adult
- Digital Certificate
- Scanning of Document – Birth Certificate
- Scanning of Document – Death Certificate

When wanting to register, select the Social Grants – Registration option by clicking on the option

SAPD eCounter - Main Menu

Logged On - SMITH JOE

Terminal ID No. 9058901

Version 3.0.0

**MENU**

Social Grants - Registration

**CUSTOMER ID NUMBER**

Select option required then Scan or Enter the customer's ID number. Click on forward when done.

Log Off

Forward



### 3.1.2 CUSTOMER ID NUMBER

Scan the beneficiary's identity document (using the scanner) or type the identity number in the space provided.

Click on **Forward** when done

SAPO eCounter - Main Menu

Terminal ID No. 9858901

Logged On - SMITH JOE

 Post Office

Version: 3.0.0

**MENU**

Social Grants - Registration

**CUSTOMER ID NUMBER**

7407040631087

Select option required then Scan or Enter the customer's ID number. Click on forward when done.


Log Off

Forward



## 3.2 SOCIAL GRANTS REGISTRAION & BENEFICIARY DETAILS

SAPD eCounter - Social Grants Registration & Beneficiary Detail

BENEFICIARY DETAILS		PAYMENT METHOD AND BANKING DETAILS	
REGISTRATION TYPE Social Grants - Registration		BANK Postbank	BANK NAME
ID NUMBER 7407040631087		BRANCH NAME	BRANCH CODE
SURNAME NDOU		ACCOUNT NUMBER	ACCOUNT TYPE
FIRST NAME TEBOGA MERRIAM			
GENDER Female			
GEOGRAPHICAL DETAILS			
PHYSICAL ADDRESS		POSTAL ADDRESS	
LINE 1		LINE 1	
LINE 2		LINE 2	
LINE 3		LINE 3	
CITY		CITY	
CODE		CODE	
		<input type="checkbox"/> Same as physical	
		TELEPHONE NUMBER(S)	
		HOME	012 1234567
		CELL	082 1234567
		OTHER	012 1234567
		EMAIL	john@abc.co.za
Enter all relevant data and click on Forward to continue.			
Back		Forward	

### 3.2.1 The Beneficiary Details screen will appear where the following details will default:

<b>REGISTRATION TYPE:</b>	Social Grants – Registration
<b>ID NUMBER:</b>	As scanned or entered
<b>SURNAME:</b>	As indicated in Id document
<b>FIRST NAME:</b>	As indicated in id document
<b>GENDER:</b>	Male or female will be displayed



### 3.2.2 PAYMENT METHOD AND BANKING DETAILS

<b>BANK:</b>	Default Postbank will appear.(Drop down list available for other options. At this stage only Postbank is valid)
<b>BANK NAME:</b>	For future use
<b>BRANCH NAME:</b>	For future use with other institutions
<b>BRANCH CODE:</b>	For future use with other institutions
<b>ACCOUNT NUMBER:</b>	For Postbank applicants an account number will be automatically be issued
<b>ACCOUNT TYPE:</b>	A Flexi card will automatically be opened. For future use the drop down list can be used to select other options

### 3.2.3 GEOGRAPHICAL DETAILS:

#### PHYSICAL ADDRESS:

<b>LINE 1,2,3:</b>	The physical street address and number needs to be entered (use the TAB key to move to next field)
<b>CITY:</b>	Select the name of the city by using the drop down list or type the name e.g.: Pretoria
<b>CODE:</b>	Type the Postal Code (Or will default if drop down list is used)

#### 3.2.4 POSTAL ADDRESS:

<b>LINE 1,2,3:</b>	The beneficiaries postal address needs to be entered (PO Box number)
<b>CITY:</b>	Select the name of the city by using the drop down list or type the name e.g.: Pretoria
<b>CODE:</b>	Type the Postal Code or will default

If the physical- and postal address is the same, click in the same as physical check box



