

Adopting of Smartphone Technologies Amongst Older Adults in Windhoek, Namibia

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ABSTRACT

Recent technological advancements show that mobile phones are becoming an increasingly significant part of our daily lives. Older adults (OAs) [60+] constitute a key demographic for this study. This study aims to determine the features of smartphone technologies used by OAs in Windhoek and to analyse the possible factors that may influence their adoption as well as to assess OAs perceptions of smartphones. A quantitative research method was adopted. A structured questionnaire was used to collect data from 99 OAs in Windhoek through convenience sampling method. Data were analysed employing SPSS. The study revealed that OAs do not fully adopt smartphones. However, they believe that smartphones provide benefits such as giving entertainment and curbing loneliness. The findings suggest there is a relationship between the smart technology (ST) features and perceptions towards the adoption of STs by OAs in Windhoek. This study can educate smartphone manufacturers and developers about elements that should be considered when designing communication devices and applications for OAs.

KEYWORDS

Adoption, Smartphone Technology, Older Adults, Features

BACKGROUND OF THE STUDY

Smartphones are technological innovations that provide immense benefits and convenience to society today. Despite this, not every member of society adopts and uses the technology (Omotayo, 2000). Zijlstra et al. (2020) state that innovations are often adopted faster by young adults than by older adults. According to Kim et al. (2022), older adults experience the need to engage in smartphone technologies but are not able to access such technologies either to meet their essential daily needs or to overcome restrictions of physical distancing. Ajaegbu et al. (2019) define smartphone technology

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(ST) as a hand-held computer capable of multitasking besides making calls. According to Ma et al. (2020), an older adult (OA) is defined by the United Nations as a person who is over 60 years of age. When new smartphone technologies (STs) are developed, OAs may not be able to keep up. Instead, they may continue using older phones. Makkonen (2021) defines adoption as an active decision to take full advantage of new technologies. Society is becoming increasingly tech-savvy, but there is still a noticeable digital divide between younger and older adults. Using mobile devices is one method to close the digital divide as highlighted by Carmien and Manzanares (2016). Even if the percentage of OAs with technological skills grows every day, a large proportion of this demographic is still technologically illiterate (Smith & Tran, 2017). Some may want to acquire skills, but several barriers prevent them from acquiring them. It is critical to increase smartphone usage and adoption among OAs because it may improve their quality of life, facilitate independent living, and bridge technological gaps between generations (Anderson & Perrin, 2017). Therefore, in this study, the researcher aims to assess the adoption of STs amongst older adults in Windhoek.

STATEMENT OF THE PROBLEM

There is the potential for both positive and adverse effects associated with smartphone usage. Besides being used for social interaction, smartphones can help people alleviate loneliness, acquire education, and reduce cognitive decline. However, Busch et al. (2021) tells us that digital technologies are becoming more important in modern society, where the next generation of older adults will experience more difficulties with their use. Although one of the National Planning Commission of Namibia's (NDP5) desired outcomes is the use of information and communication technologies (ICT) to improve public service delivery, it is not yet known how far Namibia is considering the adoption of smartphones, particularly by OAs. The use of smartphones by older adults is less well understood, hence the study aims to assess the adoption of STs amongst OAs in Windhoek.

RESEARCH OBJECTIVES

The primary objective of this study is to assess the adoption of STs amongst OAs in Windhoek. This objective is divided into three specific objectives which are:

- a) To analyse the perceptions of OAs in Windhoek towards the adoption of STs.
- b) To establish the features of STs used by OAs in Windhoek.
- c) To assess the possible factors that influence the adoption of STs amongst OAs in Windhoek.

RESEARCH QUESTIONS

The study sought to answer the following research questions:

- a) What are the perceptions of OAs in Windhoek towards the adoption of STs?
- b) What are the features of STs used by OAs in Windhoek?
- c) What are the possible factors that influence the adoption of STs amongst OAs in Windhoek?

HYPOTHESES

The study tested the following hypotheses:

- H0: There is no relationship between the ST features and perceptions towards the adoption of STs by OAs in Windhoek.
- H1: There is a relationship between the ST features and perceptions towards the adoption of STs by OAs in Windhoek.

SIGNIFICANCE OF THE STUDY

Namibia is part and parcel of the global village which is embracing technology rapidly, and there is limited literature on the adoption of smartphone devices amongst OAs, therefore the importance of this study lies in its ability to contribute to the literature. This study can also educate smartphone manufacturers and developers about elements that should be considered when designing communication devices and applications for ‘silver surfers.’

LIMITATIONS OF THE STUDY

Given the defined scope of the study, its results may not be generalised to other population groups in relation to ST usage.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Introduction

This chapter examines literature related to the research issue as well as other topics that have an impact on the research findings. A theoretical framework has been developed through a survey of the literature.

The History of Smartphones

A smartphone is a portable device that combines the capabilities of a phone and a computer into one item (Li & Luximon, 2018). International Business Machines Corporation (IBM) invented the world's first smartphone in 1992, produced by Mitsubishi Electric in 1994 (Heathman, 2017). The IBM Simon personal communicator combined the features of a mobile phone and a personal digital assistant (PDA). These features made the device unique and sophisticated enough to earn it the title of the World's First Smartphone (ibid). Nokia 9000 communicator was another notable effort, introduced in 1996 (Sahay & Sharma, 2019). Mobile communication standards improvements of the 21st century allowed portable electronic devices access to the internet wirelessly (Skyrme, 2007). In 2008, Google launched the Android operating system. Samsung and more smartphone manufacturers now use Android.

Smartphone Technology (ST) and Trends in the Market

ST is a relatively young technology with a lot of opportunities for advancement (Aldhaban, 2016). Namibia has the distinct advantage of being one of the African countries with the highest smartphone penetration rate. The smartphone market, in general, is rapidly evolving, with new items being offered regularly. The market features rapidly changing technology and designs, short product life cycles, aggressive pricing, and rapid replication of technological breakthroughs (Turnbull et al., 2000). The current trajectory of ever-more-powerful mobile devices has turned the processing industry away from desktops and toward smartphones (Pencarelli, 2020). One-third of network communication in Africa is established using a smartphone (Oyelaran-Oyeyinka & Adeya, 2004). In Namibia, the Telecommunications Company (MTC) runs campaigns aimed at converting customers from basic to smartphones.

Older Adults (OAs)

A person above the age of 60 is defined as an older adult (Gao et al., 2017). In Africa, old age is characterised by a growing reliance on others as a result of increased security needs brought on by physical frailty and poor health. Older people in Africa and other nations may be seen as burdensome due to the impairment of their health or dependence on others (Jennings & Wasunna, 2005).

