

In examining the research population, the data indicates that lack of awareness was a contributing factor as to why participants are not adopting and using mobile applications. In this study, awareness of an application refers to the knowledge that people have of the existence of an application. In this regard, what the data indicates is that many participants did not know about a mobile application for diabetes self-management before the interview commenced. This, in turn, has resulted in a negative effect on their ability to adopt and use mobile applications. For example, participants stated,

“No, I never knew it existed. This is the first time that I hear about that application” (59-year-old female)

“First time I saw it yesterday when you sent me the screenshots” (42-year-old female),

“I wasn't approached by anybody or, didn't have an app, like you the first person talking to me about an app on my phone” (60-year-old female)

and

“No one told me about a diabetes app. I am hearing about it for the first time from you. If I knew about it, I think I would have checked it out” (51-year-old female).

Likewise, many other respondents shared a similar view that they were clueless about the existence of a mobile health application. The literature indicates that uncertainty avoidance would have a negative influence on technology use (Lai et al., 2016). In this population, this is the case too. The data therefore suggest that social advocacy as an uncertainty avoidance related concept has a negative impact on mobile application adoption.

The second notion of culture identified in the data in this section is application assistance availability.

In examining the research population, the second notion of culture identified in the data is application assistance availability which is linked with the concept of lack of skills. As mentioned previously, participants in this research population are not technologically advanced and thus are not aware of an application. Examples of responses that demonstrate the latter are:

“I was not born in the digital age” (59-year-old male)

and

“I'm fifty-nine and technology is not my strong point” (59-year-old female).

Although participants were not aware of a mobile application, support in application use is available. The evidence reveals that for both male and female participants', support is readily available for respondents should they need it. What the data indicates is that for many participants, immediate family such as children and spouse are available. For example, participants stated,

“My kids, around me, is quite savvy where apps and mobile phones and stuff is concerned, so I know they will be able to assist me, should I get to a roadblock or whatever, you understand” (59-year-old male),

“My husband is available. He is more tech savvy than me so he would be able to go through the app and explain to me what I need to do and where I need to go on the app to actually do... get the outcome I need” (42-year-old female) and

“my kids know everything so they will show me how to do it” (46-year-old male).

Likewise, other respondents had similar views that should they require assistance, their first point of call would be their immediate family as they are always around and are viewed as more technologically advanced than them. The notion of social advocacy as an uncertainty avoidance concept indicates a positive effect on mobile application adoption. As such participants are more likely to use a mobile health application for diabetes self-management.

4.9 The role of long-term orientation and short-term orientation on the value of the price of mobile applications on adoption and use

According to Venkatesh, Thong & Xu (2012), price value is defined as “consumers’ cognitive trade-offs between the perceived benefits of the applications and monetary costs for using them” (Venkatesh, Thong & Xu 2012:161). Hofstede, Hofstede & Minkov (2010) state that long-term orientation is “the fostering of virtues oriented toward future rewards—in particular, perseverance and thrift” (2010:239). In this study, price value and long-term orientation refer to the way in which the perceived benefit and the cost of using an application have an influence on diabetic patients’ willingness to preserve and save. It should be noted that White South Africans scored low in this dimension, suggesting that they exhibit greater respect for tradition and a moderately insignificant propensity to save for what is to come (Hofstede, 2019). It is also noteworthy to mention that the price value is positive when the value of using an m-health application is observed to be better than the associated financial cost (Huang & Kao, 2015).

The foregoing paragraph frames the findings in the following section in which five concepts

emerged from the data: saving-low priority, thrift, willingness to persevere, tradition and pricing of application.

4.9.1 Monetary Mindset

In this study, *monetary mindset* refers to a persons' beliefs and attitudes about how they make financial decisions daily.

In long-term orientation cultures, individuals have the tendency to centre more on future rewards (Lu et al., 2017). In this population this is not the case. The outcome of the analysis reveals that saving money for future rewards is seen as a low priority to this population, even though working is a means of survival for these respondents. This study is dissimilar to literature because in this population, many people do not have the luxury to save money. Some participants are living off social grants that is used to feed their entire family, while others are working pay check to pay check. In this regard, what the data indicates is that for many, saving money is not an activity they can actively participate in. Participants stated that although saving is important, it is not a priority as there is no money to save for a mobile health application. This is demonstrated in the extracts below:

“Very important but I can't, I cannot because there isn't to save” (60-year-old female),

“If I could save at this point in time. Saving is not an option uhm whatever comes in must go out again” (46-year-old male) and

“So, there's no savings that I can say that I've got savings. I'm gonna take from the savings and buy that and that. I'm living from one month to the next month” (59-year-old female).

These respondents all had similar views that saving money is not attainable for them. This indicates that participants are of a low long-term orientation society. In the context of mobile banking adoption, Baptista & Oliveira (2015) found that low long-term orientation had a strong and negative moderating effect. In line with this research, this is found to be the case too.

The notion of saving as a low long-term orientation category resulted in a negative impact on mobile applications. As such participants may not be able to use mobile applications to self-manage their diabetes in the future due to not being able to save money.

The second notion of culture identified in the data is *thrift* which was found to be linked with the

concept of saving money. Thrift is identified as using money and resources carefully and not carelessly.

In this research population, saving money is not a priority as there is barely enough money to survive. Many respondents mentioned that they do not have money to waste in downloading a mobile application. What the data indicates is that for older respondents, their government grant (pension) is their only means of income. In addition, other respondents indicated that providing for their family financially is more important to them. This indicates that participants would rather spend money on what they perceive to be important. In this case, it is not a mobile health application. This suggests that their circumstances are what urge participants to use their money carefully in order to survive each month. Some participants stated that there is no future to save for. However, they have to use their resources sparingly to uphold a healthy lifestyle. Examples of responses that demonstrate the latter are:

“It's not really important because I'm old already, I don't have a future to save for also, pension is very little. I try to live within my means and spend money on keeping me healthy” (65-year-old female),

“I don't have money to waste. I would rather spend money on food, healthy fruits and vegetables than on that” (65-year-old female)

and

“Look, I am alone, I am a pensioner, so I have to, and the things are very expensive out there, so I have to monitor myself with costs” (65-year-old female).

Likewise, for other participants, spending money and resources carefully were not based on living a healthier lifestyle but more for providing for their family. It was previously mentioned that breadwinner obligations were a significant factor in this research population. For example, what the data shows is that paying for a mobile application is not a priority for participants. Their main concern is seeing to the needs of the family and household. This is summarised in the following quotations:

“No, well I have a family that I have to consider so for me to go pay for something where I can put a bread on a table that it” (46-year-old male),

“Well, very important because I have got a bond to pay and the light needs to burn, food needs to be put on the table” (43-year-old male) and

“It is very important but because of the life I live I have to spend my money I got to see to a household and my children” (51-year-old female).

In relation to the notion of culture, this study’s population sample comprises a low long-term orientation culture. Literature indicates that low long-term orientation plays a significant moderating role when studying technology acceptance and use at the individual level (Hoehle, Zhang & Venkatesh, 2015). The notion of monetary mindset as a low long-term orientation concept indicates a negative impact on mobile applications. As such participants are less likely to use a mobile health application for diabetes self-management as saving is, a low priority and thrift is an important factor.

The third concept in relation to monetary mindset, from a culture perspective, is the willingness to persevere. In this study, the *willingness to persevere* is defined as continuing to use a mobile health application even if it may be difficult to use.

The data indicates that many of the participants are not using mobile applications for their diabetes self-management. Although participants are not using mobile applications as yet, respondents perceive that using a mobile application will be beneficial to them. For example, a participant stated that,



“Yes, I wouldn't have leave it, because it's no use going into the diet app, in my concern, and at the end of the day it will help you. So I don't think why will I leave it [the app], even if it's a little bit difficult” (61-year-old female),

“In the beginning I don't think it will be easy but as time goes on it will be easier to use because by then I would have played around with it and figure it out as time went on” (51-year-old female) and

“I think the more I play with it, the more the more I'll know how to use it and use it properly to my advantage” (42-year-old female).

Likewise, other respondents shared similar opinions. This indicates that respondents would continue to use an application even if it is difficult at the beginning as they believe that using an application will provide them with benefits. Literature indicates in the context of learners’ voluntary technology adoption that long-term orientation would have a positive influence on technology use and intention to use (Lai et al., 2016). In this research population, this is the case too. The data therefore suggest that the notion of monetary mindset as a long-term orientation concept has a positive impact on mobile application adoption.