### 3.2.5 TELEPHONE NUMBERS

- HOME:** Enter the home telephone number by first entering the area code and then the number (must be 10 digits)
- CELL:** If applicable, the cell phone number needs to be entered here (must be 10 digits)
- OTHER:** If applicable, the number needs to be entered here.(example are code and fax number)
- EMAIL:** If applicable, the email address needs to be entered here example: [terblam@sapo.co.za](mailto:terblam@sapo.co.za)

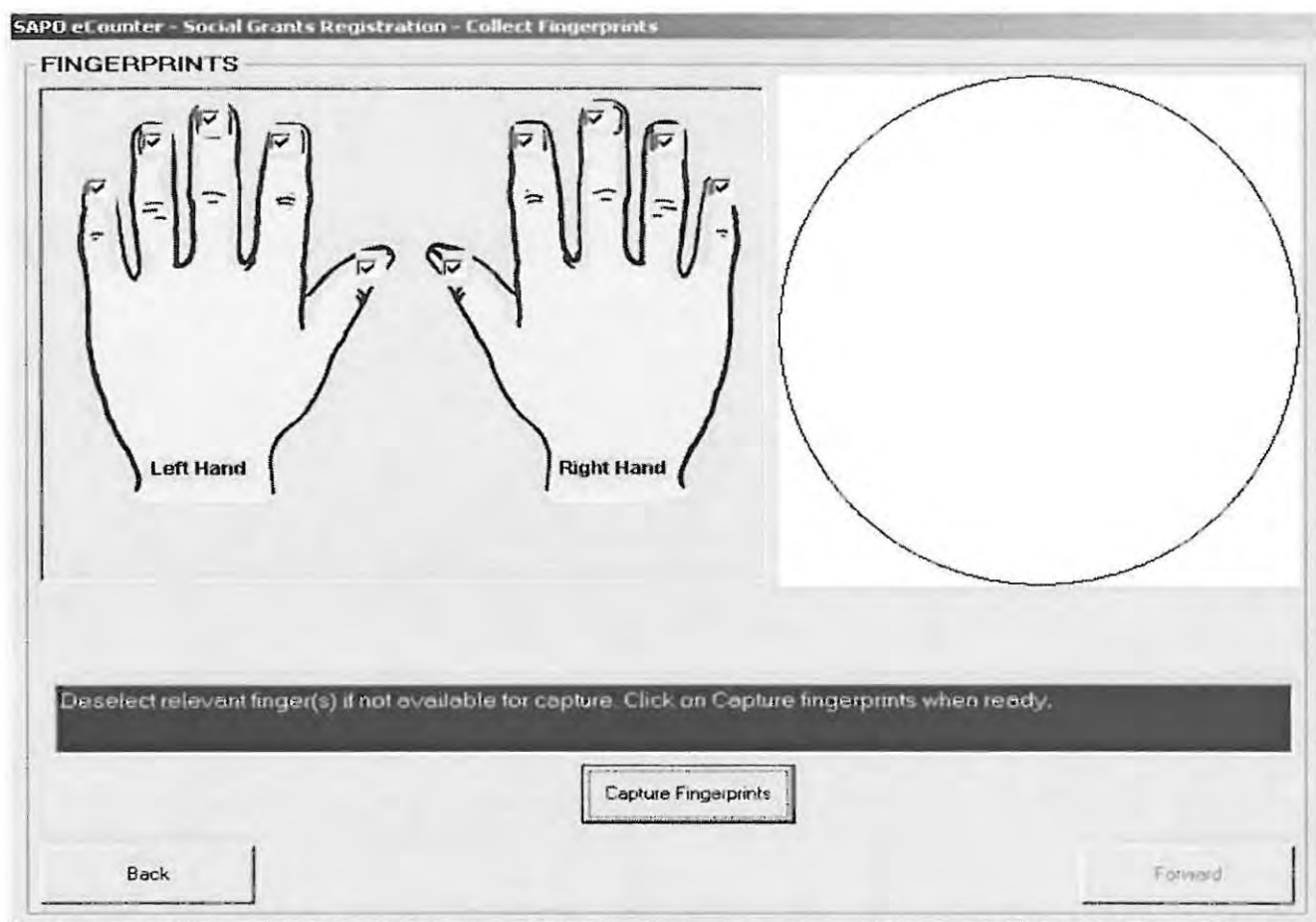
Once all the relevant data has been captured, click on **Forward** to continue



### 3.3 SOCIAL GRANTS REGISTRATION – COLLECT FINGERPRINTS

SAPD eCounter - Social Grants Registration - Collect Fingerprints

FINGERPRINTS



Left Hand

Right Hand

Deselect relevant finger(s) if not available for capture. Click on Capture fingerprints when ready.