The Adoption of Smartphones by Elderly People

Alvarez-Lozano et al. (2014) state that OAs use their smartphones more rarely than other age demographics. Senior folks have seen the greatest surge in smartphone adoption in recent years (Hong et al., 2016). Vaportzis et al. (2018) show that OAs are keen to learn how to use a smartphone and are enthusiastic about adopting new technology. However, there is some concern regarding ambiguity in the instructions and support. Kuerbis et al. (2017) claim that older persons who practice perform more accurately and quickly on technical than digital tasks. Only a few studies have examined explicitly mobile phone usage among the elderly (Jamalvo & Constantinovits, 2019). The majority of research discovered that the key reasons for elderly persons utilising mobile phones were for emergencies, safety, and security. However, when it comes to utilising smartphones, elderly persons have several obstacles. Financial constraints, restricted vision, a lack of interest, and a lack of information are the key hurdles to smartphone use for the elderly (Vaportzis et al., 2017).

Smartphone Technology Features

A product feature is a solution that suits the level of satisfaction of consumers' needs and wants during product ownership, consumption, and utilization (Kotler et al., 2017). Studies suggest users may be initially attracted to features in technology that enhance their task efficiency or completion rate (Li & Luximon, 2018). *Ease of use* is an individual's view of how easy that technology is to use. The main priority for designers is aligning technology features to the particular traits of OAs (ibid). *Complexity*—The complexity of innovation or its usage and comprehension is the level of difficulty individuals perceive to be associated with innovation (Straub, 2009). Today's social-technical systems are different, and older individuals are failing to adapt and use technology (Lewis & Naden, 2018). Technology is welcomed and used by older folks once it is viewed as simple to use or primarily designed for them (Kuerbis et al., 2017).

Size of the device—The facial attractiveness, size, and menu structure of smartphones are the most important determinants of mobile phone selection when it comes to OAs (Shabrin et al., 2017).

The Design—A smartphone's hardware includes the body, weight, and size of the phone. In addition *Applications*, mobile applications, are computer programs that run on mobile devices (Li et al., 2014). OAs can engage with their friends and family by downloading social media platforms like Facebook, Instagram, and Twitter. *Text Messaging (SMS)* is the act of composing and sending electronic messages, primarily composed of alphabetic and numeric data, between and among different users of smartphones, desktop computers, laptops, or any other type of computer (Hochgraf et al., 2010). Some OAs say that text messaging helps them keep relatives out of the house and out of their affairs (Kuerbis et al., 2017).

WhatsApp—WhatsApp is a cross-platform freeware instant messaging (IM) and voice-over-IP (VoIP) service from Meta Technologies available worldwide that has made mobile phone communication less expensive and easier than other platforms. (Rosales & Fernández-Ardèvol, 2016). *Facebook* profiles allow users to share information, create and sustain relationships, and urge others to join a community (Rithika & Selvaraj, 2013). Namibia has a Facebook penetration rate of 10.7%. Nadhom and Loskot, (2018) indicate that 231,340 people use the internet in Namibia. *Google* provides access to information on the internet about people or things (Mbala, 2019).

Internet connectivity—The 2019 Inclusive Internet Index indicates that Namibia's mobile connectivity is only at 39% serviced with 4G, that 3G is only accessible to 53% of the nation, and that 2G is accessible to 100% of the country. This creates some difficulties when it comes to acquiring smartphones in Namibia (Nashilongo, 2020). *Mobile browser*—This is a new smartphone app shop that has a wider range of browser alternatives (West & Mace, 2010). Each browser has its own set of features (West & Mace, 2010).

Battery life—One significant property for batteries is their life cycle. Most mobile phones include changeable batteries (Harris et al., 2020). Mobile phone batteries are intentionally manufactured with an artificially restricted usable life so that they become dysfunctional after a specific period to drive the market (Ibid). *Storage space* refers to the total space on a phone's hard drive that may be used to store information (Meena et al., 2014). The storage capacity becomes one of several significant criteria that influence the decision to choose one phone over another when purchasing a new phone. *Camera*—Smartphones now come with cameras as standard equipment. Shoaie Shirehjini (2019) reports that a smartphone camera contains one or more built-in digital cameras that can take pictures and record videos instantly (Delbracio et al., 2021).

Factors Influencing the Adoption of Smartphone Technologies

Adoption is the decision to utilise a new invention to its maximum potential as the best course of action available (Arts et al., 2011). OAs adapt smartphone technologies in various ways (De Barros et al., 2014). There has been much more interest among stakeholders in examining and understanding the major factors affecting user adoption and usage of ST. The economic, social, performance, cost, and demographic were all selected as factors to be reviewed for this study. The perceived value of the trade-off between a technology's advantages, its acquisition, use, and costs is known as the economic factor (Choudrie et al., 2018). This factor can predict consumers' willingness to accept and use new technology. Cost is the price paid for a product or service. People may be more willing to acquire and use smartphone technology if they believe it is cost-effective (Kuerbis et al., 2017). Social factors also play an important role in the adoption of smartphone technologies amongst OAs. OAs trust those close to them when it comes to technological choices. An individual's belief that key people should be entrusted when making judgments about the employment of new technology is characterized as a social influence (Bakker & Kamann, 2007). Performance factors have also been found to be significant predictors of intention to use smartphone technology. Customers' perceptions of how easy it is to use technology are measured by their effort expectancy. The effort expectancy element plays a significant role in impacting people's intention to use mobile technology (Kwateng et al., 2018). Research has shown that performance expectancy has a substantial impact on customers' readiness to embrace and employ technology. Demographics are an important set of elements to consider when trying to understand and respond to the needs of customers. The use of mobile apps varies by demographic group (Linnhoff & Smith, 2017). The confidence factor indicates that when older persons lack confidence in their ability to learn anything new, they may avoid using technology (Kuerbis et al., 2017). Many OAs are wary of technology and cell phones in general (Vaportzis et al., 2018). Regardless of whether a person is a subscriber or not, mobile network coverage refers to the number of people within range of a mobile cellular signal (Paul et al., 2011). Telecom Namibia (TN) and Mobile Telecommunications (MTC) are Namibia's two major telecommunications providers and they have almost comparable rates. Wi-Fi is available just about anywhere, especially in cities and businesses, making browsing the net simple.

