Chapter 6
Older South Africans' Cell Phone Use in Diverse Settings: A Baseline Assessment

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Abstract Interventions through Information and Communication Technology (ICT) (*e*Interventions), particularly cell phones, are increasingly regarded as feasible alternatives to address older individuals' access to social and health care and services. Limited documented evidence of older South Africans' cell phone use inhibits the full relevant operationalizing of *e*Interventions. This chapter sets out to present baseline evidence of a cohort of older persons' cell phone use in South Africa. Two questionnaires, iGNiTe and we-DELIVER, were developed to obtain baseline data of older persons' cell phone use over a period of six years. Reliability and validity of scales measuring latent factors were investigated using criterion sampling to select older South Africans ($n = 430$) from four communities (Lokaleng, Ikageng, Potchefstroom, and Sharpeville) in two provinces—North West and Gauteng—which represented varying levels of living standards, educational attainment, and household size. Data were analysed using IBM SPSS 26, the jamovi project, and Mplus 8.6. The study population reported high access to and ownership of cell phones, with connectivity obtained primarily on a pay-as-you-go basis. Although these individuals felt that they were competent to use their phones, they preferred older generation (pushbutton) devices. They mainly used the basic features to maintain contact with older and younger people. Moreover, their competence in using cell phones, although limited, was facilitated through the assistance of younger people, highlighting the importance of intergenerational relations. The baseline

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findings informed principles and suggestions for planning and implementing *e*Interventions.

Keywords Cell phone use · Information and communication technology (ICT) interventions · Older south Africans · Situatedness · Social dynamics

6.1 Contextualization

The deep infiltration of information and communication technology (ICT) into the developing world across all generations (including the rapidly increasing cohorts of even the oldest members of society) is a growing reality (see Chap. 1). Generally, this underscores a major demographic and technological shift within developing countries in which most older users of technology have leapfrogged previous developments. It is undisputed that the situation and well-being of older persons and their participation in society depend increasingly on ICT. Present understanding of the needs and abilities of older users of this technology in developing countries is, however, limited to a few qualitative studies. Although most older persons have access to cell phones (see Chap. 1), it is not clear how they use them. Because of the many potential benefits ICT offers, including reduced care costs, improved therapeutic outcomes, and increased access to services (Agha, 2014; Lindberg et al., 2013; McInnes et al., 2013; Zonneveld et al., 2020), it is important in terms of future interventions for researchers, policymakers and practitioners alike to have an evidence-based understanding of older persons' use of cell phones. This chapter reports on older users' baseline cell phone use, the type of device they have access to and how they use it, as well as the nature of the social networks generated around them and the relational dynamics mediated by the use of the cell phone.

Four communities of older persons in South Africa (ranging from a poorly resourced, tribal rural village to better resourced and urbanized settings) serve as the study populations for this baseline assessment. The country includes a diverse range of older cell phone users, and the results presented in this chapter should be understood against the background of some general trends that impact the majority of older South Africans: poverty and inequalities, migration, and the quadruple burden of disease (Hoffman & Roos, 2021); a fragmented care sector; and the changing dynamics of generational family care within and across complex linked multigenerational households (Moore, 2020; Schatz et al., 2015) (see Chap. 1).

The study reported here considers the following conceptual and methodological parameters for analytical and interpretative perspectives:

– Most older Black South Africans have no choice but to age in places where they have lived for much or all of their lives, whether appropriate or not. This lack of choice is predominantly the result of past policies instituted by Apartheid, the centrality of 'the family should care' discourse, and issues of accessibility and affordability of institutional or more formalized housing and care (Aboderin & Hoffman, 2015). This means that they often live with families in areas where

there are few nursing homes or other facilities to accommodate older persons as they become frail, particularly in rural parts. Technology to assist in soliciting and accessing care through cell phones is thus essential.

- Within these linear and complex linked multigenerational households, older persons constitute a source of income (often the only reliable source) as recipients of a means-tested, non-contributory, state-funded pension available at age 60 (see Chap. 1). At a time of high youth unemployment, this gives older generations a particular status but also renders them vulnerable, especially in the case of older women on whom many monetary demands (including paying for airtime) are made (Moore, 2020).
- For categorization purposes, the South African Advertising Research Foundation (SAARF) Living Standards Measure (SU-LSM™) is used; this has become the most widely used segmentation tool in South Africa (Haupt, 2017). It cuts across variables such as race, gender, and age to categorize people by grouping them according to their living standards. For the purposes of this baseline assessment, age (starting at 50 years) was considered. Haupt (2017) draws attention to the fact that, during the early development and operationalization of SU-LSM™, the descriptors correlated highly with race, with the majority of Black people falling into lower LSM descriptors (1 to 6), and the higher measures (7–10) being more multiracial. As the South African society resets itself post-1994, it is already evident that the impact of race as a differentiating variable has declined, as well as its correlation with LSMs.
- The use of technology by older persons is complex in terms of the continuous differential use by subsequent generations and cohorts. This reflects an apparent digital divide between and within generations (Pirhonen et al., 2020). The digital divide broadly refers to a disparity between groups, related to access to or use of ICT (Chang et al., 2004). As new technologies are rapidly developed, older persons may not be able to adapt to new features or capabilities. Instead, they may continue using technology developed when they were younger, even if it has been replaced by improved versions. The digital divide is a fluid issue, changing with and within each generation (see Charness & Boot, 2009). As generations and cohorts age, they will inevitably be superseded by the cohorts following, representing a different culture, and who will in their turn be using increasingly advanced technology with various levels of comfort, acceptance, and skill.
- The analysis in this chapter adopts a 'material' approach to ICT use (see Appadurai, 1986; Ginsburg et al., 2002). It describes the roles the cell phone plays in practice as well as its significance. While the analysis will touch on motives and needs, it focuses more on the social relationships in which the use of cell phones is (ideally or practically) embedded.