Back

Capture Fingerprints

Forward

Deselect the relevant finger(s) by clicking on that specific finger if not available to capture.

Click on **Capture fingerprints** when ready



### 3.3.1 SOCIAL GRANTS REGISTRATION – COLLECT FINGERPRINTS



The green circle will indicate which finger to register on the biometric reader. In this case the system prompts you to place the left thumb on the reader five/5 times

Please note that each finger has to be registered five/5 times

When ready click on Capture fingerprints

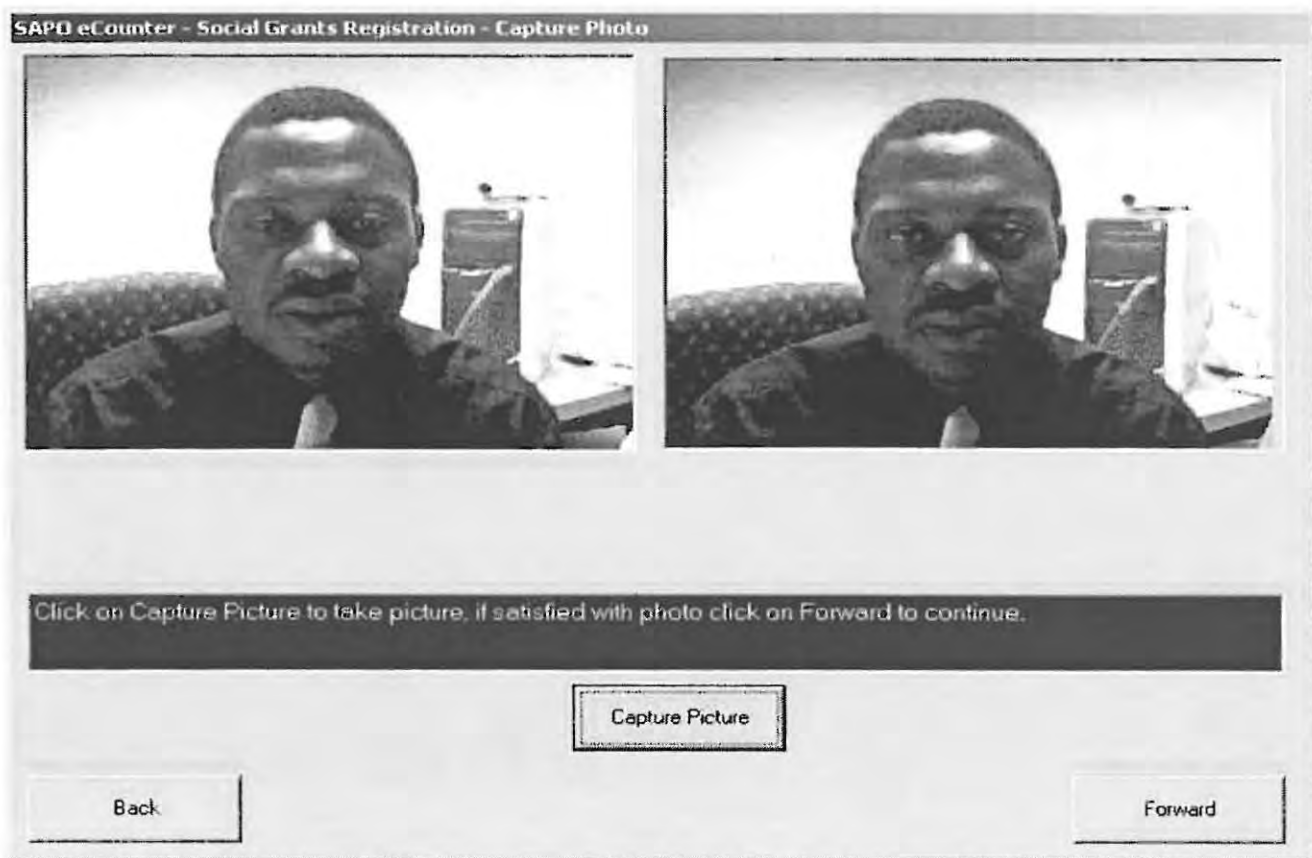
Once the finger (indicated by the green circle) has been successfully registered, the circle will indicate which finger to register next.