4.9.2 Traditional mindset

According to Venkatesh, Thong & Xu (2012), price value is defined as “consumers’ cognitive trade-offs between the perceived benefits of the applications and monetary costs for using them” (Venkatesh, Thong and Xu, 2012:161). Hofstede, Hofstede & Minkov (2010) state that short-term orientation is defined as “the fostering of virtues related to the past and present—in particular, respect for tradition, preservation of face, and fulfilling social obligations” (2010:239). In this study, price value and short-term orientation refer to the way in which the perceived benefit and the cost of using an application have an influence on diabetic patients’ traditions and values. In individualistic societies, service quality and prices play a significant role in driving consumers’ financial decision-making (Zheng et al., 2013).

The foregoing paragraph frames the findings in the following section in which two concepts emerged from the data: tradition and pricing of application.

In this study, *the traditional mindset* refers to behaviour and attitude implemented over a period of time which are shaped by an individuals’ culture. This indicates that change occurs; individuals may be resistant to getting on board.

In examining the research population, the data indicates that elderly participants are more traditional in the way that they seek information. As mentioned previously, participants prefer going to the doctor than using an application. For example, participants stated that,

“I’m more old school, I like the traditional way of visiting my doctor, where my health is concern” (65-year-old female) and

“I am very old school I just...the only thing I really kept are a record of my blood sugar so that I..if anything could go wrong, I can atleast give that to my doctor and say, this is what the sugars look like over the past two weeks” (57-year-old female).

These respondents and many others had similar views that they prefer the traditional face to face consultation with their doctor than using a mobile health application. This indicates that this society forms part of a high short-term orientation culture. This is similar to Hofstede’ view of culture where White South Africans scored low in long-term orientation (Hofstede, 2019) as they prefer to uphold traditions and are sceptical about change. This indicates that the participants will follow the traditions of their society in terms of managing their condition and in this case, face to face consultations with their doctor.

The second notion of culture identified in the data is the *pricing of application* which was found to be linked with the concept of traditional mindset.

Short-term orientation societies put great importance on attaining rapid results. Consequently, they would give more consideration to the utility and ease of use of new technologies as ways to improve their performance quickly (Lu et al., 2017).

In examining the research population, what the data indicates is that pricing of application emerged as a concept. In this study, the pricing of an application refers to the data service carriers' costs (mobile internet) and service cost associated with using a mobile application. What the data shows is that participants would not necessarily consider downloading mobile applications that they have to pay for. In addition, the data reveals that they feel that there is a variety to choose from, so why should they download mobile applications that have an associated cost when they might be able to download another one at no cost. Examples of responses that demonstrate the latter:

“No, I don't think I've ever downloaded an app that cost me money. I steer clear from those kinds of apps, any app that has a cost involved” (53-year old male),

“There's many apps available that you don't pay for so I don't see the need to download one that I need to pay for” (42-year-old female).

The literature indicates that the price value is positive when the benefits of using mobile applications are perceived to be greater than the associated monetary cost (Baptista & Oliveira, 2015). In this research population, this is the case too. While delving deeper into the data, it was found that other participants would pay for a mobile application. For example, what the data indicates is that when participants find an application that adds value to their life and offers what they need, they will pay the application. For example, participants stated,

“If you've got good reviews on it and if you feel that it would add value to your life then why not” (50-year-old male),

“Not necessarily, I will first check if there are free apps that have the same purpose before spending money unnecessary” (51-year-old female) and

“I don't know hey, depending. I would have to go through the apps and see what it offers for me and if that is the one I want before I decide to pay for it” (57-year-old female).

Likewise, participants shared the same views that if the value is greater than the cost of downloading the mobile application, they will use it. The data therefore suggests that the notion of traditional mindset as a short-term orientation related concept has a positive impact on mobile application adoption.

4.10 The role of indulgence on the habits of users and non-users' mobile applications on adoption and use

According to Venkatesh, Thong & Xu (2012), habit is the “extent to which people tend to perform behaviours automatically because of learning” (Venkatesh, Thong & Xu 2012:161). Hofstede, Hofstede & Minkov (2010) state that indulgence refers to a “society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun” (2010:519). In this study, habit and indulgence refer to when people make the decision automatically because of learning, and when that decision is one that satisfies them. In addition, the way in which the choices are taken by diabetic patients has an influence on self-care activities. The literature indicates that price consciousness is strong in cultures with high masculinity (e.g., White South Africa and Canada), as masculine cultures stress goals such as careers and money (Hofstede, 2001).

The foregoing paragraph frames the findings in the following section in which two concepts emerged from the data: choices and manage diabetes better with applications.

4.10.1 Personal regulations

In examining the research population, the outcome of the analysis reveals that the decision-making process is entirely up to the individual. The literature indicates that this society permits the fulfilment of ones' desire. In this study, choices refer to participants making their own decisions on whether or not they would adopt a mobile application.

The data, in this study, shows that the opinions of others do not have an influence on whether participants adopt and use a mobile health application for self-care activities. In this regard, what the data indicates is that it is their own decision whether they use a mobile application and whichever decision they make, they are free to do so. For example, respondents stated that,

“I make my own choices, my children can't tell me what to do it's my body and my health” (65-year-old female),

“I prefer making it on my own because the doctors already advised me at the beginning. They only need to tell you once. They don't need to repeat themselves” (50-year-old male) and

“Uhm, I will do it on my own. I do ... I will, I will speak to my doctor but I basically make it on my own because I take it how I feel. I know my body” (44-year-old female).

Likewise, these respondents and others shared the same view that as it is their body, the decision on whether to use a mobile application is their choice. Even though participants consult their doctor, the decision lies with them.

In relation to the notion of culture, this study's population sample comprises a high indulgence society. The higher the indulgence in the society, the more frequently (willing) participants will use mobile applications for their diabetes self-management. A high indulgent society is more likely to adopt and use a mobile application to gratify their desires and impulses. Based on the data, the notion of the category choices as an indulgence concept indicates a positive impact on mobile application adoption.

The second concept in relation to personal regulations, from a culture perspective, is managing with an application.

In examining the research population, the data indicates that participants are not users of mobile applications for diabetes self-management and thus could not form a routine behaviour that tends to occur subconsciously.

The literature indicates that in order to develop a habit, a certain amount of repetition or practice is required from the individual. Therefore, to explore the role of habit, participants should have experience in using the technology. Thus, we can concur that habit only develops once repetition occurs.

In this study, the impact of habit was only explored amongst current users of mobile applications for diabetes self-management. It should be noted that these are young adults. The evidence indicates that application users found that managing their diabetes with a mobile application is beneficial. Furthermore, it was found that participants felt as if they were in control of their condition and in turn, using a mobile application became second nature to the user. For example, the participants stated:

“I do think that I manage my diabetes better when I use the app because I can take all the things, I do such as my eating habits and medication intake, like you call it self-care activities” (30-year-old male),

“Became like a second nature kind of thing like when I tested my sugar, I would go to the application and then input the data” (35-year-old female) and

“it makes you feel like you’re in control of you diabetes... uhm... makes you feel like you’ve got your shit under control here” (35-year-old female).

Likewise, all these participants shared the same views that using a mobile application is more useful than the traditional way of managing their condition. This, in turn, has resulted in a positive effect on their ability to adopt and use mobile applications.

4.11 The role of individualism on the hedonic motivation of users and non-users’ mobile applications on adoption and use

According to Venkatesh, Thong & Xu (2012), hedonic motivation is defined as “the fun or pleasure derived from using a technology.” (Venkatesh, Thong & Xu, 2012:161). As stated by Hofstede, Hofstede & Minkov (2010), individualism refers to “societies in which the ties between individuals are loose: everyone is expected to look after him- or herself and his or her immediate family” (Hofstede, Hofstede & Minkov, 2010:92). In this study, individualism and hedonic motivation refer to the way in which the pleasure of using an application has an influence on diabetic patients’ willingness to use it. It should be noted that hedonic motivation is linked to an individuals’ willingness to adopt a mobile application. The literature indicates that hedonic motivation has been found to influence technology acceptance and use (Venkatesh, Thong & Xu, 2012).

The foregoing paragraph frames the findings in the following section in which four concepts emerged from the data: application is fun, the application is enjoyable, age and application is challenging.

4.11.1 Perceived enjoyment

In this study, *perceived enjoyment* refers to the excitement and happiness derived from using a system (Praveena & Thomas, 2014) and in this case a mobile application. It therefore refers to hedonic motivation experienced when using a mobile health application.

While examining the research population, the outcome of the analysis reveals that mobile

application users found using an application to be fun.