Older Adults' Perceptions of Newer Technology

Perception is a psychological process created by the five senses (Pallasmaa, 2012). Understanding OA's perceptions of technology is critical to introducing technology to this group and maximizing its effectiveness (Vaportzis et al., 2017). The decision of a customer to purchase a product will be

heavily affected by how he or she perceives it (Mustapha et al., 2021). TV advertisements are ideally suited for smartphones, since they can make the devices even more attractive and appealing which may, in turn, create positive perceptions in viewers (Sethi, 2017).

Conceptual Framework

Antunes et al. (2021) define a conceptual framework as an interconnected set of concepts that provide a unified understanding of an issue or phenomenon. The senior technology acceptance model (STAM) and Unified Theory of Acceptance and Use of Technology (UTAT) have provided the theoretic framework for this study.

METHODOLOGY

Introduction

This section focuses on the research design, philosophies, and methodology used. It further covers the population, sampling techniques, data collection procedure, and how the data was collected and tested for reliability and validity.

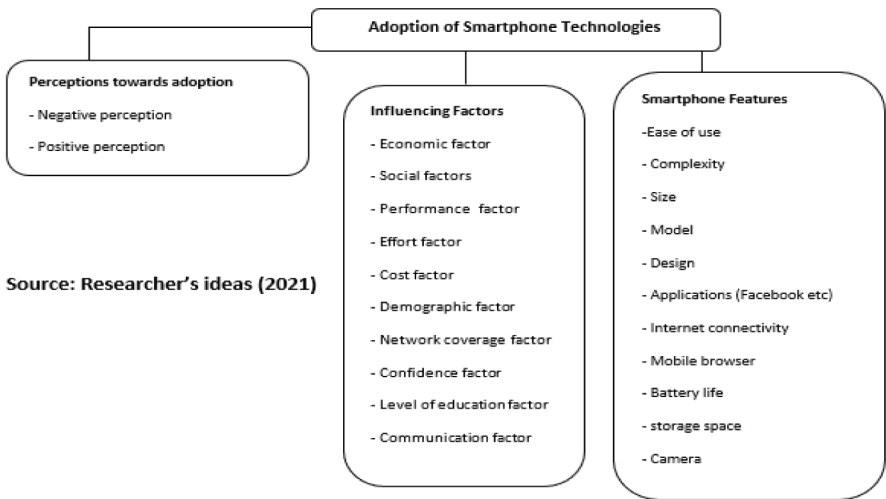
Research Design

In this study, exploratory research was conducted to improve the understanding of how OAs use their smartphones and of their adoption of the technology. To do this, a cross-sectional quantitative study was conducted.

Research Philosophy

The positivism paradigm formed the basis of this study. The main purpose of the research(er) was to reach the objective truth and facts.

Figure 1. Conceptual Framework



Research Approach

Descriptive research was conducted using a quantitative methodological approach to obtain information about the existing phenomena. Creswell & Creswell (2003) defines quantitative research as an approach to testing objective theories. The study employed deductive reasoning to explain the link between variables in quantitative data.

Population

There are 13,720 OAs in the Khomas region (Namibia Statistics Agency, 2017). The population for this study is OAs in Windhoek

Sample Size and Method

The participants were selected using a non-probability convenience sampling method. Yamane's formula was used to calculate the sample size (Israel, 1992). This formula provides a simplified formula for calculating sample sizes, and it also gives a sample size with known confidence and risk levels (Saunders et al., 2012).

$$n = \frac{N}{1 + Ne^2}$$

where n = sample size, N = the size of the population, e = the probability error of 10%.

$$\text{Calculation: } n = \frac{13720}{1 + 13720(0.1)^2} = 99 \text{ participants (sample size)}$$

Data Collection

A structured questionnaire was developed to collect primary data from the participants. Participants were reached through the old age homes identified via a google search and telephone directories and door-to-door visits.

Data Analysis

The data were analysed using the Statistical Package for the Social Science (SPSS) software. Frequency and percentages were used to analyse the demographic characteristics of respondents, while descriptive statistics such as mean and standard deviation were used to analyse the study's objectives. Correlation analyses were used to test for the association between the ST features and perceptions towards the adoption of STs by older adults in Windhoek. Further, the researcher used graphic presentations such as tables, bar graphs, and pie charts to help with the understanding of the results.

Trustworthiness, Credibility, and Confirmability

The data collection instrument questions were prepared. A pilot study was created to test the design of the survey questions and the inclusion of measurement questions.

Validity

The questionnaire was constructed to address the specific and relevant aspects of the concepts under study, and representative questions from each section of the data collection instrument were evaluated against the desired outcome.

Reliability

Cronbach's alpha was calculated to ensure reliability and only reliability coefficients of 0.7 and above were accepted.

Ethical Considerations

The researcher remained honest and respectful to all the participants. Participants took part voluntarily in the study and could withdraw at any point. The identity of participants was kept confidential.

PRESENTATION OF FINDINGS, INTERPRETATIONS, AND DISCUSSIONS

Introduction

This section presents the findings, interpretation, and discussion based on the data collected from responses to the questionnaires.

Response Rate

The study achieved a 97% response rate to the administered questionnaires. This is far above the optimal rate of 35% to 50% which is sufficient for corporate and academic studies. The total number of questionnaires administered for this study was 99. However, only 96 out of 99 administered questionnaires were fully completed, as seen in Table 1. The questions were not all responded to because some respondents were not able to make responses to all questions.

Reliability

The internal consistency reliability and indication reliability were evaluated through the application of Cronbach's Alpha. Results are depicted in Table 2.

Gender Distribution

Figure 2 shows that 56% of the respondents were females while 44% were males.

Table 1. The Response Rate for the Questionnaires

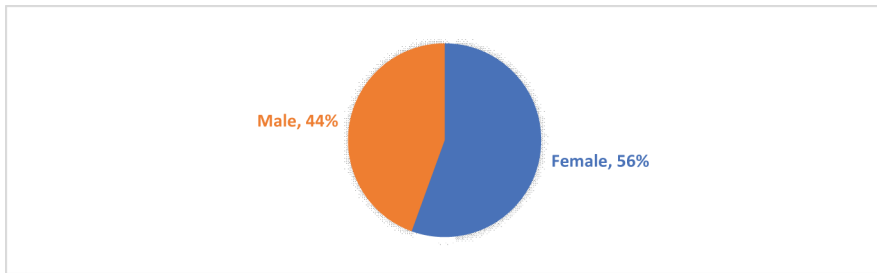
Item	Older adults	
	Frequency	Percentage
Returned questionnaires	96	96.96%
Incomplete questionnaires	3	3.04%
Total questionnaires	99	100%

Source: (Source: Field Survey, 2022)

Table 2. Reliability Statistic

Reliability Statistics	
Cronbach's Alpha	N of Items
0.741	4

Figure 2. Gender Distribution



(Source: Field Survey, 2022)

Age Categories

The study aimed to find out if age influences the adoption of smartphone technologies. Figure 3 shows that in terms of age, 23 (23.23%) respondents were between the ages of 60 and 70, while 76 (76.76%) were above 71.