Once all the fingers on the left- and right had has been successfully captured, click on **forward** to continue.

The image of the fingerprints will appear on the top right hand side of the screen



## 4.0 SOCIAL GRANTS REGISTRATION – CAPTURE PHOTO



Ensure that the client is in the right position for you to take a photo.  
The image of the person will appear on the screen.  
When satisfied with the image click on Capture Picture.  
The photo on the right hand side of the screen will be captured

If satisfied with the photo, click on **Forward** to continue



## 5.0 SOCIAL GRANTS REGISTRATION – GET PIN CODE

SAPD eCounter - Social Grants Registration - Get Pin Code

Click on Get Pin Code.

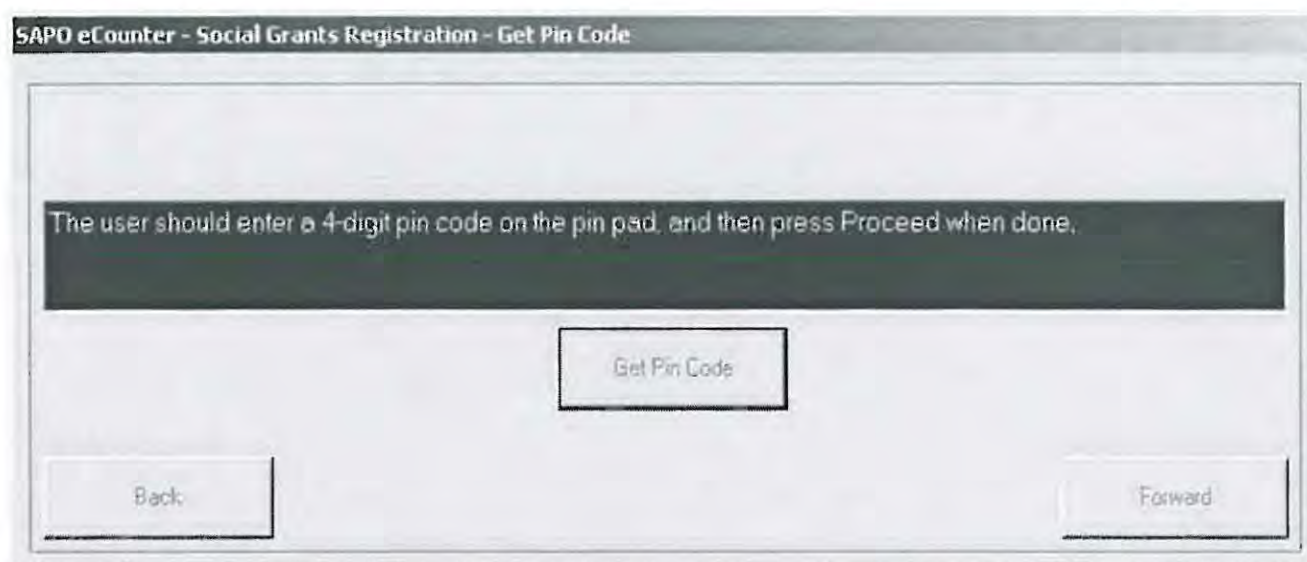
Get Pin Code

Back Forward

To obtain a pin code for the Postbank card, click on **Get Pin Code**



## 5.1 PIN CODE SCREEN



Request the beneficiary to enter a 4 digit pin code on the pin pad (Inform clients to choose a number that they will remember. Should they forget their pin they will have to apply for a new card and a replacement fee will be charged)

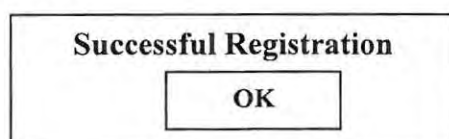
Once the client has entered the 4-digit pin code on the pin pad, press proceed on the pin pad.