The first notion of culture identified in the data is *application is fun*. The evidence indicates that respondents find mobile application fun to use. In this regard, what the data indicates is that a majority of mobile application users are both intrinsically and extrinsically motivated to use a mobile application. For example, mobile application users stated that an application was enjoyable as they felt as though they accomplished their goal. In addition, others indicated that an application was fun as it provided a step-by-step guide on how to complete exercises correctly. For example, the participant stated,

“I think sometimes the area in medical is not really entertaining, but definitely fun. Fun in a sense of... uhm... or more like accomplished. You felt like you had accomplished something when you have filled out all your readings and food units for the day... uhm... and insulin dosage”(35-year-old female),

“It gives you like this unicorn that would jump across the screen if you've finished it, and it also like sends you like points... uhm... if you completed it like for like the last seven days and... uhm... you get an email to say like, “Hey [participants name], you've finished the last fourteen days. This is what your sugar should be looking like,” and send you a report of what you've been doing for the last two weeks. So that was really cool. It was like fun”(35-year-old female) and

“It was very fun. Yeh, all the exercises. There's different stuff that I didn't know about that's on the App. Like different kind of exercises and they give you advise as well on how to do it and they show you like different, how you shouldn't be doing certain exercises because you could hurt yourself”(25-year-old female).

An interesting finding was that although a majority of the mobile application users found an application to be fun, one participant indicated that, using a mobile application for diabetes self-management is not fun due to the fact the participant has to record all their information on an application. This finding could be due to this participant having breadwinner obligations and thus finding it difficult to track their progress and fulfil his breadwinner obligation. For example, a participant stated,

“Regarding my sugar app, uhm it wasn't fun because everything I ate I had to record on the app”(30-year-old male).

From the findings above, the data indicates that for mobile application users, hedonic motivation is a contributing factor to continuous intention to use an application. The literature indicates that

perceived enjoyment had significant positive effects on the perceived usefulness. (Mehra, Paul & Kaurav, 2020). This suggest that before users make the decision to adopt a mobile application, they would evaluate whether the application is better compared to the alternatives of such applications (Mehra, Paul & Kaurav, 2020). As these respondents are from a high individualistic culture, finding mobile applications intrinsically useful is associated with hedonic motivation.

The second notion of culture in the study is application is enjoyable.

In examining the research population, the outcome of the analysis reveals that although the majority of the participants are not using mobile applications, they perceive that it will be enjoyable as they will be learning something new. For example, they will be learning how to use the application and in turn, the more they use it, the more joy they would find in it. This, in turn, has resulted in a positive effect on their ability to adopt and use mobile applications. For example, participants stated that,

“Because the more you use it, the more skilful you will become and the more you will enjoy it and Also, trust in it. It will become you way of life by using the app” (51-year-old female),

“It will be fun using it. It will, maybe, enjoyable too, if I get used to it” (65-year-old female) and

“It will be fun and very interesting to see you know if I was a... if I’m right or you know, if it has a... the effect, if it, if it works for me, if it doesn’t work for me. So, that will be very eager ... It will probably be more interesting to see what is the results” (44-year-old female).

Likewise, other respondents had similar views that using a mobile application will be fun and enjoyable. In addition, high individualistic cultures will adopt and use mobile applications as they are intrinsically and extrinsically motivated to do so.

4.11.2 Negative drivers of application use

In examining the research population, what the data indicates is that age is a contributing factor that influences the adoption and use amongst elderly participants.

The literature indicates that younger adults are more experienced in using mobile applications as they were raised in the digital era. This finding is prevalent in the research population. Participants mentioned that since they are from a younger generation, using a mobile application

is easier and would not be interesting for someone from an older generation. This is summarised below:

“I’m from the younger generation who knows how to work a cell phone. So, having the skills made it much easier” (30-year-old male),

“I think that yes. Because if I have to show my mother this app. It just wouldn’t interest them. It’s because I know how to use the app” (25-year-old female),

and

“I am quite tech savvy...so it’s easy, but I think the app itself is easy. It’s very self-explanatory” (35-year-old female).

In this research population, age was a contributing factor whether participants would adopt and use mobile applications. The data indicate that participants perceive their age to affect their adoption behaviours. Many participants stated that they are pensioners and that using a mobile application would not be an activity they could afford or be interested in. Example of respondents that demonstrate the latter are:

“I think an app will be unnecessary for someone my age” (65-year-old female),

“I’m old and I won’t be able to remember everything” (65-year-old female)

and

“I’m fifty-nine and technology is not my strong point. [laugh]” (59-year-old female).

The second notion of culture in the study is application is challenging, which is strongly correlated to age.

In examining the research population, the data indicates that age was not the only issue. Participants felt that using an application would be challenging and thus would not motivate them to use an application. They were not born in the digital age and thus saw no need to use an application. Example of respondents that demonstrate the latter are:

“I think it’s more for the younger generation. I would be keen to try uhm like I said, but it’s so difficult” (65-year-old female),

“It will be challenging for me to try new technology” (65-year-old female).

If individuals deem the technology to be beneficial and effortless, they are more likely to accept

and use it (Tarhini et al., 2017). The notion of age as an individualistic related category has resulted in a negative impact on mobile application. In this study sample, this indicates that due to age, participants are less willing to use a mobile health application for diabetes self-management.

4.12 Chapter summary

The purpose of this chapter is to provide the results and the discussion of the main findings based on the literature, in relation to the research objectives. Simply put, the findings provided answers to the main research question, the research objective and were linked to the literature.

To study technology and how people use it, cultural differences need to be considered. How culture influences technology acceptance is context-bound and cannot be transferred from one culture to another. Based on Hofstede's cultural dimensions in South Africa, White South Africans scored high in individualism, masculinity and indulgence (Hofstede, 2019) and this is consistent with this study as this research population also forms part of a high individualism, masculine and indulgence society.

Hofstede's cultural dimensions and the UTAUT2 model were central to this study. A juxtaposition of these models answered the objective "to determine which cultural factors affect the acceptance and use of m-health for diabetes self-management". Most of Hofstede's cultural dimensions were identified in this study. However, in terms of Hofstede's cultural dimensions, habit was not significant in these findings as many of the research population in this study are not using m-health applications and thus could not form a habit to use m-health applications. "Habitual behaviour is the best predictor of subsequent technology use of applications used on a daily basis" (Tamilmani, Rana & Dwivedi, 2020:12). However, in this study, a minority of the participants are not using mobile applications for diabetes self-management and thus habit as a construct could not be analysed as it is not prevalent amongst this research population.

In addition, these participants may prefer to use traditional means of information seeking as opposed to using a mobile application. Evidence (e.g., Vaportzis, Clausen & Gow, 2017) reported that younger participants are more likely to use technology than older adults as the young form part of the digital age.

The researcher used the theoretical framework to develop a conceptual framework to describe

the findings. The findings provide detailed information to explain culture and technology adoption of diabetic patients. The findings were validated through a qualitative evaluation of research e.g., thick descriptions.

In the final chapter, a summary of the main findings of this research will be presented. Furthermore, Chapter 5 will present the relationships developed between the two models and highlight the research process, potential limitations, contributions of this research and directions for future research.



Chapter 5: Conclusions and recommendations

5.1 Introduction

This chapter concludes by providing an overview of the previous chapters, including the findings of the research. The conclusions were based on the aim, research questions and the findings of this study. Moreover, this chapter describes the contributions of this research. It also undertakes an evaluation of the research. This chapter also examines the implications of the research findings and provides several recommendations for future research. Lastly, the chapter presents a research framework. The framework explains the relationship between the Unified- Theory of Acceptance and Use of Technology 2 and Hofstede's cultural dimension. This framework is the basis upon which the final conclusions of the study are based.

5.2 Reflection on the research process

The study set out to achieve the following objectives:

- To identify which user acceptance models are appropriately aligned to a study of culture
- To derive a framework that defines the concept of culture
- To determine which cultural factors affect acceptance and use of m-health for diabetes self-management.
- To recommend interventions that might lead to improvements in m-health acceptance for diabetic patients.

This study addressed the research questions through a case study research design. The use of a case study was most suitable for this study as it answered that 'what' and 'how' questions and it allowed for the development of context-rich knowledge on the phenomena while it examined the phenomenon in its natural setting. The data collection was accomplished through semi-structured interviews. The data analysis was done using thematic content analysis. Furthermore, validity was achieved following qualitative research validity – credibility, transferability, dependability and confirmability.

5.3 Summary of research findings

In this section, the researcher summarises (Table 11) and reflects on the main findings (Appendix E: example of an interview transcript on page 165).