Marital Status

In the study, the respondents' marital status was requested. The results depicted in Figure 4 show that 48% of respondents are married, 34% are single, and 18% are divorced.

Level of Education

Figure 5 shows the level of education of the respondents. 46% of respondents have no formal education, 26% have grade 12, 14% have attained diploma level while 11% have bachelor's degrees, and only 3% have attained master's degree level. This shows that the majority (54%) of the OA respondents in Windhoek have adequate education to understand the importance and operation of a smartphone.

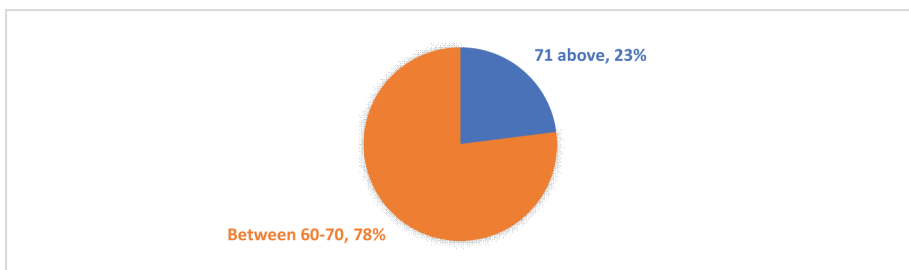
Ethnic Group

Figure 6 shows that 74% of the respondents were black, 8% white, 15% coloured, and 3% were non-black (other).

Ownership of Smartphones

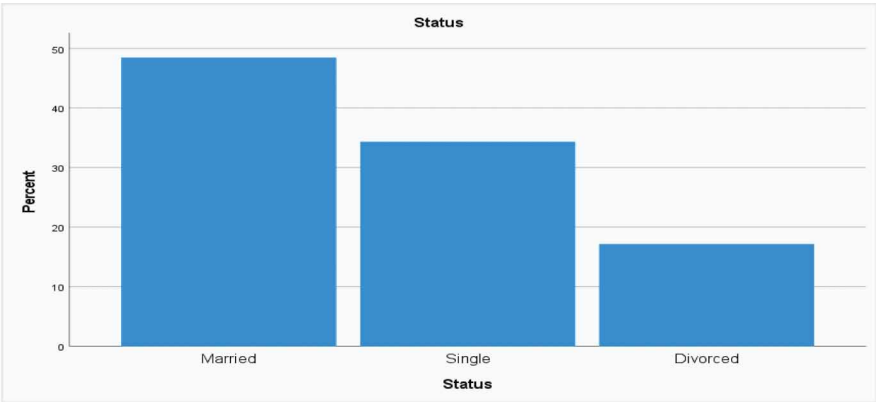
Figure 7 shows that the majority (92%) of respondents have smartphones. The remaining 8% do not own a smartphone. This indicates that the older generation is moving with technological changes.

Figure 3. Age Categories



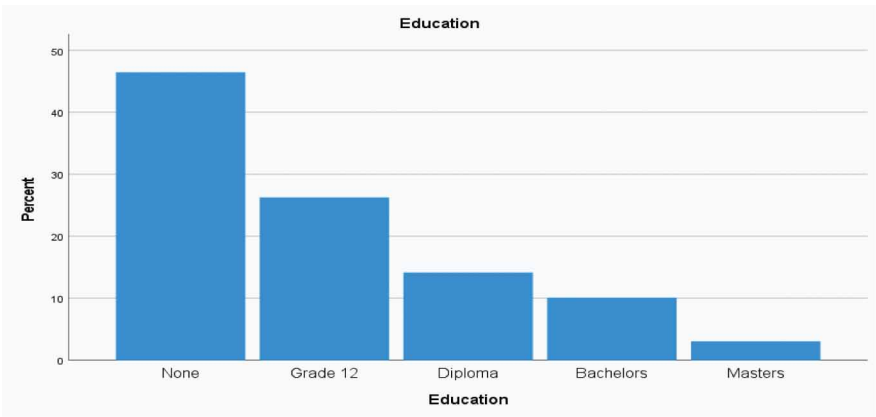
(Source: Field Survey, 2022)

Figure 4. Marital Status



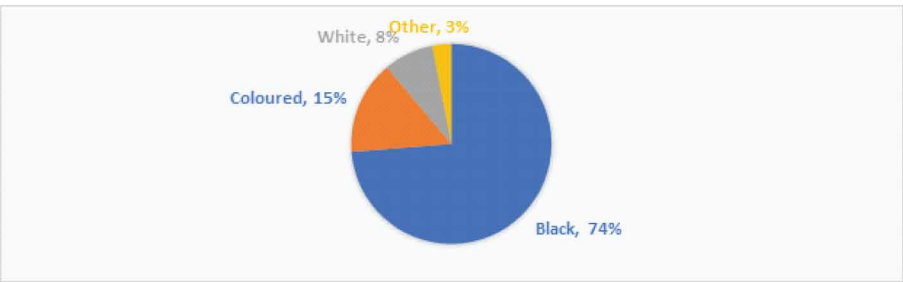
(Source: Field Survey, 2022)

Figure 5. Level of Education



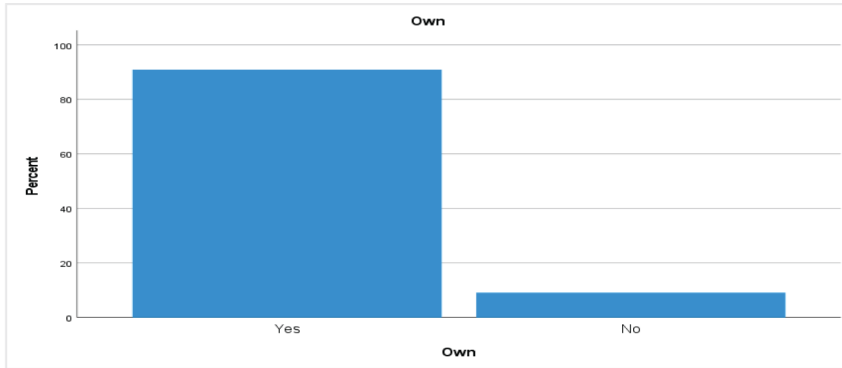
(Source: Field Survey, 2022)

Figure 6. Ethnic Group



(Source: Field Survey, 2022)

Figure 7. Smartphone Ownership



(Source: Field Survey, 2022)

Duration of Owning the Smartphone

Table 3 shows the respondents have been owning smartphones for a minimum of one year and a maximum of at most four years. This gives mean ownership of 3.0909 years with a standard deviation of 1.10740.