This chapter focuses on obtaining information about older persons' cell phone use that can be drawn upon in the subsequent development of *e*Interventions. The drive to determine older South Africans' cell phone use was informed by challenges associated with limited resources, older consumers' needs, and the digital revolution to deliver services. Clearly, without evidence of older adults' cell phone use,

*e*Interventions could be misaligned with the way in which particular cohorts of older persons, across a range of socio-economic contexts, negotiate the digital (cell phone) world. To obtain baseline cell phone use data, a pragmatic view was adopted. It focuses on practice, is interested in facts, while considering context for generalization or transferability to other situations (Gonzalez, 2020; Kankam, 2019; Talisse & Aikin, 2008). A pragmatic approach is particularly relevant in order to identify cell phone literacy and use by older persons because it informs intelligent practice in relation to the "what" and "how" of *e*Interventions (Kankam, 2019).

6.2 Research Method

This study applied a cross-sectional survey research design (Satten & Grummer-Strawn, 2014) (see sect. 6.7 for a discussion of the limitations). Data from a selected group of older South Africans' cell phone use were collected in two projects (iGNiTe and we-DELIVER), involving different participants. In addition, the first iGNiTe questionnaire was drawn upon to develop the we-DELIVER questionnaire (see Chap. 5). Accordingly, the datasets have been treated as two separate sets of cross-sectional data, but combined when possible and necessary. The reason for including both sets of data was not necessarily to compare the data sets but to get a more comprehensive, representative picture of older persons' cell phone use in South Africa. However, there were very few instances in which the research settings in the data sets were compared.

6.2.1 Participants

Purposive sampling was used to identify research settings (Lokaleng, Ikageng, Potchefstroom, and Sharpeville) in two provinces in South Africa, North West and Gauteng (see Chap. 3). Criterion sampling was used to select the research population consisting of older Black individuals (aged 50+ years) (see footnote 2 in Preface, on page vi) in Lokaleng, Ikageng and Sharpeville, and older White individuals in Potchefstroom (Lavrakas, 2008). These communities represented varying levels of living standard, educational attainment, household size, and competence regarding the use of cell phone technology. The sample consisted of 430 participants[1] (iGNiTe: Ikageng $n = 28$, Potchefstroom $n = 83$,[2] Surrounding areas (e.g. Promosa) $n = 17$; we-DELIVER: Lokaleng $n = 103$, Ikageng $n = 94$; Sharpeville $n = 86$; Surrounding areas (e.g. Tshepiso) $n = 15$). The participants' demographic information is reported in Table 6.1.

[1] Four participants did not indicate where they live.

[2] Due to past Apartheid policies of spatial separation, this population is mainly White, as classified by Statistics SA.

Table 6.1 Characteristics of the participants ($n = 430$: iGNiTe $n = 128$; we-DELIVER $n = 302$; n/a = not available)

		iGNiTe		we-DELIVER		Combined	
Item	Category	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Gender	Male	26	20.3	73	24.2	99	23.0
	Female	102	79.7	229	75.8	331	77.0
Education	No education	6	4.7	84	28.0	90	20.9
	Primary school	28	21.9	132	44.0	160	37.2
	High school/Matric certificate	61	47.6	74	24.7	135	31.4
	Degree/Diploma	27	21.1	4	1.3	31	7.2
	Postgraduate	6	4.7	6	2.0	12	2.8
Location	Lokaleng	0	0.0	103	34.6	103	24.0
	Ikageng	28	21.9	94	31.5	122	28.4
	Sharpeville	0	0.0	86	28.9	86	20.0
	Potchefstroom	83	64.8	0	0.0	83	19.3
	Other	17	13.3	15	5.0	32	7.4
Household size	Living alone	26	20.3	73	27.2	99	23.0
	2–5 persons	n/a	n/a	85	31.7	n/a	n/a
	6–19 persons	n/a	n/a	110	41.1	n/a	n/a
Living with	No one else	26	22.6	73	24.5	99	24.0
	Spouse	45	39.1	139	46.6	184	44.6
	Children	35	30.4	162	54.9	197	48.0
	Grandchildren	35	30.4	167	57.2	202	49.6
	Siblings	2	1.7	27	9.1	29	7.0
	Parents	0	0.0	2	0.7	2	0.5
	Grandparents	0	0.0	3	1.0	3	0.7
	Friends	8	7.0	4	1.4	12	2.9
	Other people	0	0.0	31	10.5	31	10.5

(continued)

Table 6.1 (continued)

Item	Category	iGNiTe		we-DELIVER		Combined	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Living standards	Low	1	0.8	50	16.9	51	11.9
	Medium	51	39.8	224	75.7	275	64.0
	High	76	59.4	22	7.4	98	22.8

Note. "Living with" percentage given for each category separately

Participants were aged 50+ years, with grandchildren. Most were female (combined: 77%; iGNiTe: 79.7%; we-DELIVER: 75.8%). Overall, 68.6% of the participants had completed at least some level of basic education. Participants from the iGNiTe project reported higher levels of education (secondary: 47.6%; degree/diploma: 21.1%) compared with their we-DELIVER counterparts (no education: 28%; primary school: 44%). This is likely to be the result of previous pre-1994 inequalities; for example, the creation of separate schools and discriminatory regulations with lower requirements for non-White people in South Africa, preventing the majority of older Black people from obtaining a quality education (McKeever, 2017) and impacting on their current social status and mobility. In the iGNiTE study, more White older individuals responded to the invitation to participate in the research. The we-DELIVER project intentionally aimed at including Black participants. Although 20.3% (iGNiTe) and 27.2% (we-DELIVER) of the group lived by themselves, most of the households in the we-DELIVER project were multigenerational and consisted of 2–19 people (72.8%). The participants' households were made up largely of a combination of their spouses, children, and/or grandchildren. Very few households included friends or other people.