Table 11: Alignment of technology adoption concept with culture

Theme	Findings
Performance expectancy in relation to masculinity-Femininity	<p>Breadwinner influence, which reflects masculinity, has a negative influence on users as a result of work is their main priority. In this population diabetic patients have to work in order to survive which indicates that anything else is simply not a priority and more of a time-consuming task.</p> <p>Caregiver influence, which reflects femininity, has a negative influence on users as a result of diabetic patients being responsible for taking care of their family and others are both home carers and providers for their families. This indicates that patients are more concerned with the quality of their life and family than with the adoption mobile applications</p>
Effort expectancy in relation to uncertainty avoidance	<p>Technology impediments, which reflect uncertainty avoidance, has a negative influence on users as a result of declining cognitive capabilities. Technology anxiety has been identified amongst older diabetic patients. These elderly patients found mobile application stressful. While younger patients did not. The distrust in application use has also resulted in a negative influence as a result of personal information being easily accessible by others.</p> <p>Technology convenience, which reflects uncertainty avoidance, has a positive influence on users and non-users as a result of many mobile applications existing which are freely available to diabetic patients. In addition, diabetic patients who are not using mobile health applications would like to adopt a mobile application that is suitable for their needs. This indicates that diabetic patients would search for an application that is easier to use as opposed to abandoning an application in its entirety.</p>
Social influence in relation to power distance	<p>Medical practitioner influence, which reflects power distance, has a negative impact on users and non-users as a result of diabetic patients preferring their doctor. This indicates that diabetic patients are less likely to adopt and use a mobile application if their doctors do not inform them about it or if they perceive that their doctors would not be in favour of them using mobile applications for self-management activities.</p> <p>Opinions towards medical practitioners, which reflects power distance has a positive impact on users and non-users. Diabetic patients comply with the opinions of their doctors as they fear disagreeing with them. As such, this may result in having a positive influence on a participant's ability to adopt and use mobile applications. This indicates that if their doctors inform them about a mobile application, they would adopt it.</p>
Social influence in relation to individualism-collectivism	<p>Individual responsibility, which reflects individualism has a positive influence on users and non-users as a result of prioritising their own interests rather than the opinions of important others in their society, which indicates that they would adopt and use mobile health applications.</p> <p>Individual responsibility, which reflects individualism has a negative influence on users and non-users, as a result of some diabetic patients not seeing the benefit of adopting an application. This indicates a negative attitude towards adoption and use of mobile applications</p> <p>Social cohesion, which reflects collectivism has a positive influence on users and non-users as a result of social support and support groups that exists. As such participants are more likely to use a mobile application for diabetes self-management.</p>

Theme	Findings
Facilitating conditions in relation to uncertainty avoidance	<p>Predisposing factors of avoidance, which reflects uncertainty avoidance has a negative influence on mobile application adoption. Diabetic patients indicate that using mobile applications can be a stressful activity due to cyber-crime and unsafe communities where they reside. A fear of uncertainty may result in resistance to adopting the technology.</p> <p>Social advocacy, which reflects uncertainty avoidance has a negative influence on users and non-users as a result of diabetes patients having a lack of awareness of the existence of mobile applications. This indicates that diabetic patients may not adopt mobile applications.</p> <p>Social advocacy, which reflects uncertainty avoidance has resulted in a positive influence on users and non-users as a result of application assistance that is available. Diabetic patients are more likely to adopt mobile applications when organisational and technical infrastructure exists. Diabetic patients indicated that should they require assistance with using an application, family and friends would assist.</p>
Price value in relation to long-term orientation-short-term orientation	<p>Monetary mindset, which reflects long-term orientation has resulted in a negative influence on users and non-users as a result of saving being a low priority. Diabetic patients may not be able to adopt mobile applications due to being unable to save money. For some participants, money that is generated needs to be spent on necessities and not carelessly. This indicates that diabetic patients will not waste money downloading an application for use. Elderly diabetic patients survive off their pensions and thus cannot save to download a mobile application for use.</p> <p>Traditional mindset, which reflect short-term orientation has resulted in negative influence on users and non-users mobile application adoption. Elderly diabetic patients prefer the traditional way of seeking information as opposed to using a mobile application adoption.</p> <p>In addition, traditional mindset, which reflects short-term orientation has resulted in positive influence on users and non-users as a result of the pricing of an application. Diabetic patients would continue to use an application even if it is difficult at the beginning as they perceive that using an application will provide them with benefits.</p>
Habit in relation to indulgence-	<p>Personal regulation, which reflects indulgence has resulted in a positive influence on users and non-users as a result of a diabetic patients' decision to act on their own choices and desires. Diabetic patients are able to make their own decisions on whether to adopt mobile applications. This indicates that they are more likely than not to adopt and use a mobile application to gratify their desires and impulses.</p> <p>Mobile application users indicated that they manage diabetes better with an application as they felt in control of their condition, this in turn had a positive influence on mobile application adoption.</p>
Hedonic motivation and Individualism	<p>Perceived enjoyment, which reflects individualism has resulted in a positive influence on users and non-users as a result of diabetic patients finding an application enjoyable as they will be learning how to use the application for diabetes self-management.</p> <p>Negative drivers of application use on users and non-users, which reflects individualism are as a result of age and a mobile application being challenging.</p> <p>Elderly diabetic patients indicated that being a pensioner they are unable to afford adopting an application nor are they interested in adopting a mobile application as they feel that it would be challenging and perceives these to be for the younger generation.</p>

The findings (Table 11) indicate that although people make their own choices when adopting mobile applications, diabetic patients also respect the hierarchy of the medical practitioners and they would still consult their family and friends. Even though diabetic patients have the choice of whether they are going to use it or not the choice is influenced by what society deemed as normal. These individuals are influenced by the opinion the doctor, family and friends. People are making their own choices', but they are influenced by social construction, the way society is constructed, societal norms, what societal cues and what society thinks is right. So, if using a mobile application is understood as normal to a society they would adopt and use an application. Conversely, if this study had been conducted 10 years ago these responses would have been very different because socially the norm was not to use cell phones, applications, and social media.

A key finding (Table 11) is that the adoption of m-health is affected by culture because of social constructionism. Diabetic patients are free to disagree with their doctor as they are listening to popular discourse. They are socially constructed as a "know all" opinion of their doctor due to popular discourse because doctors are constructed as the "know best"; the person who knows everything about the body better than the patient itself. If the doctor were the one to inform the patient about an m-health application for diabetes self-management, the patient would be more inclined to use it as the opinion and thoughts of a doctor is valued.

Elderly people prefer to visit their doctor than to adopt and use mobile applications to manage their diabetes. What seems normal for one generation is not necessarily normal for another; in the era we are in now, people are caught in the centre because there are people who are born into technology and then there are others who have been around a long time, and although they have been introduced to technology, they are not use to it and the way they are experiencing technology is different. Some find it challenging to adjust while others are simply not interested to make the transition.

Another key finding (Table 11) is that the adoption of m-health is affected by culture because of individuals' monetary mindset. For diabetic patients in this population, saving money regularly for health care is difficult. These individuals often have daily expenses that they have to account for which undermines long-term savings. Saving money for m-health applications is not deemed as a priority for this research population. Many of these participants are elderly patients who live off government grants in order to survive. These individuals do not have money to spend on what they deem as unnecessary as there is barely

enough money for necessities thus making any type of saving not possible. Therefore, using a mobile application to manage their diabetes is not important as they believe that spending money on healthy fruits, vegetables is more beneficial than on m-health applications.

The seven constructs of the UTAUT2 model help to explain m-health adoption among diabetic patients. In this study, the influence of the constructs on m-health adoption varied depending on the cultural values of the diabetic patients.

5.4 A framework for understanding how culture influences m-health acceptance and use by diabetic patients in previously disadvantaged communities.

The framework depicted in Figure 9 is based on the outcome of qualitative data analysis. The relationships between the Unified- Theory of Acceptance and Use of Technology 2 and Hofstede’s cultural dimensions derived from the coding process where themes and categories have been developed. The relationships between the constructs have been explained in 3.14 (Table 8). This conceptual framework is the researchers view on the phenomenon investigated which was created through synthesizing the analysis.