Frequency of Smartphone Use

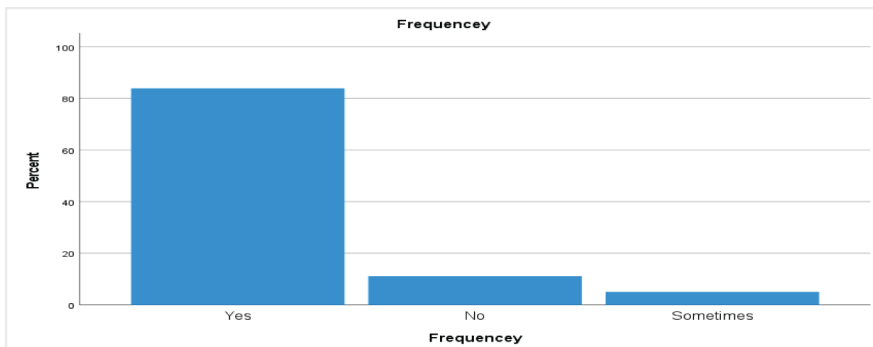
Figure 8 shows that 82% of the respondents use their smartphones daily, 11% do not use their smartphones at all, while 6% use their smartphones once in a while.

Table 3. Duration of Owning the Smartphone (Descriptive Statistics)

	N	Minimum	Maximum	Mean	Std. Deviation
Time	99	1.00	4.00	3.0909	1.10740
Valid N (listwise)	99				

(Source: Field Survey, 2022)

Figure 8. Frequency of Smartphone Use



(Source: Field survey, 2022)

Comfortability in the Use of Basic Functions on the Smartphone

Figure 9 shows that the majority (58%) of the respondents are comfortable using the features on the smartphone, 24% are not comfortable, while the remaining 17% are not sure.

Features of the Smartphone

The respondents were asked to select the features of the smartphones they normally use. Table 4 shows that the majority of respondents (96%) said their smartphones were used for basic phone functions, while 35% used the browser, 24% accessed e-mail, and 4% played games. Even though email is one of the less advanced features of smartphones, only 24% of OAs emailed their friends and family. At 48%, another popular phone function is photo sharing. Features like Calendar, Internet, Google, Music, E-mails, Facebook, Games, Clock, and GPS are not so popular amongst the older generation. Only 35% of people use the internet and 35% use the calendar. Snapchat and Twitter come out as unknown to these older adults.

Challenges Faced Using the Smartphone

Figure 10 shows that lack of instruction guidance takes the pole position with 47%, screen size being too small at 38%, and data being a costly (challenge) at 34%. Figure 11 also depicts that the respondents face the challenge of complex technology at 29%, devices being too fragile at 27%, and devices being slippery at 26%. 19% find the device difficult to operate, whereas 18% of respondents have no challenges. 41% indicated that the font size was too small, but because there is no instruction book, they do not know how to enlarge it.

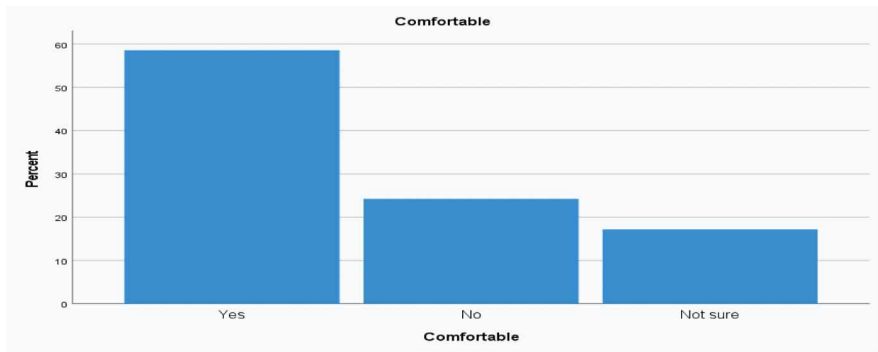
Benefits Found in the Use of Smartphones

Figure 11 shows that 59% of respondents benefit from quick access to information by using a smartphone, 49% from easy-to-type text, 48% from the elimination of loneliness, 45% from the ease of navigation, 41% from access to media, 30% from the availability of social networks, 25% from multiple apps, 18% from bigger storage space, and 18% from easy communication.

Perceptions Toward Adoption of Smartphone Technologies

In Table 5, the most striking feature was the flexibility of the device. The majority of the respondents agreed with the statement that a smartphone is a flexible device. It is evident that the statement “Smartphone features meet my expectations” collected the second-highest ratings from the respondents. The table further indicates that the statement, “I find the device light and convenient”

Figure 9. Comfortability



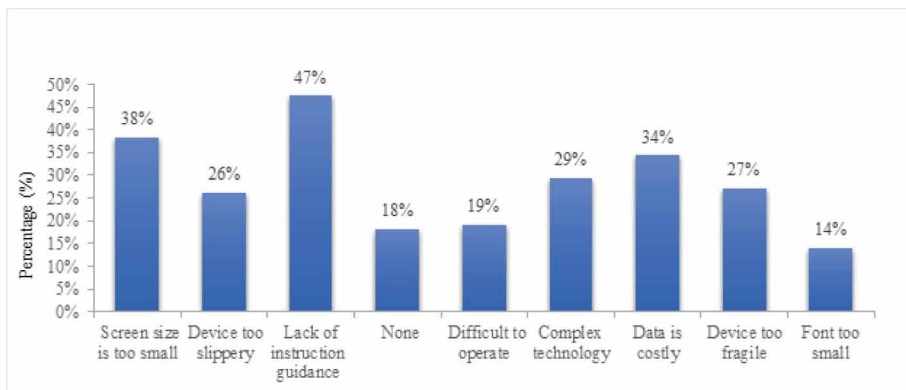
(Source: Field survey, 2022)

Table 4. Features of STs Used by OAs in Windhoek

Feature	Frequency	Percentage	Sample Size
a) Calls	95	96%	99
b) Games	14	14%	99
c) Calendar	35	35%	99
d) Internet	35	35%	99
e) SMS	65	66%	99
f) Music	25	25%	99
g) Radio	37	37%	99
h) Facebook	20	20%	99
i) Photography	48	48%	99
j) YouTube	23	23%	99
k) Twitter	0	0%	99
l) E-mail	24	24%	99
m) Videos	40	40%	99
n) Google	27	27%	99
o) WhatsApp	53	54%	99
p) Snapchat	0	0%	99
q) Clock	6	6%	99
r) GPS	1	1%	99