Living standards were measured using the Living Standard Measure (SU-LSM™) with a scale which varied from 1 to 10 (Haupt, 2017). For reporting purposes, the 10 levels were divided into low, medium, and high standards of living. Lower living standards meant minimal access to services; communal water (some on plots, but not inside the home); and minimal ownership of appliances, except radios and stoves. Medium living standards were defined as having access to most necessary utilities (e.g. electricity; water and flush toilet outside or inside the home) and some useful appliances (e.g. television, stove, refrigerator), while high living standards constituted full access to services and high ownership of durables (e.g. a motor vehicle or a computer). The largest group of people from the iGNiTe study (59.4%) reported high living standards, with the largest group from the we-DELIVER project reporting average living standards (75.7%).

Due to the categorical nature of variables, associations between them were calculated using cross-tabulations (also known as contingency tables). Cross-tabulations are the equivalent of correlations that are used to determine the relationships between continuous variables. Cramer's V (the equivalent of the rho coefficient used in continuous correlations) was computed to provide a measure of the strength of the association between the categorical variables (Field, 2018). The following guidelines were used to determine the magnitude of the association: strong (>.50), moderate (.30 to .49), weak (.10 to .29) (Cohen, 1988). The relation between area and LSM [χ^2 ($df = 16$, $n = 420$) = 404, $p < .001$] and education and LSM [χ^2 ($df = 20$, $n = 424$) = 273, $p < .001$] were both statistically significant. Cramer's V of .49 and .40 indicated a moderate associations between LSM and these demographic characteristics. The results of the cross-tabulation indicated that the LSM for Lokaleng was the lowest, followed by Ikageng and Sharpeville (which reported the same levels of LSM), with Potchefstroom reporting the highest levels. Regarding education, the results showed that LSM levels were positively associated with

education in that increased LSM levels also indicated increased education levels and vice versa.

6.2.2 Data-Collection Tools

The iGNiTe questionnaire was developed as part of the mixed-method Inter-Generational Networks through Information Technology study, with the aim of establishing baseline information about older South Africans' cell phone use, as well as the mitigating role played by intergenerational relationships. The iGNiTe questionnaire was based on an extensive literature review of cell phone user patterns of older people throughout the world. Relevant literature and the opinions of experts in socio-gerontology informed its development. The first section contained demographic questions, followed by questions regarding the functions of the participants' cell phones, user patterns, attitudes towards the cell phones, and how they use the cell phones in relation to others (see Chap. 5).

In preparation for the we-DELIVER project, the iGNiTe questionnaire was adapted, based on statistical analyses of the data, and further developed using the qualitative findings from the iGNiTe study (Lamont et al., 2017; Leburu et al., 2018; Scholtz, 2015; Steyn et al., 2018). This adapted version was subsequently used for the we-DELIVER questionnaire (see Chap. 5). Certain items were included in the we-DELIVER questionnaire in an attempt to answer the specific research questions in the research project in more depth. The we-DELIVER questionnaire was translated from English into Setswana, Sesotho, and isiZulu by a back-translation process. The first section contained questions about biographical information. The following section asked for information about the cell phone used by participants, and how they accessed the device. Items in the third section measured feature use as well as participants' levels of knowledge, skills, and attitude regarding cell phones. The final section dealt with intergenerational patterns around cell phone use (referred to as social networks and communication in this chapter) (see Chap. 5).

6.2.3 Data Analysis

SPSS 26 (IBM Corporation, 2020), jamovi 1.2 (R Core Team, 2019; the jamovi project, 2020), and Mplus 8.6 (Muthén & Muthén, 1998–2021) were used to analyse the data. Descriptive statistics and frequencies were calculated. There was a notable amount of missing information on many questions, therefore, the different items' frequencies might not add up to the total of 430 participants, whereas percentages should add up to 100%, as missing values were not considered in the calculation of totals. Associations between categorical variables were analysed using cross-tabulations, and Pearson's chi-square (χ^2) test. The validity (using confirmatory factor analysis) and reliability (using McDonald's omega coefficient) of the

knowledge, skills, and attitude scales were evaluated with a suggested cut-off value of .70 (Nunnally & Bernstein, 1994) for the reliability coefficients. These three factors are latent variables and hence the dimensionality (i.e. validity) and reliability needed to be evaluated. Finally, differences in means (for knowledge, skills and attitudes) were investigated using a non-parametric technique (the Independent-samples Kruskal–Wallis test). The statistical analyses were reviewed independently to ensure that procedures followed were applicable and applied correctly.

6.3 Results

The results are presented in four main sections: first, by situating cell phones in relation to older people, followed by how they use cell phones, the social networks around the cell phones, and finally their skills, knowledge and attitudes towards cell phones.

6.3.1 Cell Phones in the Context of Older Participants

Table 6.2 illustrates cell phone access, ownership, payment, preference, and choice as assessed in the section "About the cell phone" in the we-DELIVER questionnaire and the relevant items in the iGNiTe questionnaire.

Access The majority (iGNiTe 98.4%, we-DELIVER 90.6%) of households had one or more working cell phones. Only 1.6% (iGNiTe) and 9.4% (we-DELIVER) had no cell phones. The relation between the number of phones owned and LSM [χ^2 ($df = 12$, $n = 424$) = 48.7, $p < .001$] was statistically significant but weak (Cramer's V = .20). The number of cell phones increased as the LSM level of the household increased.

Ownership Participants in the iGNiTe (91.7%) project indicated that they were the owners of their phones, whereas most of the participants in the we-DELIVER (70.4%) sample indicated that they borrowed and/or shared the phone with someone else in the household. In this case, most of them shared their phone with children and/or grandchildren rather than with other people. Even if they shared and/or borrowed the phone, 82.5% of the participants reported that they could decide what happened with the phone. The relation between ownership and LSM [χ^2 ($df = 16$, $n = 262$) = 74.20, $p < .001$] was statistically significant (weak effect, Cramer's V = .27). Older persons who owned their own cell phone tended to fall into the moderate to high LSM categories.