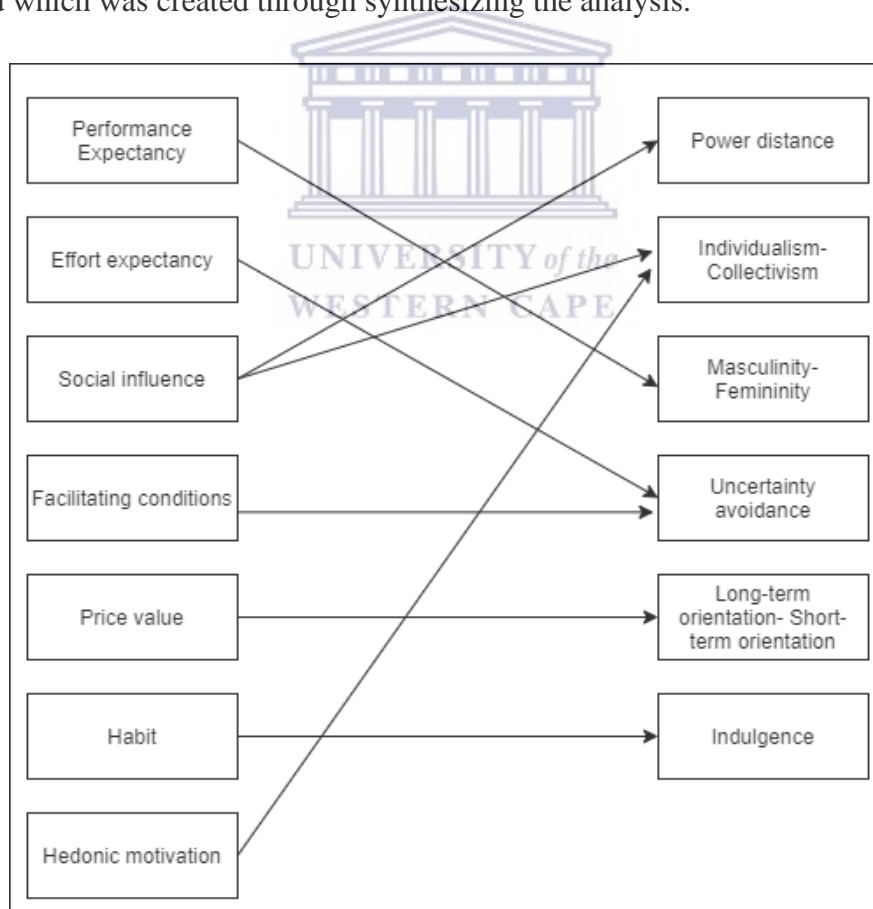


Figure 9: A framework of technology adoption and culture

The researcher merged the UTAUT2 and Hofstede's cultural dimensions to create a conceptual framework (Chapter 2, Figure 7 depicted on page 61) from the extant literature, which was used to examine the research question. This conceptual model provides a retrospective inspection to the theoretical model discussed in the literature review. In addition, the framework depicted above (Figure 9) shows the relationship between technology adoption and culture. The purpose of depicting the relationship between the two is to explain how culture influences technology adoption which is based on the synthesis of analysis in the previous chapter. In addition, the value of this proposed framework would assist application developers as to how cultures influences' m-health adoption for diabetes patients in disadvantaged communities.

5.5 The attainment of the research objective

The research method followed a qualitative approach by first reviewing literature pertaining to technology adoption and culture in relation to diabetes patients. The literature allowed the researcher to develop a deep-rooted understanding of the phenomenon and identify a model and framework to answer the main research question. The section below summarises how the objectives have led to a response to the main research question "*How does culture influence m-health acceptance by diabetic patients in disadvantaged communities?*". Throughout the research process, each of the sub-questions has been answered. The main research question depicted in Table 1, is answered in objective 3 briefly and objective 4- *to recommend interventions that might lead to improvements in m-health acceptance for diabetic patients*, is discussed in section 5.9 and 5.10 and therefore is not discussed in this section. It can therefore be concluded that all the research objectives have been achieved through the research process.

5.5.1 Objective 1

"To identify which user acceptance models are appropriately aligned to a study of culture"

This sub-question was achieved through reviewing literature. A number of user acceptance models were revealed by investigating deeply into the literature. Several of these user acceptance models have been developed in the last decade and a half. In this study, the models were narrowed down to the pertinent models that related to the research question. The models that were defined and discussed are Theory of Reasoned Action (1975), Technology Acceptance Model (1989), Theory of Planned Behaviour (Ajzen, 1991), Unified-Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) and UTAUT2 (Venkatesh, Thong & Xu, 2012). By assessing these models, it was found that the Theory of

Reasoned Action explains less variance in behavioural intention to use technology (Venkatesh et al., 2003). The Technology Acceptance Model can be applied to study m-health acceptance and has been used to study culture (Hoque & Bao, 2015). The Theory of Planned Behaviour has been used to predict self-care behaviours of type 2 diabetic patients (Boudreau & Godin, 2014; Traina et al., 2016), the cultural orientations of individuals (Albar, Anderson & Gallegos, 2015; Arpaci, 2016) and the impact of culture on physical activity (Shukri, Jones & Conner, 2016). The UTAUT model has been used to investigate mobile phone and health application adoption (Cillers, Viljoen & Chinyamurindi, 2017; Hoque & Sorwar, 2017) and espoused culture (Alshare & Mousa, 2014). However, it was found that constructs of this model did not sufficiently explain the low levels of adoption of ICT (Petersen, Pather & Tucker, 2018). Additionally, it has been suggested that focusing on a community, country and culture is a constraint for the UTAUT2 model (Alam et al., 2020). The UTAUT2 has been used in technology adoption and culture studies (Baptista & Oliveria, 2015; Dwivedi et al., 2016). By discussing the prominent models of user acceptance and identifying literature related to the research, the researcher identified that the UTAUT2 is the best model to examine culture and technology adoption by diabetic patients.

5.5.2 Objective 2

“To derive a framework that defines the concept of culture”

To answer this objective the researcher first defined the term culture. Culture is a broad concept and therefore the researcher used definitions of culture given by various authors (Tylor, 1871; Rohner, 1984; Kluckhohn & Strodtbeck, 1961; Hofstede, 1980). By reviewing literature, it was found that culture can be considered at 6 different levels three of which are national, organisational and individual (Hofstede, Hofstede & Minkov, 2010) and culture can influence technology adoption and use. However, there is very little evidence of the influence of culture on technology acceptance at an individual level (Sun, Lee & Law, 2019).

Many cultural models exist however, the researcher discussed the most significant cultural models that are imperative to this research. Trompenaars & Hampden-Turner (1997) and Hofstede’s cultural dimensions (1980, 2010) were discussed. Trompenaars and Hofstede’s cultural dimensions were critiqued and examined to identify which of these models will be applicable to this study of the dimension of culture for this research population. The researcher identified Hofstede’s cultural dimensions as a suitable framework.

5.5.3 Objective 3

“To determine which cultural factors affect the acceptance and use of m-health for diabetes”

self-management.”

To answer the sub- question, UTAUT2 and Hofstede’s cultural dimensions have been utilised as a lens to investigate m-health acceptance and culture amongst diabetic patients. The researcher identified in chapter 4 that Hofstede’s cultural dimensions indeed influence technology adoption. Chapter 4, together with a summary in a form of a table (Table 11) discusses and answers this research sub- question and the relationships that emerged from the data are depicted in Figure 9 above.

5.6 Assessment of qualitative research

To ensure that validity and reliability was achieved in this study, the criteria for assessing qualitative research are discussed below.

Qualitative researchers consider credibility, transferability, and dependability and confirmability (Lincoln & Guba, 1985) as the standards by which qualitative studies are assessed. These factors serve as proxies for validity and reliability of qualitative research.

5.6.1 Research Credibility

Credibility is the first criterion in establishing trustworthiness in research. Credibility is comparable to internal validity in quantitative research (Lincoln & Guba, 1985). Credibility refers to the confidence in the accuracy of the research findings. More specifically, credibility ascertains if the research study’s findings are a true reflection of the situation from the perspective of the participants (Lincoln & Guba, 1985).

Peer debriefing and member checks were used in this research as strategies to establish trustworthiness. Peer debriefing “provides inquirers with the opportunity to test their growing insights and to expose themselves to searching questions” (Guba, 1981:85). Qualitative researchers are required to request academic assistance from other academics who are prepared to offer scholarly insight. In contrast, member checking is a technique wherein the data collected, data analysis and conclusions are discussed with the participants in the study, rather than academic colleagues. This strategy allows participants to correct any errors, and the option to provide additional information which they deem necessary. In addition, member checks remove researcher bias when interpreting findings (Anney, 2014).

In this research, the following were conducted as part of peer debriefing and member checks.

- The interviews were transcribed, and aspects of the interviews were imported into excel. Moreover, the transcribed interviews were provided given to a writing coaches

for them to provide feedback. This strategy helped enhance the value of the interviews and findings.

- The research results were presented to other researchers and a thesis coach as part of the research progress. The feedback received helped improve the understanding of the research findings, and it also helped with writing up the research findings section of the research.

5.6.2 Research transferability

Transferability is like external validity in quantitative studies (Lincoln & Guba, 1985). The term transferability refers to the degree to which qualitative evidence can be transferred from one study to another that is in a different context or setting (Lincoln & Guba, 1985). More specifically, research transferability is created by affording the reader with confirmation that the research results can be applied to a different research population and situation. Lincoln & Guba (1985) state, “it is, in summary, not the naturalist’s task to provide an index of transferability; it is his or her responsibility to provide the database that makes transferability judgements possible on the part of potential appliers” (1985:316). In other words, the researcher’s role is to give an indication that the research can be applied in a different study.

Purposive sampling and thick description have been used to address transferability. As stated by Li (2004) thick description “enables judgments about how well the research context fits other contexts, thus thick descriptive data, i.e. a rich and extensive set of details concerning methodology and context, should be included in the research report” (2004:305). When researchers provide detailed descriptions of a setting, the results become more vibrant and realistic (Creswell, 2014). To determine whether this study can be transferred to another study, the research population, research setting, and inclusion is discussed. In this study, cases were chosen that embody culture and technology adoption. The research was carried out in disadvantaged communities Mitchells Plain and Strandfontein, a majority of the participants was ‘*Coloured*’ and a minority was ‘*Indian*’. These participants are rich in cultural orientations, but technology adoption is low in these areas due to their socio- economical background. Twenty type 2 diabetic patients were purposely sampled, and only type 2 diabetes patients formed part of this study.