(Source: Field survey, 2022)

Figure 10. Challenges



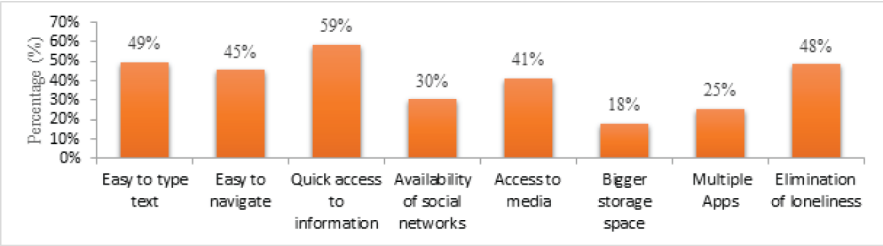
(Source: Field survey, 2022)

also received favourable ratings from the respondents. Followed by “I enjoy using a smartphone because of its applications.” Respondents did not agree with some statements such as “Smartphones can improve communications.”

Source of Information Regarding Smartphone Use

Respondents were asked to identify the source of information that prompted their smartphone purchases. The results are depicted below in Figure 12. The majority (87%) of purchases were made

Figure 11. Benefits of Using a Smartphone



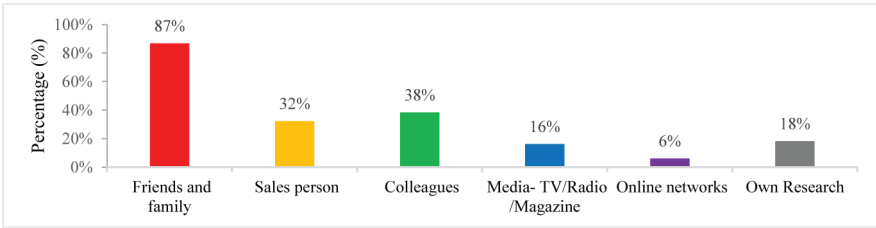
(Source: Field survey, 2022)

Table 5. Perceptions of Older Adults Toward Smartphone Adoption

Perceptions of Smartphone Technology	Agree		Strongly Agree		Undecided		Disagree		Strongly Disagree		Total
	F	%	F	%	F	%	F	%	F	%	
1. Smartphones features meet my expectations	27	27%	26	26%	27	27%	15	15%	5	5%	100
2. A smartphone is a flexible device for interactions	41	41%	44	44%	5	5%	5	5%	5	5%	100
3. I enjoy using smartphones because of their applications	30	30%	15	15%	16	16%	13	13%	26	26%	100
4. I use a smartphone because of its design	14	14%	10	10%	26	26%	20	20%	30	30%	100
5. I find the device light and convenient	24	24%	23	23%	21	21%	15	15%	17	17%	100
6. I am interested in the durability of a smartphone	13	13%	14	14%	12	12%	27	27%	34	34%	100
7. Smartphones are worthy of the cost	9	9%	5	5%	0	0%	42	42%	44	44%	100
8. The device fits into the level of my education	13	13%	12	12%	3	3%	36	36%	36	36%	100
9. ST features determines my purchase	36	36%	16	16%	8	8%	22	22%	18	18%	100
10. Smartphones can improve communication	23	23%	20	20%	25	25%	17	17%	15	15%	100

(Source: Field survey, 2022)

Figure 12. Source of Information Regarding the Use of Smartphones



(Source: Field survey, 2022)

due to the social influence of friends and family, followed by 38% from colleagues, 18% from own research, 32% from salespeople, 16% from TV/Media, and 6% from online networks. The analysed results indicated that social influence has a significant impact on smartphone purchases.

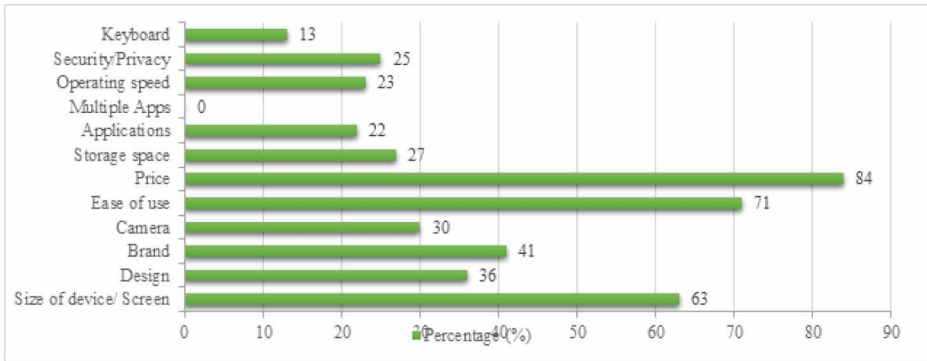
Considerations Taken Into Account When Buying a Smartphone

Respondents were asked to choose from the list of elements indicated in the survey instrument. Figure 13 shows that the top four elements for consideration were the price, ease-of-use, size of screen/ device, and brand. Findings showed that the price of the device was considered significant by 84%, that 71% of respondents considered ease-of-use, 63% considered size of device/screen, and 36% the brand. There were some anxieties regarding the camera, design, storage space, applications, multiple apps, operating speed, security/ privacy, and the keyboard.

Factors That May Possibly Encourage Future Use of Smartphones

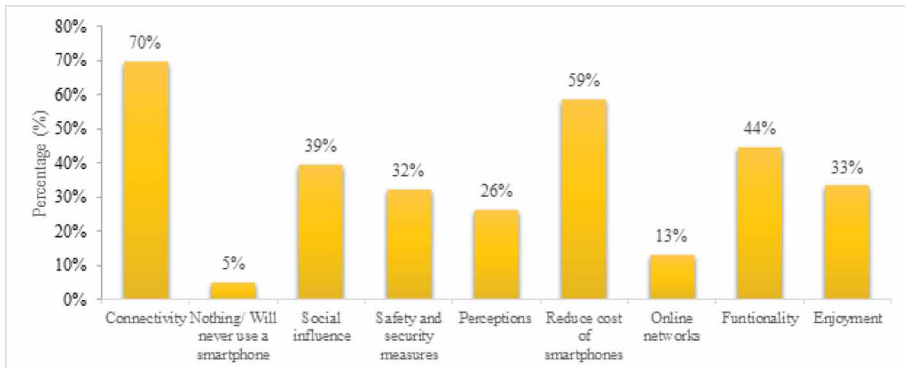
Factors that might encourage elderly Windhoek residents to use ST in the future were found to be the network connectivity and the reduced cost of smartphone devices (price). Figure 14 indicates that 70% of respondents reacted to connectivity being an important factor and 59% the reduced cost of smartphones. The remaining factors did not come out strongly. Social influence was rated by 39% of respondents, perceptions by 26%, and functionality by 44%. 13% of respondents cited online networks,

Figure 13. Factors That May Influence the Adoption of STs Among OAs in Windhoek



(Source: Fieldwork, 2022)

Figure 14. Factors Encouraging Future Use of Smartphones



(Source: Fieldwork, 2022)

33% enjoy smartphones, and 32% felt they were safe. Only 5% of respondents indicated that there were no encouraging factors and that they will never adopt smartphone technology.