Request the client to again enter his/her 4-digit pin code on the pin pad to confirm the code and press Proceed when done

Once done, click on **forward** to continue.

A screen will appear indicating the following:

Click on **OK**



## 6.0 SOCIAL GRANTS REGISTRATION – PRINT CARD

Insert a card into the printer and click on **Print Card** to continue

A Postbank card will now be printed on the printer

The Postbank account number that will be printed on the card will appear on the screen

SAPO eCounter - Social Grants Registration - Print Card

The card is currently being printed. Fetch card from printer, and then click on Forward.

**5312 0360 0000 0269**

Print Card

Back Forward

Ensure that there are sufficient cards in the card hopper (can take 50 cards)

The account number generated by the system will appear on your screen.

Please ensure that when you fetch the card from the printer, that the account number on the card and the one appearing on the screen corresponds.

Fetch the card from the card printer

Click on **Forward** when done.

SAPO eCounter - Social Grants Registration - Confirm Card

Correct card. Click on Forward to Continue.

Confirm Card

Back Forward

Click on **confirm card**

Swipe the printed card on the pin-pad (Magstripe to back and to the bottom)

The system will indicate that it is the correct card

Click on **Forward** to continue

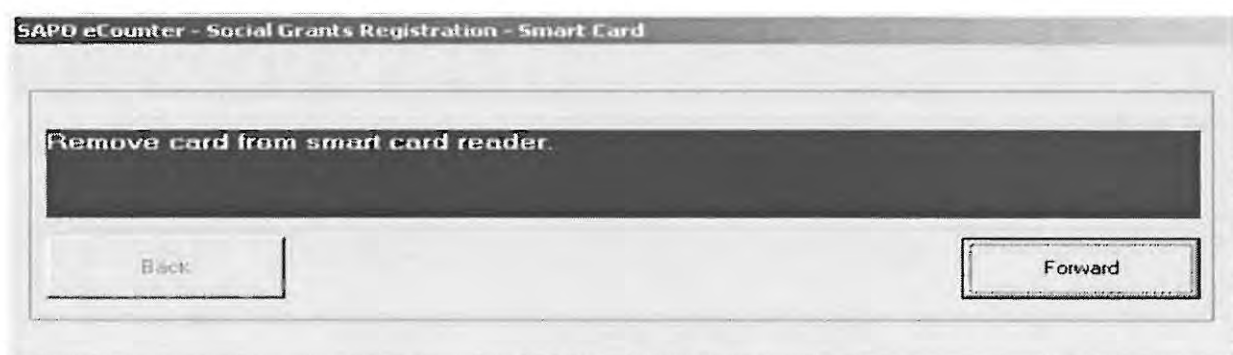


## 7.0 SOCIAL GRANTS REGISTRATION – SMART CARD

Insert card into the smart card reader (magstripe to the bottom, right)  
Click on forward to continue (Fingerprints, Identity number and photo will be written to the smart card)



The system will prompt you to remove the card from the smart card reader when successful.



The Main Menu screen will appear and more beneficiaries can be registered



## 8.0 USING AND MAINTAINING THE ELTRON P310 PRINTER

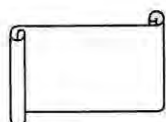
### 8.1 INDICATORS AND CONTROLS

The printer has three status indicators and a panel button on the front and a power switch on the rear

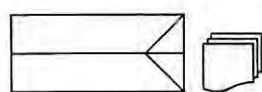
#### Indicators:



Power On or processing Indicator



Load cards or replace ribbon Indicator



Printer alert or encoder alert Indicator

#### Panel Button:



Used to clear errors, indicates the cleaning process, etc.