Preferences and Choice (applicable only to the we-DELIVER project). Approximately half of the participants indicated that they had chosen their cell phones and wanted them to communicate with others. Only 10.1% wanted a cell phone so that they could receive and provide help. There were a few participants who did not want their cell phones (12.3%) for various reasons. Around three quarters of the participants agreed that they preferred cell phones with pushbuttons, not touchscreens (78.4%), as well as older phones, because they found the new phones too complex (77.2%).

Table 6.2 Mapping of participants' cell phone information (n = 430: iGNiTe n = 128; we-DELIVER n = 302)

Item	Category	iGNiTe		we-DELIVER	
		Frequency	Percentage	Frequency	Percentage
How many working cell phones are there in your household?	None	2	1.6	28	9.4
	1	52	40.6	94	31.7
	2–3	56	43.8	120	40.4
	4+	18	14.0	55	18.5
Is the cell phone	Your own	111	91.7	39	27.5
	Borrowed	10	8.3	20	14.1
	Shared	0	0.0	48	33.8
	Borrowed and shared	n/a	n/a	32	22.5
	Your own and shared	n/a	n/a	3	2.1
Who is cell phone borrowed from?	Not borrowed	114	94.2	90	63.4
	Children and/or grandchildren	7	5.8	42	29.6
	Other	0	0.0	10	7.0
Who is cell phone shared with?	Not shared	n/a	n/a	59	41.3
	Children and/or grandchildren	n/a	n/a	68	47.5
	Other	n/a	n/a	16	11.2
Who decides what happens on the phone?	Myself	n/a	n/a	127	82.5
	Other people	n/a	n/a	27	17.5
Who chose the cell phone?	Myself	n/a	n/a	109	49.1
	Children	n/a	n/a	63	28.4
	Grandchildren	n/a	n/a	17	7.6
	Family member	n/a	n/a	17	7.6
	Other person	n/a	n/a	16	7.3
Did you want this cell phone and why/not?	Don't have a phone/Not sharing or borrowing	n/a	n/a	4	2.2
	Yes, for communication	n/a	n/a	94	52.8
	Yes, to receive and provide help	n/a	n/a	18	10.1
	Yes, it's easy to use/affordable/strong/good quality	n/a	n/a	19	10.7
	Yes, other reason (s)	n/a	n/a	15	8.4

(continued)

Table 6.2 (continued)

Item	Category	iGNiTe		we-DELIVER	
		Frequency	Percentage	Frequency	Percentage
	No, different reason(s)	n/a	n/a	22	12.3
	Unsure, other reason(s)	n/a	n/a	6	3.5
How are the network services paid for and by whom?	Contract: Myself	29	24.6	6	2.9
	Contract: Children and/or grandchildren	12	10.2	1	0.5
	Contract: Family member(s)	7	5.9	0	0.0
	Contract: Other person(s)	2	1.6	0	0.0
	Pay-as-you-go: Myself	42	35.6	102	50.0
	Pay-as-you-go: Children and/or grandchildren	7	5.9	31	15.2
	Pay-as-you-go: Family member (s)	2	1.7	1	0.5
	Pay-as-you-go: Other person(s)	2	1.7	3	1.5
	Pay-as-you-go: Myself and other person(s)	n/a	n/a	12	5.9
	Top-up: Myself	11	9.3	33	16.2
	Top-up: Children and/or grandchildren	4	3.4	8	3.9
	Top-up: Family member(s)	0	0.0	1	0.5
	Top-up: Other person(s)	0	0.0	2	1.0
	Top-up: Myself and other person (s)	n/a	n/a	4	2.0
Do you prefer old cell phones to new ones?	Strongly agree	n/a	n/a	112	48.3
	Agree	n/a	n/a	67	28.9
	Disagree	n/a	n/a	25	10.8
	Strongly disagree	n/a	n/a	28	12.0

(continued)

Table 6.2 (continued)

Item	Category	iGNiTe		we-DELIVER	
		Frequency	Percentage	Frequency	Percentage
Do you prefer cell phones with pushbuttons to touchscreens?	Strongly agree	n/a	n/a	101	43.5
	Agree	n/a	n/a	81	34.9
	Disagree	n/a	n/a	23	9.9
	Strongly disagree	n/a	n/a	27	11.7

Note: n/a = not available

Payment Older persons pay for network services themselves: iGNiTe 69.5% (35.6% pay-as-you-go, 24.6% contract, and 9.3% top-up) and we-DELIVER 69.1% (50.0% pay-as-you-go, 16.2% top-up, and 2.9% contract)].

6.3.2 Utilization

The results of older people's understanding of the use their phones are reported in Table 6.3.

Feature Use Cell phones offer a wide variety of features and it is important to map how older people use these. Most participants indicated that they used their phones sometimes (60.6%). The categories specified in the we-DELIVER questionnaire were divided into two for ease of reporting, namely:

- basic features: call, SMS, alarm clock, time, calendar; and
- advanced, including internet-dependent features: WhatsApp, games, photos and selfies, calculator, radio, email, news, Facebook, Google, online banking.

These items were not part of the iGNiTe questionnaire in this format, thus the information was available only for we-DELIVER participants. More than two thirds of the participants indicated that they used the functions categorized under basic features themselves (69.3%), and on average a few times a day (55.8%), while on average 24.9% indicated use once a day, and another average, 12.9%, once a week.

Looking at each basic feature, the following major trends emerged: (we-DELIVER $n = 302$).

- By far the majority (95.5%) of older persons make and receive calls themselves and more than 70% do so once and more often a day. Only around 3% asked for help occasionally.
- Most of the participants (64.5%) are able to send and receive SMSs. Around 10% asking for help a few times a day. The rest of the participants do not use this cell phone feature.