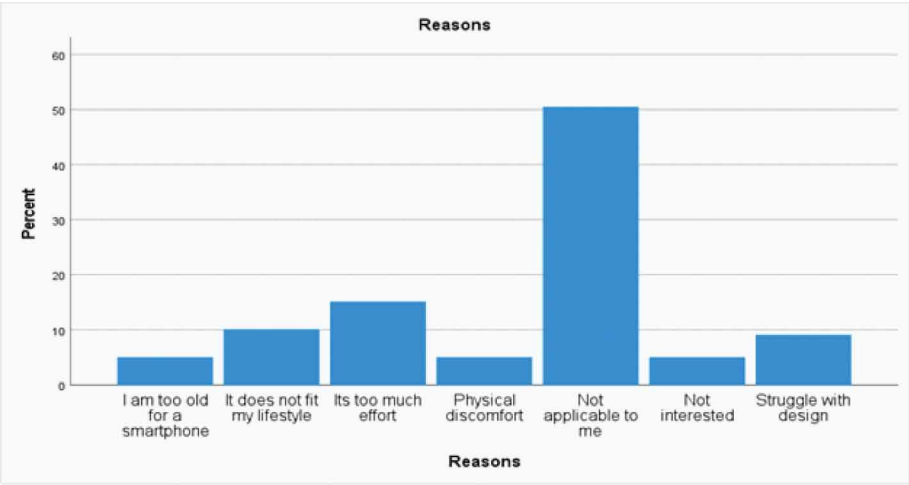
Reasons for Not Using a Smartphone

Figure 15 shows that the most stated reason for not using the device turned out to be that because they did not use the technology therefore the question did not apply to them. Some indicated that it's too much effort to use the technology, others mentioned that the device does not fit into their lifestyles, some struggled with the design, whilst others felt that they were too old to adopt the technology. Some statements were not selected and therefore not indicated in the figure.

Factors That Can Improve the Adoption of Smartphone Technologies

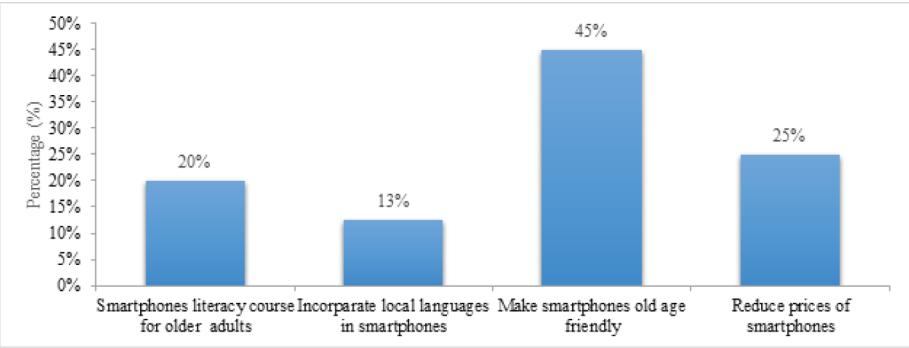
In Figure 16, it can be seen that in order to improve the adoption of smartphone technology, 45% of respondents would like to see more age-friendly smartphone devices, 20% indicated they liked smartphone literacy courses, 13% would like local languages on their smartphone to be introduced, and 25% thought that the cost to acquire a smartphone should be reduced 25%.

Figure 15. Reasons for Not Opting for a Smartphone



(Source: Fieldwork, 2022)

Figure 16. Factors to Improve Smartphone Technologies



(Source: Fieldwork, 2022)

Hypothesis Testing

Pearson's correlation coefficients were calculated to analyse the connection between older persons' perceptions of smartphone adoption and smartphone features. Based on the results of the analysis, and as seen in Figure 17, the H_1 hypothesis was confirmed by a coefficient of 0.748 at a significance level of less than 0.01. Therefore, the study concludes that ST features are related to perceptions of Windhoek OAs with regard to the adoption of smartphone technology. The study rejects the H_0 hypothesis. There is no relationship between the ST features and perceptions towards the adoption of STs by OAs in Windhoek.

A relationship diagram was also used in this study to establish how variables are linked to one another. Black circles shown in Figure 17 represented statements of perceptions. Whereas the blue circles represent the variables (features of the smartphone). The larger the circles, the stronger the influence is on the variables. Links between the circles represent the strength of the influence between notes and variables. Thicker links represent stronger connections and influence. Thinner links represent weaker connections and influence. The respondents who have indicated that they find the device light and convenient appear to be enjoying utilising the device to access the internet.

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Introduction

This section now concludes this research study after presenting the objectives, the literature review, the research methodology, the findings, interpretations, and discussions.

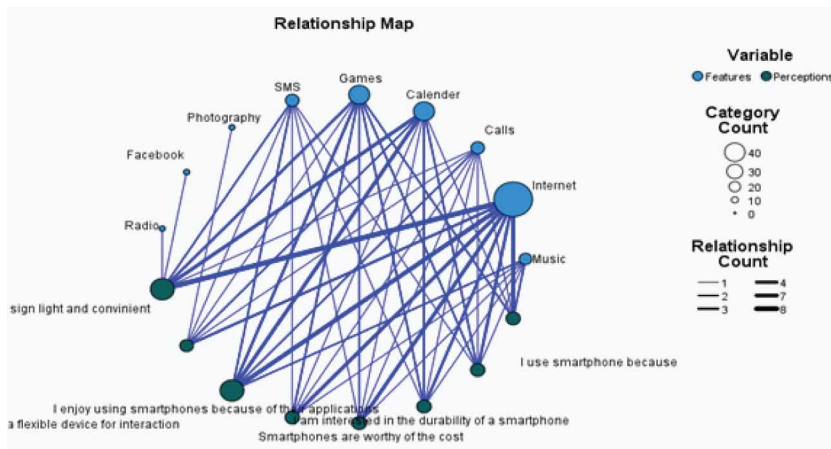
Summary of Key Findings

Overall, the study concluded that OAs adopt smartphones because they have the necessary expertise, time, and money. They also believe smartphones are easy to use, provide benefits such as entertainment, and fit with their lifestyles.