#### Indicators

The indicators will flash in green, amber and red to indicate status.



## 8.2 REPLACING RIBBONS:

Ensure that the correct ribbons are used. The print head will be damaged when the wrong ribbons are used.

**DO NOT TOUCH** the print head or the electronic components on the print head carriage to avoid damage.

### STEPS:

1. Remove the ribbon from the packaging
2. Open the printer cover and press down on the print head unlock lever to open the print head carriage. The print head carriage will pop open
3. Load the ribbon onto the supply spindle (right) under print head carriage and empty core (with tape attached) onto the take-up spindle (left). Ensure that the ribbon comes off of the top of the supply spindle and feeds to the top of the take-up spindle.(Flush side towards the printer)
4. Push down on the Print Head Lock Lever until an audible “click” signals the locked-down position
5. Close the cover of the printer.

Please note that the ribbon automatically synchronizes whenever the print head lock down occurs.



## 8.3 HANDLING OF CARDS

### RULES:

1. Store cards in a clean, dust free place
2. Avoid touching card surfaces
3. Only use cards just taken from their packaging
4. Never use cards with raised surface areas
5. Avoid the loss of data by keeping encoded magnetic stripes away from magnets

## 8.4 LOADING OF CARDS

### STEPS:

1. Press the release tab (down) and open card input hopper (on the right)
2. Place the cards in an upright position in the card hopper (magnetic stripes facing the back of the printer)
3. Close the hopper

### Setting for the correct card thickness

The card thickness settings adjust a card gate for single card feeds. If the card thickness is not set properly it will result into cards not being fed or more than one card being fed.

Adjust the blue lever to a position that matches the thickness of cards in the Input Hopper. (1.2-1.5mm,2mm,3mm)

## 8.5 CLEANING THE PRINT HEAD

Any particles that find their way to the Print Head can produce an artifact in the printed image.

Deposits, such as oily films can disrupt the application of ribbon dyes and resins.

You can avoid such problems by operating the printer in a clean environment and by responding to the Cleaning Alert with a periodic cleaning using the recommended cleaning swabs and cards

The print head should be cleaned after every 200 cards issued. If not done the printer alert will occur showing that you should clean your printer head.

Please note that the lights on the printer will flash to indicate that you should clean the printer head, but you will still be able to operate the printer.



**PROCEDURE:****Step 1:**

- Open the printer cover and the Card Input Hopper
- Remove the ribbon, as well as, any cards that might be in the card hopper
- Lower the print head and close the printer cover and the card input hopper

**Step 2:**

- Obtain a fresh cleaning card and remove it from its pouch
- Manually feed the card into the card slot

**Step 3:**

- Press and hold the Panel button until the card feeds
- Retrieve the card
- If the card is excessively soiled, repeat the process using a new cleaning card

**Step 4:**

- Should the cleaning card not clean the print head completely, use a alcohol-saturated foam-tipped swab
- Clean the print head from side to side across the print head

Remember not to touch the print head with your hands as this might damage the print head elements.



## 8.6 CLEANING THE ROLLER CARTRIDGE

The cleaning roller cartridge houses a roller with a sticky surface. Dust from passing cards are collected on this roller

The roller should be changed whenever the print head cleaned (after printing 200 cards)

### Procedure:

#### Step 1:

- Open the printer cover and locate the cleaning roller cartridge (blue holder)

#### Step 2:

- Lift the cartridge up and away from the printer

#### Step 3:

- Lift the cleaning roller up and out of the cartridge
- Discard the old roller

#### Step 4:

- Place a new roller in the cartridge

#### Step 5:

- Remove the material protecting the sticky surface

#### Step 6:

- Return the cartridge to its original position inside the printer
- Close the printer cover



## 8.7 PRINT QUALITY

*Print quality depends on the following factors:*

- Proper and clean cards (do not handle cards to much)
- Proper storage of cards and ribbons
- A clean and undamaged print head
- Operation in a clean dust-free environment
- A timely and proper response to the cleaning alert