Table 6.3 Cell phone feature use (iGNiTe $n = 0$; we-DELIVER $n = 302$)

			we-DELIVER	
Type	Item	Category	Frequency	Percentage
Do you use cell phone to/for...	Call	Never	4	1.8
		Myself	214	95.5
		Ask someone else	6	2.7
	SMS	Never	51	25.9
		Myself	127	64.5
		Ask someone else	19	9.6
	Alarm	Never	88	47.8
		Myself	85	46.2
		Ask someone else	11	6.0
	Time	Never	28	15.7
		Myself	146	82.0
		Ask someone else	4	2.3
	Date and calendar	Never	62	35.8
		Myself	101	58.4
		Ask someone else	10	5.8
	Advanced, incl. internet-dependent features	Never		87.2
		Myself		9.9
		Ask someone else		3.0
How often is a cell phone used for...	Basic features	Never/once a month		66.4
		Once a week		13.9
		Once a day		15.3
		A few times a day		4.4
	Advanced, incl. internet-dependent features	Never/once a month		98.0
		Once a week		0.9
		Once a day		1.2
		A few times a day		0.0

- Almost half of the participants (51.1%) use the alarm clock, with almost 6% needing assistance. It is important to note that nearly 48% had never made use of this basic feature.
- The majority of participants consult their cell phones themselves for the time (82.1%), while 15.7% never used their cell phone to tell the time, and only 2.3% needed help with this feature.
- Around half of the participants (58.4%) use the cell phone calendar themselves, with around 6% needing assistance to do so.

In contrast, the advanced, including internet-dependent features were used rarely, with about 98% of people reporting that they had never, or only once a month, made use of any of these. There were two exceptions, however: some participants reported that another person had helped them with appointment reminders once a week

(26.3%), and 14.9% indicated that they listened to music or the radio on their cell phone several times a day. Table 6.3 presents the information about use of specific cell phone features.

Obtaining Information about Services Relevant data were collected under the "Care needs and relational regulation" section of the we-DELIVER questionnaire. Very few (average 5.9%) used their cell phones regularly to find information about services. They sometimes used their cell phones for information about ambulance services (34.7%), police services (32.3%), hospitals (27.1%), clinics (25.4%), and electrical services (21.0%). The majority never used their cell phones to find information about available services (average 72.3%).

6.3.3 Social Networks around Cell Phone Use

Cell phones are not used in isolation. These devices are intricately intertwined with the social networks of older persons, both in terms of contact and assistance. Contact is made and maintained with people across distance and assistance is required from people in the immediate proximity. Table 6.4 provides an overview of the older participants' behaviour when they encounter difficulties with using their cell phones and of the reactions of those from whom they ask for assistance.

Contact Making and maintaining contact was the main reason for having a cell phone, according to the participants. Whether they needed help or just wanted someone to talk to, participants mostly contacted their children (for help 56.8%, to talk to 60.0%) or family members (for help 14.4%, to talk to 20.9%). Examination of the frequency of contact between older persons and others revealed that most participants only sometimes contacted other people and were contacted by other people (grandchildren, younger/older family members, younger/older friends, or people from church). There were exceptions in the case of their children (a large number contacted their children regularly) and emergency services (most never contacted these). They were regularly contacted by their children but never by the emergency services. Participants indicated they mostly contacted or were contacted by others to find out how they were doing.

Assistance When participants struggled to use their cell phones, 67.8% (iGNiTe) and 71.2% (we-DELIVER) would ask for help. When seeking assistance, 68.8% (iGNiTe) and 71.2% (we-DELIVER) of participants would preferably ask their children or grandchildren, because they trusted them and/or they were nearby (we-DELIVER 72.0%; information not available for iGNiTe). The participants reported that the people they had approached for assistance were usually friendly and helpful (89.6%). When they asked younger people to assist them, 75.8% always did so. Although 82.0% of the younger people did not expect anything in return for their help, some asked for airtime (7.3%), money (6.1%), use of the cell phone (1.5%), or something else, such as sweets (e.g. chocolates), tea, or useful items around the house (2.7%).

Table 6.4 Assistance with cell phone functions ($n = 430$: iGNiTe $n = 128$; we-DELIVER $n = 302$)

		iGNiTe		we-DELIVER	
Type	Item	Frequency	Percentage	Frequency	Percentage
What do you do when experiencing difficulty with a cell phone?	Leave it	10	8.5	28	10.8
	Try to figure it out	23	19.5	13	5.0
	Read the manual	5	4.2	3	1.2
	Ask for help	80	67.8	185	71.2
	Other, e.g. Google	n/a	n/a	11	4.2
	Combination of above options	n/a	n/a	20	7.7
Whom do you mainly ask for help?	Children and/or grandchildren	55	68.8	185	71.2
	Family member	9	11.3	12	4.6
	Other, e.g. friend, community member	16	20.1	28	10.7
	Combination of above options	n/a	n/a	35	13.4
Why do you ask these person(s)?	Trust them and/or they are close by	n/a	n/a	187	72.0
	They are younger than me	n/a	n/a	9	3.5
	They have knowledge and resources	n/a	n/a	27	10.4
	Combination of above options	n/a	n/a	37	14.3
Attitude of people asked for help	Friendly or helpful	n/a	n/a	233	89.6
	Neutral	n/a	n/a	16	6.2
	Unhelpful/unfriendly/irritated	n/a	n/a	11	4.2
What do younger people do when asked for help?	Always help	n/a	n/a	197	75.8
	Sometimes help	n/a	n/a	42	16.2
	Never help	n/a	n/a	9	3.5
	Help but with negative attitude	n/a	n/a	8	3.1
	Ignore me	n/a	n/a	4	1.5
Do they expect something in return for helping?	No	n/a	n/a	214	82.0
	Yes, airtime	n/a	n/a	19	7.3
	Yes, money	n/a	n/a	16	6.1
	Yes, co-use of the phone	n/a	n/a	4	1.5
	Yes, other things	n/a	n/a	7	2.7
	I don't ask for help	n/a	n/a	1	0.4