5.6.3 Research Dependability

Dependability is similar to reliability in quantitative research (Lincoln & Guba, 1985). Dependability refers to the steadiness of the study’s findings over time and the degree to which the research procedure is detailed. This allows a researcher who is not part of the

research team to audit and evaluate the research process (Polit, Beck & Hungler, 2006; Sandelowski, 1986)

In this study, dependability was achieved through an audit trail (Figure 10) and a code-recode strategy. An audit trail refers to defining the research process from the start of the project to the advancement and write up of the research results (Korstjens & Moser, 2018). According to Halpern (1983), the six categories of information that make up an audit trail are “raw data, data reduction and analysis products, data reconstruction and synthesis products, process notes, materials related to intentions and dispositions, and instrument development information”. The code-recode strategy refers to coding the data more than once with a gestation period between each coding (Anney, 2014). This strategy provided more in-depth insight into the data patterns, and it aided the researcher to improve the delivery of respondents’ narratives. Figure 10 below depicts the audit trail of this research.

5.6.4 Research Confirmability

Confirmability refers to establishing that the findings can be confirmed by others (Lincoln & Guba, 1985). Many strategies exist to establish confirmability. To ensure confirmability, the data collection method and analysis must be clearly described.

Phase 1: Collecting data from type 2 diabetes patients in Mitchells Plain.

Phase 2: Collecting data from type 2 diabetes patients in Strandfontein.

Twenty interviews were conducted, and the textual data were transcribed in English. Participants that responded in Afrikaans were (where necessary) translated into English. Atlas.ti 8 was used to analyse the data and themes emerged from the data using thematic content analysis. The themes generated from the coding process were then used for the development of the merged framework that formed a conceptual framework (Figure 9). In addition, the researcher recorded a physical audit trail to describe the research process, which is depicted in Figure 10.

The physical audit trail below (Figure 10) demonstrates that this research has been carried out using a logical and linear approach.

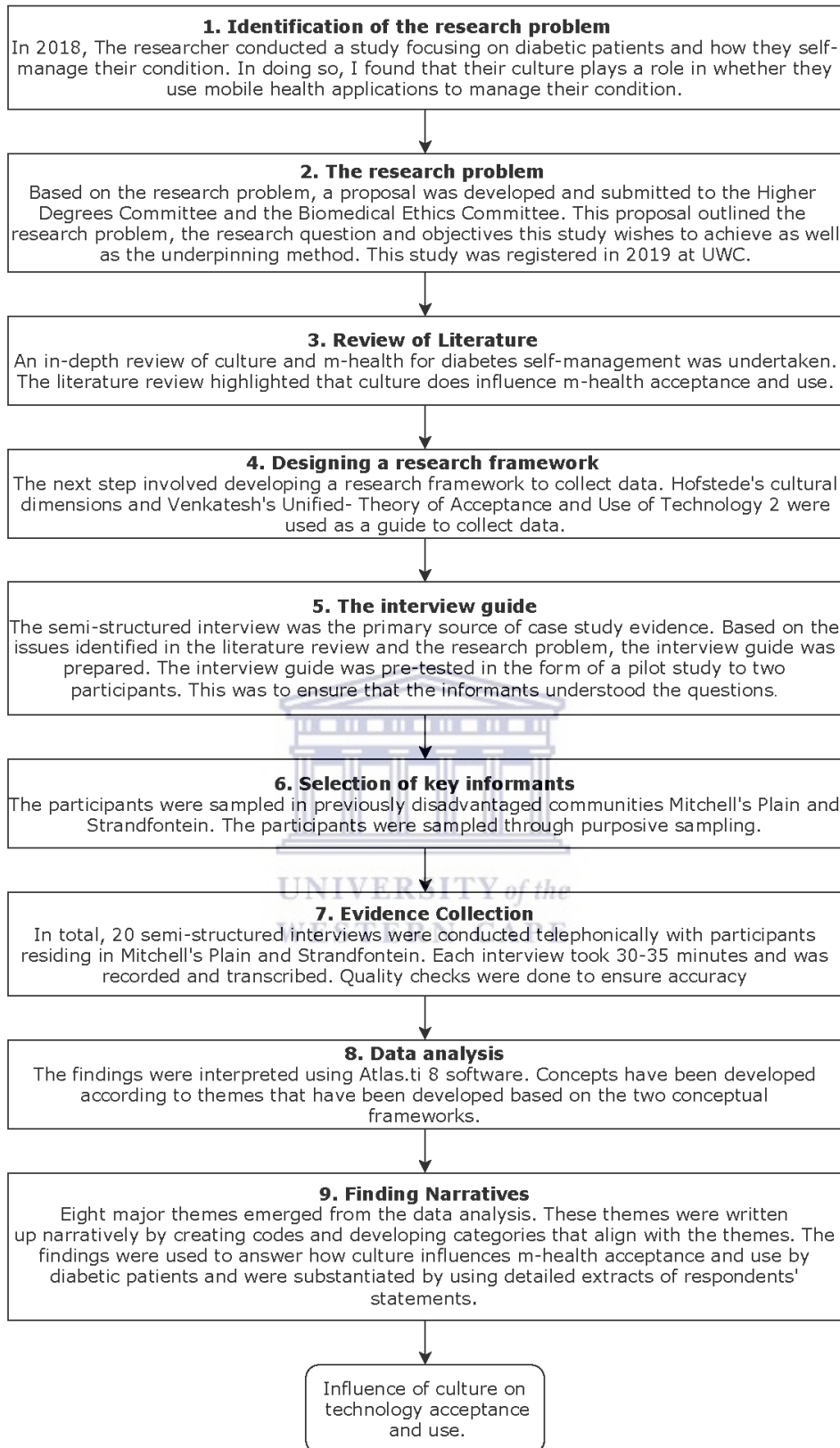


Figure 10: Physical Audit Trail

5.7 Contribution of research

This study draws on the extant frameworks (UTAUT2 and Hofstede's cultural dimensions), subjecting it to empirical investigation in this problem domain and as a result, has determined how the constructs inter-relate in this problem context; and providing evidence of the role of culture in technology adoption amongst diabetic patients in previously disadvantaged communities. The major contribution for the study is an understanding of the application of this conceptual framework in this health context. To date there has been no other study applied in this kind of health context to investigate the role of culture. In essence, this research brought new understanding as to how respondents feel about mobile health applications and how their culture influences their acceptance and use of these applications.

In addition, this study contributes to the academic body of knowledge regarding culture and diabetes self-management in previously disadvantaged communities. This study contributed to a better understanding of culture and technology adoption and how the cultural constructs influence the perceptions of performance and effort expectancy, social influence, facilitating conditions, price value, habit and hedonic motivation, in the context of m-health adoption and diabetes self-management. Long term, this could result in improved disease management, which could contribute to SDG 3 amongst disadvantaged populations.

5.8 Limitations of the study

The research was conducted telephonically rather than face-to-face due to the COVID-19 pandemic. This posed a challenge as additional work had to be done to ensure that participants understood the research objective and what the study entails. As this research was only conducted in previously disadvantaged communities, the findings are only applicable to other populations of similar social and economic status. Another limitation in this study was that many of the respondents were not using a mobile application for diabetes self-management and thus could not form a habit. This indicates that while analysing the data, more than one code could not be developed under the category "continuous discipline", as only a minority of the participants were habitual mobile health application users.

5.9 Recommendations for future research

Given that the study was only done in Mitchells Plain and Strandfontein, it is therefore suggested that future research should be conducted in other areas in the Western Cape, specifically in the Cape flats to see whether the same sorts of results will be achieved in different communities. This could help policymakers and application developers tailor mobile applications for this target population. This research findings could be implemented by

creating a cultural sensitive m-health application for diabetic patients in the low income area within the Western Cape.

The findings in the study indicated that this research population belongs to an uncertainty avoidance culture and that the distrust in using mobile applications is a hindrance to adoption and use by diabetes patients. As uncertainty avoidance is prevalent in technology acceptance (Özbilen, 2017), it is therefore suggested that future research should explore the reasons why diabetic patients lack trust in using a mobile application for diabetes self-management.

As the researcher merged two frameworks to answer the research question, the research framework (Figure 7) can be used as a tool to research technology adoption and culture in a different context, culture and country.