Objective 1: Analyse OAs Perceptions Towards the Adoption of STs in Windhoek

The study determined that the features of smartphones play an important part in catching the attention of elder adults. The study reveals that smartphones were found to be flexible for OAs and that OAs

Figure 17. Relationship Map



(Source: Fieldwork, 2022)

perceive smartphones as light and convenient devices. OAs enjoy using their phones because of the applications on the device. OAs are found to be less interested in the durability of the device and do not agree with the statement that smartphones can improve communication.

Objective 2: Establish the Features of STs Used by Older Adults in Windhoek

The study reveals that the majority of participants were comfortable using their smartphones. However, it was established that OAs only utilise the primary features and shy away from fully utilising the technology features. There were concerns regarding the inclusion of features not utilised by the elderly folks. It is also cited that such features should be replaced with more appealing features. These could include features like emergency buttons, larger screen sizes, hearing aid compatibility, voice commands, face recognition, etc. The study established that the use of the international language was not a barrier to usage. Findings further indicated that devices can be tailor-made and applications can be paid for as the user needs them or acquires new skills.

Objective 3: Assess the Possible Factors That Influence the Adoption of STs Amongst OAs in Windhoek

The study revealed a rise in ownership of smartphones among OAs. It is noted that although there are benefits to an individual's ownership of smartphones there are also disadvantages (Busch et al., 2021). Findings further revealed that older folks enjoy benefits such as quick access to information on their device, easy-to-text features, easy-to-navigate screens, and much more. However, findings showed concerns regarding the price of the device. The study noted that the four factors mentioned by most respondents that influence the adoption of smartphones amongst the older generation were the price, brand, appearance, and features. Price surfaced as the most critical criterion influencing older individuals' real choice of acquiring a smartphone. The study further concludes that the cost of a smartphone has a considerable impact on elderly people's desire to use technology. The brand appears to be the second influencing factor. Many Chinese brands that were introduced to the market raised concerns in the elderly market. Technology is far too complicated, and it has been proposed that simpler technology might be ideal for the elderly. Kuerbis et al. (2017) indicated that older people welcome and utilise technology. Ease-of-use also stood out as one of the influencing factors. The elderly appear to avoid using the more complex functions.

Conclusion

Our findings revealed that more OAs are adopting smartphones rather than ordinary cell phones. However, the older folks show no interest in fully embracing them. Older folks are still engaging with their cell phones at a quite primary level for conversing. Although the majority (92%) of respondents use smartphones, many are dissatisfied with them. It is important to consider the factors that contribute to not enjoying using smart mobile devices to minimize the likelihood of future abandonment of mobile technology. This study reveals that older people do not want to put in much effort to stay up with new technologies. When it comes to smartphone applications, usability is critical (de Oliveira et al., 2021). Studies have indicated that smartphone application usability concerns are broadly shared among the elderly. When technology is viewed as simple to use or specifically created for them, OAs welcome and accept it (Ameen & Willis, 2015). As a result, many elderly folks prefer the most basic technological versions over the most advanced. Three sources of influence for technology adoption among OAs have been identified by the literature. Tsertsidis et al. (2019) cite family, friends, and institutions as sources of influence. This study looked at the sources of influence and revealed that with societal interest, OAs may feel pressured to use a smartphone. 87% of respondents indicated that their source of influence was friends and

family, meaning that social influence has a strong influence on the use of the smartphone. The study also found that loneliness is a strong predictor of smartphone purchases among older adults. OAs seek social relationships to gain social status and create effective connections, regardless of their personality types (Jeong et al., 2016). Loneliness is more common among elderly persons than in other age demographics (Mahapatra, 2019).

The study further concluded that lack of experience and guidance is the main obstacle to the adoption of STs among elderly people. OAs claimed to have purchased services (such as Netflix) that they never used since they couldn't figure out how to utilise them. The study also concludes the main impediment to OAs using mobile technology is the same as it is for the general population (cost). The cost of a smartphone device significantly impacts older people's willingness to use technology (Kuerbis et al., 2017). Those on government pensions may not be able to afford even basic devices, let alone the most advanced smartphone models.

RECOMMENDATIONS

Recommendations for the Industry

What Can Be Done to Improve the Adoption of Smartphones Among Elderly People?

The study recommends that stakeholders such as application developers, smartphone manufacturers, etc., use the findings to improve smartphone applications that help elderly individuals learn new things. To improve the quality of life, health, security, well-being, and independence of the OAs, the technological goal must be clearly stated and made known to the OAs. Lastly, smartphone manufacturers should consider lowering the cost of smartphone technologies to make them more available to a greater spectrum of older adults with diverse socioeconomic classes. This will allow a larger proportion of the aging population to reap these potential benefits.

What Could Be Done to Minimize Elderly People's Lack of Knowledge Regarding Smartphone Technologies?

The study reveals some of the obstacles that have kept some of the elderly from using smartphones. These can be summed up as a lack of expertise, a lack of awareness about the benefits of smartphone use, the complexity of use, and fear of difficulty that may be encountered while learning to use the device. The study recommends that user manuals should be written in layman's terms, with easy step-by-step instructions, so that an elderly person can refer to them as often as needed. In the longer term, as more elders utilise smartphones, mobile media literacy programs should be considered to assure success, which will also have a good impact on raising seniors' skill levels, allowing them to be employed in a more diverse variety of jobs. It is also recommended that local trainers and experts be made available to provide innovative technology training and education to assist OAs in acquiring knowledge that will inspire them to use innovative technologies.

Recommendations for Further Research

For academia, there was little significant research to be found on smartphone adoption in general when this study focussed on Windhoek was conducted. By referring to the results of this study, a new study could be expanded to the entirety of Namibia to provide a further dimension. Furthermore, the study's future trajectory should incorporate quantitative features as well as data collection methods suitable for a qualitative study, such as interviews, observations, or focus groups. This would result in a better understanding of smartphone adoption among older adults. In terms of advancing technology, more research could be done focusing on other devices such as tablets and iPads. Future studies could also look into smartphone use for specific goals, such as healthcare.

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