Note: n/a = not available
Data from care needs and relational regulation and intergenerational patterns in the we-DELIVER questionnaire were combined

6.3.4 Knowledge, Skills, and Attitude

Knowledge, skills, and attitude items were not included in this format in the iGNiTe questionnaire, hence only information from the we-DELIVER questionnaire will be discussed. Confirmatory factor analysis (CFA) was conducted to confirm the factor structure (i.e. the validity) of the respective scales due to the latent nature of the factors. The knowledge and skills scales used dichotomous response scales (no/yes) and the attitude scale used an ordinal level response scale [1 (strongly disagree) to 4 (strongly agree)] and therefore the weighted least squares mean- and variance-adjusted (WLSMV) estimator was used. The following goodness of fit indices were used to evaluate model fit (Kline, 2016; West et al., 2012): Satorra-Bentler (SB) chi-square (χ^2) (a smaller value indicates better fit); the Tucker–Lewis index (TLI) and comparative fit index (CFI) $\geq .95$; root mean square error of approximation (RMSEA) $\leq .08$; and the standardized root mean square residual (SRMR) $< .10$. Following the validity assessment, the reliability coefficients of the scales were calculated.

Knowledge was modelled as a latent factor with 11 observed indicators in line with the theoretical proposition of the questionnaire. Warning messages, containing Items 1 ["I know where to switch my cell phone on and off" and 4 ("I know how to use advanced features on my cell phone (e.g. WhatsApp, Facebook, etc.)" were generated. These warnings indicated that the variables were not statistically distinguishable, thus rendering the items unusable for the analysis. Therefore, these two items were deleted. Most of the fit indices of the revised model were satisfactory ($\chi^2 = 62.92$, d$f = 27$, $p < .001$; RMSEA = .07 [.05, .09]; CFI = .99; TLI = 1.00; SRMR = .08). RMSEA values could be artificially high for models with low degrees of freedom (Kenny et al., 2015). However, although the upper bound value of the RMSEA was higher than the cut-off of .08, recent simulation studies have shown that the SRMR performs better than the RMSEA (Shi et al., 2020). The SRMR value in the current study showed a good fit between the model and the data. The factor loadings were all significant and ranged from .74 to .99.

Skills were modelled as a latent factor with six observed indicators in line with the theoretical proposition of the questionnaire. Most of the fit indices of the model were unsatisfactory ($\chi^2 = 183.90$, d$f = 9$, $p < .001$; RMSEA = .27 [.24, .31]; CFI = .75; TLI = .58; SRMR = .15). Upon inspection of the factor loadings, two items were problematic: Item 3 ("I require assistance to explore new features") had a non-significant factor loading, and 4 ("I am not competent enough to use all my cell phone features") had a factor loading of .19. This is far below the recommended value of .50 (Hair et al., 2014). Consequently, these two items were removed. The revised model's fit statistics were acceptable for most of the indices ($\chi^2 = 1.57$, d$f = 2$, $p < .001$; RMSEA = .00 [.00, .11]; CFI = 1.00; TLI = 1.00; SRMR = .02). The factor loadings were all significant and ranged from .69 to .95. Although the upper bound value of the RMSEA was higher than the cut-off of .08, the SRMR value in the current study showed a good fit between the model and the data.

Attitude was modelled as a latent factor with 13 observed indicators in line with the theoretical proposition of the questionnaire. Most of the fit indices of the model were satisfactory ($\chi^2 = 334.183$, d$f = 65$, $p < .001$; RMSEA = .13 [.11, .14]; CFI = .93; TLI = .92; SRMR = .07). However, inspection of the factor loadings indicated two problematic items with non-significant factor loadings: Items 4 ("I see my cell phone as a dangerous gadget") and 5 ("I don't like cell phones"). Consequently, these two items were removed, and the revised model's fit statistics were acceptable for most of the indices ($\chi^2 = 335.53$, d$f = 44$, p < .001; RMSEA = .16 [.14, .17]; CFI = .92; TLI = .90; SRMR = .07). The RMSEA value was again higher than the cut-off of .08. However, the SRMR value in the current study showed a good fit between the model and the data. The factor loadings were all significant and ranged from .46 to .92. The reliability coefficients for each of the respective factors were .86 (for knowledge), .76 (for skills), and .89 (for attitude).

The modes for the items of each of the factors were inspected. Most participants indicated that they had no knowledge of most functions (i.e. send messages, take photos, operate cell phone independently, create a contacts list, use the internet, and upload airtime). The only exceptions were making calls, locking and unlocking the phone, and checking phone balance) with most participants indicating that they knew how to do these. Similarly, most participants indicated that they had no skills to use a cell phone (that is, the ability to do what they intend to without assistance, to explain to others what to do, and to use all the features on their phones). Participants, however, felt that they could check their cell phone balance on their own. Most participants felt positive about their phones because most agreed, or strongly agreed, with the attitude statements.