To conclude, the phenomenon of culture and technology adoption is more than a decade old. As the effect of a consumer's intention varies from one culture to another (Alshare & Mousa, 2014), investigating cultural factors provides reasonable justification for more studies in this field, since it is difficult to transfer technology from developed countries into developing countries or from one culture to another (Chung, 2015). It is therefore recommended that another study similar to this one be conducted in another developing country to identify similarities and differences in type 2 diabetic patients' value orientations.

5.10 Implications for policy and practice

This study was conducted as a result of high prevalence of diabetes in the Western Cape. Although opportunities exist in which people can use technologies to improve the way they manage diabetes, they are reluctant to use it due to various reasons as seen through prior research (Petersen et al., 2019; Petersen et al., 2020). Research indicated that there is a very low prevalence of m-health application uptake and use (Petersen, Pather and Tucker, 2018). The study was set out to understand why there is a low prevalence of m-health applications being used in particular low-income communities in the Western Cape. Prior research noted factors that influences technology uptake and use. However, the current study provides evidence of how culture impacts on the use of technology of mobile applications.

As the researcher has obtained a good understanding of culture and how it links to technology adoption in the context of diabetes self-management through the research findings, the knowledge can be shared with stakeholders. This knowledge can be shared as a policy note to the South African Department of Health (DoH) public healthcare system with the intention that they may get into a pro conscientization by creating awareness to the use of promoting

mobile applications for patients to self-manage their diabetes. This is not limited to any organised intervention, but this understanding would help the DoH lead a more successful awareness campaign. If policy makers understand the nature of how technology uptake is negatively influenced by culture, then they can mitigate those in programs by promoting technology use.

The challenges encountered in m-health projects by government have been influenced by numerous factors. These include a lack of alignment and integration of the interventions into health plans, lack of interoperability and use of open-source options and a lack of a single framework to evaluate m-health tools in strengthening the health system (Department of Health, 2015). The DoH strategic goals for m-health (2015-2019) are to prevent disease, reduce its burden, promote health and develop an efficient and effective health management Information Systems for improved decision making (Department of Health, 2015).

The government has implemented several m-health initiatives to support their health programmes. One of the initiatives developed was the MOMConnect programme which proved to be a useful tool in educating and encouraging woman to use services during and after pregnancy. Another initiative implemented by government in clinics and hospitals is the development of a Stock Visibility Systems (SVS). This m-health application is designed to increase “access to accurate, timeous medicine availability information from health facilities” (National Department of Health, 2019:16).

Government should ensure that policies are more reactive to the specific requirements of diabetic patients’ culture. Specific attention must be given to improved policies, planning and prioritisation for diabetes, with particular attention to the culture and the uptake and use of technology.

While conducting and analysing the research data, it became clear that the communities trust the role of their healthcare practitioner and therefore a doctor plays a huge role in changing the discourse around mobile application adoption. As the Department of Health, it is their responsibility to train doctors to use an m-health application as the patient trusts their doctor and they will be more willing to use an application when a healthcare professional provides them with this information. In addition, facilitators can promote m-health applications at diabetes support groups to promote technology adoption and mitigate low levels of technology use. It is recommended that the healthcare system should holistically work together to introduce and normalise the use of m-health applications. This will allow more

people to become aware of m-health applications. Another novel intervention could be that the Department of Health uses the findings of this study as a framework to provide their patients with a culturally sensitive, tailor-made m-health application that is zero-rated. This will not only reduce cost as a factor that hinders uptake and use but will serve as a culture specific m-health intervention that will reduce low levels of technology adoption.

5.11 Chapter summary

The purpose of this chapter is to present the summary of the findings based on the results found in the previous chapter. In addition, this chapter followed with the attainment of research objectives, validity and reliability in qualitative research, the contribution and limitation of this study and recommendations for future research. This study indicates that Hofstede's cultural dimensions can be used to study culture and technology adoption in the context of diabetes self-management. The key findings indicate that culture can have both a positive and negative influence on mobile application adoption. In terms of Hofstede's cultural dimensions, masculinity/femininity can have a negative influence on mobile application adoption while indulgence can have a positive influence on mobile application adoption. The findings also indicated that uncertainty avoidance can have a positive and/or negative influence on mobile application adoption. This chapter concludes that all the research objectives were achieved, through an analysis of literature review and an analysis of qualitative data. Validity and reliability were achieved through peer debriefing and member check for research credibility, purposive sampling for research transferability and an audit trail for research dependability. The research contributed to a better understanding of culture and technology adoption in this context of the WC and the researcher recommended that future research on culture and technology adoption can be conducted in other disadvantaged communities as this can assist government and policymakers to create interventions that could assist with the successful adoption of mobile applications for health.

6. References

- Abdulrehman, M.S., Woith, W., Jenkins, S., Kossman, S. & Hunter, G.L. 2016. Exploring Cultural Influences of Self-Management of Diabetes in Coastal Kenya. *Global Qualitative Nursing Research*. 3:1–13. DOI: 10.1177/2333393616641825.
- Adejumo, H., Odusan, O., Sogbein, O., Laiteerapong, N., Dauda, M., Ahmed, O. & Hakeem, O. 2015. The impact of religion and culture on diabetes care in Nigeria. *African Journal of Diabetes Medicine*. 17(2):17–19. Available: www.africanjournalofdiabetesmedicine.com
- Ahlan, A.R. & Ahmad, B.I. 2014. User Acceptance of Health Information Technology (HIT) in Developing Countries: A Conceptual Model. In *Procedia Technology*. V. 16. Elsevier B.V. 1287–1296. DOI: 10.1016/j.protcy.2014.10.145.
- Ajzen, I. 1985. From Intentions to Actions: A Theory of Planned Behavior. In *Action Control*. Springer Berlin Heidelberg. 11–39. DOI: 10.1007/978-3-642-69746-3_2.
- Ajzen, I. 1991. The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*. 50(2):179–211. DOI: 10.1016/0749-5978(91)90020-T.
- Ajzen, I. 2005. *Attitudes, Personality and Behavior*. 2nd ed. Berkshire, England: Mac-Graw Hill.
- Ajzen, I. & Fishbein, M. 1980. *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice-Hall Inc.
- Ajzen, I., Joyce, N., Sheikh, S., Gilbert & Cote, N. 2011. Knowledge and prediction of behaviour: The role of information accuracy in the theory of planned behaviour. *Basic and Applied Psychology*. 33(2):101–117.
- Akbar, H., Anderson, D. & Gallegos, D. 2015. Predicting intentions and behaviours in populations with or at-risk of diabetes: A systematic review. *Preventive Medicine Reports*. 2:270–282. DOI: 10.1016/j.pmedr.2015.04.006.
- Akter, S., D'Ambra, J. & Ray, P. 2010. Service quality of mHealth platforms: development and validation of a hierarchical model using PLS. *Electronic Markets*. 20(3):209–227. DOI: 10.1007/s12525-010-0043-x.
- Al-Bannay, H., Jarus, T., Jongbloed, L., Yazigi, M. & Dean, E. 2014. Culture as a variable in health research: Perspectives and caveats. *Health Promotion International*. 29(3):549–557. DOI: 10.1093/heapro/dat002.
- Al-Gahtani, S.S., Hubona, G.S. & Wang, J. 2007. Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. *Information and Management*. 44(8):681–691. DOI: 10.1016/j.im.2007.09.002.
- Al-jumeily, D. & Hussain, A.J. 2014. The impact of cultural factors on technology acceptance: A technology acceptance model across Eastern and Western cultures. *International Journal of Enhanced Research in Educational Development (IJERED)*. 2(4):37–62.
- Alam, M.Z., Hoque, M.R., Hu, W. & Barua, Z. 2020. Factors influencing the adoption of mHealth services in a developing country: A patient-centric study. *International Journal of Information Management*. 50:128–143. DOI: 10.1016/j.ijinfomgt.2019.04.016.
- Alam, Z.M., Hu, W. & Barua, Z. 2018. Using the UTAUT Model to Determine Factors Affecting Acceptance and Use of Mobile Health (mHealth) Services in Bangladesh. *JOURNAL OF STUDIES IN SOCIAL SCIENCES*. 17(2):137–172.
- Alanzi, T. 2018. mHealth for diabetes self-management in the kingdom of Saudi Arabia: Barriers