To gain a deeper understanding of the participants' knowledge, skills and attitudes, group differences (according to area, education, LSM, ownership, and desire to own a cell phone) were investigated. Factor scores were calculated for each factor after the respective CFAs and used in subsequent analyses. Because the data deviated from a normal distribution (Shapiro–Wilk test: $p < .001$), the non-parametric alternative of the analysis of variance (ANOVA) test, the Independent-samples Kruskal–Wallis test, was used. Results indicated that knowledge [H (3) = 1.50, $p = .68$] and skills [H (3) = 1.83, $p = .61$] were equal across areas, but that attitudes differed among some areas [H (3) = 15.26, $p = .001$]. More specifically, post-hoc tests [Games-Howell because the Welch's test for equal variances was significant ($p = .004$)] showed that Lokaleng had more positive attitudes towards cell phones than Ikageng and Sharpeville. In contrast, results indicated that knowledge [H (3) = 30.25, $p < .001$] and skills [H (3) = 16.87, $p < .001$] differed on the basis of education, but attitudes did not [H (3) = .92, $p = .82$]. Games-Howell post-hoc comparisons indicated that those with higher levels of education reported greater levels of knowledge and skills regarding cell phone use. More specifically, the possession of a matric (school-leaving) certificate and higher education mattered. Results also indicated that levels of knowledge [H (4) = 7.64, $p = .106$], skills [H (4) = 2.74, $p = .603$], as well as attitude [H (4) = 6.46, $p = .168$], were the same across LSM groups. Levels of knowledge [H (3) = 7.09, $p = .069$], skills [H (3) = 7.62, $p = .054$], as well as attitude

[H (3) = 2.50, $p = .476$], were the same regardless of whether the older person was the owner of the phone or shared and/or borrowed it.

The Kruskal–Wallis test showed that knowledge [H (2) = 12.09, $p = .002$] differed depending on whether the older person wanted a cell phone. However, Games-Howell post-hoc comparisons indicated no significant differences between the groups. Skills did not differ [H (2) = 5.42, $p = .066$] significantly when compared in terms of whether the older person wanted a cell phone or not. Attitude [H (2) = 7.09, $p = .029$] differed depending on whether the older person wanted a cell phone. More specifically, Games-Howell post-hoc comparisons showed that older persons who wanted a phone had more positive attitudes than those who did not want the device.

6.4 Discussion of Results

The core baseline data of South Africans and their cell phones present in relation to the:

- situation in households, living standard and educational levels;
- use of the phones;
- cell phone competence (skills and knowledge) and attitudes; and
- social dynamics around the use of the cell phones.

The majority of older participants in multigenerational households have access to at least one cell phone or even more. Cell phone ownership depends on living standards and the level of education. Most of these older individuals have at least some level of basic education and those with a higher education status (secondary and tertiary education) also report higher living standards and own more cell phones. This is in direct contrast with most older individuals with lower education and living standards, also confirmed by Pirhonen et al. (2020) in a developed-country context. A means-tested old age pension sustains the livelihoods of the majority of multigenerational households and is also drawn on to purchase airtime (usually on a pay-as-you-go basis). This financial lifeline gives older individuals negotiating power—even though they might not always own the cell phone, they ultimately decide how it is used—and demonstrates a sense of agency (also see Pype, 2016).

In line with similar international studies in relation to the use of cell phones (Chen et al., 2013; Kurniawan, 2008; Pirhonen et al., 2020), most participants prefer older generation cell phones (pushbutton) because of familiarity and ease of use. This may explain a particular cohort's preference, but rapid technological advancements will always leave many ageing individuals lagging behind. Planning and implementing *e*Interventions with high acceptance thus require a basic understanding of the cell phone features older persons use and for what purpose at a particular time.

To this end, cell phone features were grouped into basic (call, SMS, alarm clock, time, and calendar) and advanced functions (e.g. internet-dependent, WhatsApp, games, photos and selfies, calculator, radio, email, news, Facebook, Google, online

banking). At least two thirds of older South Africans in this sample used basic cell phone features (excluding the alarm function) daily, with limited help from other people. Older persons used cell phones to make and maintain contact with their children, grandchildren, friends, and sometimes members of a religious community. Older persons in this study hardly ever used advanced features such as WhatsApp, games, photos and selfies, calculator, radio, email, news, Facebook, Google and online banking. This could be because their phones do not support these features. However, it is possible that older users found these features too complicated. The cost of data could also have played a role. Cell phones are used in emergencies and to make and receive contact to exchange information. Our participants never seem to call emergency services, which could be as a result of local government officials' unresponsiveness to their needs (see Chap. 2). However, it seems that the participants did not regard the cell phone as a means to obtain general or emergency information; this might relate to ability or cell phone use competence (knowledge, skills and attitude) to use basic phone features.

Participants' knowledge and skills were found to be the same across contexts, even with different living standards and cell phone ownership groups. The only exception was that of cell phone users' more positive attitudes to the instrument in the lowest resourced setting (Lokaleng). A possible explanation could be that in contexts of deprivation (limited, inappropriate service delivery and the lack of infrastructure) (Hoffman & Roos, 2021), older persons may regard any ICT intervention as a means of obtaining access to better services or the information they need to negotiate a difficult environment (see Chap. 7). Future older cohorts will probably be more competent in using a cell phone, but given cohort effects in terms of the digital divide, will still be at a disadvantage. From a rights perspective, it is argued that no older individual should be left behind and that well-designed intra/intergenerational ICT programmes should be available to support these older generations (see Chap. 2; Pirhonen et al., 2020).

This cohort of older individuals complements their limited educational and cell phone use competence by applying relational regulation strategies (Steyn et al., 2018). They obtain help from related younger people (children and grandchildren) whom they trust, in close physical proximity, and because the younger helpers display a positive, willing attitude (see Chap. 7; Roos & Robertson, 2019). Generally, younger individuals help without an explicit expectation of receiving anything in return, but a small minority does expect something in return for assisting older individuals with their cell phones, such as airtime, money, or the use of the phone.

The social dynamics around cell phones stimulate negotiation around using, sharing or borrowing the phone. In deprived contexts in which multigenerational households rely on older adults' state pensions, cell phones become the currency for connectivity. At the same time, the majority of older persons are dependent on younger people to assist them with their cell phones. This intergenerational interdependency involves the relational history as well as the nature of the relational interactions which play out both in private and public domains (see Chap. 7; Smith-Acuña, 2011). Any ICT intervention for this cohort of older individuals involving cell phone devices should therefore acknowledge and approach it as a generational

project. Drawing on these findings, the following recommendations are made in Box 6.1 for planning *e*Interventions.

Box 6.1
Points of departure to plan *e*Interventions for older South Africans

- Multigenerational (intergenerational) households
- Access to phones
- Agency to determine what is done with them

Recommendations for planning and implementing *e*Interventions

– Accommodate older individuals' phone preference for less complicated devices and provide alternative avenues to obtain information, such as a USSD code.
– Provide opportunities for older persons to upscale their use of different cell phone features on smart or pushbutton phones to support the uptake of the intervention.
– Support older individuals with limited financial resources, such as providing back-end funding to enable their access.
– Use push notifications with relevant information to reach older cell phone users without requiring independent use of setting an alarm or using advanced phone features.
– Use the intergenerational interdependence of this particular cohort of older persons through formal programmes to promote older individuals' use of cell phones and thereby their access to *e*Interventions.

6.5 Implications of Results for ICT Interventions

This baseline story of a cohort of older South Africans' cell phone use amplifies two aspects deemed to be fundamental to the involvement of older adults in *e*Interventions; a generational perspective and their autonomy, centred on their ownership and use of cell phones:

– It is evident from the data that any *e*Interventions in which older people are involved should be planned and designed as a generational project. The cell phone generates generationality, simply by use of its functions through the support and assistance of younger and digitally knowledgeable generations. This inter/intragenerational effort simultaneously elicits support and assistance from the generational other or mediates and maintains generational (filial) belonging. The digital/resource divide and subsequent dependencies present an imperative towards generational solidarity. Younger people provide assistance and support to older individuals, who in return provide resources in the form of data or (the use of) cell phones (thanks to the older persons' state grant). These

dependencies are continually being negotiated by the generations; the insertion of objects (cell phones) into everyday lives and the access to and handling of these goods are dependent on constraints and social hierarchies. De Bruijn et al. (2009 p.12) characterize Africa's "mobile phone culture" as a dynamic space in which cell phones are appropriated and used as a means of social change and development (also see Goggin, 2006; Katz, 2006). In this social space around cellular communication technology, new forms of social action come into being; a material item such as the cell phone mediates between social individuals and groups; and various kinds of agencies, both human and non-human. The cell phone itself allows and limits communication and social action. Cell phone culture thus integrates expectations as well as the social, economic and political trajectories that exist in other dimensions of everyday life.

– According to this baseline story, older persons maintain their authority despite their dependency on practical support from younger generations in order to access and use relevant technology. They are not passive actors but actively initiate cell phone usage, albeit by proxy because of the intervention of surrogate users. There are various cultural and practical dynamics that push older users to insert go-betweens in their cell phone communications. The cell phone thus mediates intergenerational relationships and impacts power relations.

6.6 Limitations

The study has several limitations and therefore the results should be interpreted with caution. Quantitative findings from cross-sectional studies are not only limited in terms of generalizability but also in respect of the conclusions that can be drawn in terms of the direction of relationships. We align with the notion proposed by Spector (2019) to use cross-sectional designs when limited information exists regarding a phenomenon (as is the case with cell phone use by older persons in South Africa), and do not draw cause–effect conclusions. A carefully designed longitudinal study (see Spector (2019) for recommendations) is suggested for future research in gerotechnology. To this end, a partnership with the Department of Health at the Blekinge Institute of Technology is envisaged where a future (South) African project speaks to a section of the Swedish National Study of Aging and Care (SNAC). SNAC is a longitudinal cohort study of a representative sample of the ageing Swedish population that began data collection in 2001 and is a comprehensive, interdisciplinary study that investigates the health and living conditions of the Swedish population aged 60 years and older, including issues of gerothechnology.

This study also used self-report data, which are known for their common method bias (CMB). CMB may distort relationships between variables (Spector et al., 2019) and for this reason several authors (Podsakoff et al., 2003, 2012; Spector et al., 2019) provided methodological and statistical ways in which one can minimize CMB.

Another limitation of the study pertains to the RMSEA value of the three measurement models (for knowledge, skills and attitudes). The RMSEA value remains a popular fit statistic to assess goodness of fit but its performance may be problematic in models with small degrees of freedom (d*f*). In such instances, the RMSEA value would be unusually large and indicate poor model fit even though the other fit indices indicate the opposite (Curran et al., 2003; Kenny et al., 2015). Some authors go so far as to argue that this fit statistic should not be calculated when the model's d*f* is small. However, if researchers wish to calculate and interpret this statistic, it is recommended they redesign a study to include more (complex) indicators to avoid having a low d*f* model (Kenny et al., 2015).

Although care was taken to sample older persons from a variety of communities (that is, by increasing the heterogeneity of the sample), the total sample was not only small but also limited to two provinces. This hampers the generalizability of the findings. Future studies should consider gathering data from larger samples (also in other provinces in South Africa) using random sampling techniques to enable group comparisons and generalization. Larger groups will also provide more opportunities for group comparisons (especially in cases in which differences are presented as trends observed rather than as statistical evidence for significance). Last, the reversed scored items (in the skills and attitudes scales) proved to be problematic as they did not load significantly onto their respective factors, and their usefulness should be reconsidered in future studies.

6.7 Conclusion

Against the backdrop of four communities in South Africa, this chapter provides some basic data on older persons' cell phone use and how we might make sense of their everyday ICT practices and dynamics using this technology. The use of cell phones by the study population reflects the typical complexities of a developing country, exacerbated by an unjust past, which provoked extreme systemic inequalities between disadvantaged Black older individuals in comparison with their White counterparts. This affected their competency properly to utilize available ICT in the form of a cell phone. Nevertheless, the generally positive attitudes of older persons towards cell phone technology and the way in which these older generations leapfrogged into its acceptance (even ownership) potentially provide opportunities for access and participation despite some of the cumulative historical disadvantages. The potential to involve older individuals in *e*Interventions for participation in service delivery as well as social and healthcare management offers numerous developmental opportunities.

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