- and solutions. *Journal of Multidisciplinary Healthcare*. 11:535–546. DOI: 10.2147/JMDH.S174198.
- Alavi, M. & Carlson, P. 1992. A Review of MIS Research and Disciplinary Development. *Journal of Management Information Systems*. 8(4):45–62. DOI: 10.1080/07421222.1992.11517938.
- Albar, A.M. & Hoque, M.R. 2019. Patient Acceptance of e-Health Services in Saudi Arabia: An Integrative Perspective. *Telemedicine and e-Health*. 25(9):847–852. DOI: 10.1089/tmj.2018.0107.
- Alhirz, H. & Sajeev, A.S.M. 2015. Do cultural dimensions differentiate ERP acceptance? A study in the context of Saudi Arabia. *Information Technology and People*. 28(1):163–194. DOI: 10.1108/ITP-07-2013-0127.
- Alloghani, M., Hussain, A., Al-Jumeily, D. & Abuelma'atti, O. 2015. Technology Acceptance Model for the Use of M-Health Services among Health Related Users in UAE. In *2015 International Conference on Developments of E-Systems Engineering (DeSE)*. IEEE. 213–217. DOI: 10.1109/DeSE.2015.58.
- Alshare, K.A. & Mousa, A.A. 2014. The moderating effect of espoused cultural dimensions on consumer's intention to use mobile payment devices. In *35th International Conference on Information Systems "Building a Better World Through Information Systems", ICIS 2014*. 1–15.
- American Association of Diabetes Educators. 1997. Self Care Behaviors. In *Diabetes Self-Management*. 1–11.
- American Association of Diabetes Educators. 2019. *Find a Diabetes Education Program in Your Area*, American Association Of Diabetes Educators. Available: <https://www.diabeteseducator.org/living-with-diabetes/find-an-education-program>.
- American Diabetes Association. 2015. Strategies for improving care. *Diabetes Care*. 38(1):S5–S7. DOI: 10.2337/dc15-S004.
- American Diabetes Association. 2019. *Improving Care and Promoting Health in Populations: Standards of Medical Care in Diabetes*. DOI: 10.2337/dc19-S001.
- Aminuddin, H.B., Jiao, N., Jiang, Y., Hong, J. & Wang, W. 2019. Effectiveness of smartphone-based self-management interventions on self-efficacy, self-care activities, health-related quality of life and clinical outcomes in patients with type 2 diabetes: A systematic review and meta-analysis. *International Journal of Nursing Studies*. 1–10. DOI: 10.1016/j.ijnurstu.2019.02.003.
- Anderson, R. 2007. Thematic content analysis: Descriptive presentation of qualitative data. Available: <http://www.wellknowingconsulting.org/publications/pdfs/ThematicContentAnalysis.pdf>.
- Anderson, K. & Emmerton, L.M. 2016. Contribution of mobile health applications to self-management by consumers: Review of published evidence. *Australian Health Review*. 40(5):591–597. DOI: 10.1071/AH15162.
- Anney, V.N. 2014. Ensuring the Quality of the Findings of Qualitative Research: Looking at Trustworthiness Criteria. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)*. 5(2):272–281.
- Arpaci, İ. 2016. An Investigation of the Relationship Between Cultural Orientations and Collaborative Learning and Its Implications on Higher Education. *Sakarya University*

Journal of Education. 6(2):209. DOI: 10.19126/suje.22570.

- Ayele, K., Tesfa, B., Abebe, L., Tilahun, T. & Girma, E. 2012. Self Care Behavior among Patients with Diabetes in Harari, Eastern Ethiopia: The Health Belief Model Perspective. *PLoS ONE*. 7(4):e35515. DOI: 10.1371/journal.pone.0035515.
- Babbie, E. & Mouton, J. 2008. *The practice of social research*. 8th ed. Cape Town: Oxford University Press Southern Africa.
- Bähre, E. 2014. Housing for the Urban Poor: A post-apartheid dream or nightmare? In *Cities in transition: Transforming the global built environment*. Cheshire: Open House Press.
- Baig, M.M., GholamHosseini, H. & Connolly, M.J. 2015. Mobile healthcare applications: system design review, critical issues and challenges. *Australasian Physical & Engineering Sciences in Medicine*. 38(1):23–38. DOI: 10.1007/s13246-014-0315-4.
- Banda, D. 2012. Extract of dissertation on Zambia's culture and cultural identity.
- Bandura, A. 1997. *Self-efficacy: The exercise of control*. New York: W. H.: Freeman and Co.
- Bandyopadhyay, K. & Fraccastoro, K.A. 2007. The Effect of Culture on User Acceptance of Information Technology. *Communications of the Association for Information Systems*. 19(23):522–543. DOI: 10.17705/1CAIS.01923.
- Baptista, G. & Oliveira, T. 2015. Understanding mobile banking: The unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behavior*. 50:418–430. DOI: 10.1016/j.chb.2015.04.024.
- Barbara, S. & Krass, I. 2013. Self management of type 2 diabetes by Maltese immigrants in Australia: can community pharmacies play a supporting role. *The International Journal of Pharmacy Practice*. 21(5):305–13. DOI: <http://dx.doi.org/10.1111/ijpp.12011>.
- Barton, S.M. 2010. Social and Cultural Factors that Influence the Uptake of E-learning: Case Studies in Malaysia, Indonesia, Turkey, Singapore and Australia. RMIT.
- Bawack, R.E. & Kala Kamdjoug, J.R. 2018. Adequacy of UTAUT in clinician adoption of health information systems in developing countries: The case of Cameroon. *International Journal of Medical Informatics*. 109:15–22. DOI: 10.1016/j.ijmedinf.2017.10.016.
- Becker, H. 2015. How We See Our Culture: Photographic Self-Representations from the Cape Flats, South Africa. *Visual Anthropology*. 28(5):373–397. DOI: 10.1080/08949468.2015.1085791.
- Behl, A., Pal, A. & Tiwari, C. 2019. Analysis of effect of perceived cybercrime risk on mobile app payments. *International Journal of Public Sector Performance Management*. 5(3–4):415–432. DOI: 10.1504/IJPSPM.2019.101062.
- Belkhamza, Z. & Wafa, S.A. 2014. The Role of Uncertainty Avoidance on E-Commerce Acceptance across Cultures. *International Business Research*. 7(5):166–173. DOI: 10.5539/ibr.v7n5p166.
- Bem, S. 1981. The BSRI and Gender Schema Theory: A Reply to Spence and Heimrich. *Psychological Review*. 88(4):369–371.
- Benbasat, I., Goldstein, D. & Mead, M. 1987. The Case Research Strategy in Studies of Information System. *MIS Quarterly*. 11(3):369–386.
- Bene, B.A., O'Connor, S., Mastellos, N., Majeed, A., Fadahunsi, K.P. & O'Donoghue, J. 2019. Impact of mobile health applications on self-management in patients with type 2 diabetes mellitus: protocol of a

systematic review. *BMJ Open*. 9(6):e025714. DOI: 10.1136/bmjopen-2018-025714.

- Beratarrechea, A., Lee, A.G., Willner, J.M., Jahangir, E., Ciapponi, A. & Rubinstein, A. 2014. The Impact of Mobile Health Interventions on Chronic Disease Outcomes in Developing Countries: A Systematic Review. *Telemedicine and e-Health*. 20(1):75–82. DOI: 10.1089/tmj.2012.0328.
- Beukman, T.L. 2005. *CHAPTER 3 CULTURE, VALUES AND WORK-RELATED VALUES-A THEORETICAL OVERVIEW*.
- Booyesen, B.L. & Schlemmer, A.C. 2015. Reasons for diabetes patients attending Bishop Lavis Community Health Centre being non-adherent to diabetes care. *South African Family Practice*. 57(3):166–171. DOI: 10.1080/20786190.2014.977027.
- Boudreau, F. & Godin, G. 2014. Participation in Regular Leisure-Time Physical Activity Among Individuals with Type 2 Diabetes Not Meeting Canadian Guidelines: the Influence of Intention, Perceived Behavioral Control, and Moral Norm. *International Journal of Behavioral Medicine*. 21(6):918–926. DOI: 10.1007/s12529-013-9380-4.
- Braun, V. & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 3:77–101.
- Burns, M.N., Montague, E. & Mohr, D.C. 2013. Initial design of culturally informed behavioral intervention technologies: developing an mHealth intervention for young sexual minority men with generalized anxiety disorder and major depression. *Journal of Medical Internet Research*. 15(2).
- Burns, N. & Grove S.K. 2005. *The Practice of Nursing Research: Conduct, Critique & Utilization*. 5th ed. Elsevier Saunders, St Louis.
- Caporarello, L., Magni, M. & Pennarola, F. 2014. Does Culture make the difference? Technology Acceptance and Diffusion in India. In *Proceedings of the 8th Mediterranean Conference on Information Systems*, Verona, Italy.
- Cavana, R., Delahaye, B. & Sekaran, U. 2001. *Applied Business Research: Qualitative and Quantitative Methods*. 1st ed. US & Australia: John Wiley and Sons Ltd.
- Cho, Y.M., Lee, S., Islam, S.M.S. & Kim, S.Y. 2018. Theories Applied to m-Health Interventions for Behavior Change in Low- and Middle-Income Countries: A Systematic Review. *Telemedicine and e-Health*. 24(10). DOI: 10.1089/tmj.2017.0249.
- Choi, T.S.T., Walker, K.Z., Ralston, R.A. & Palermo, C. 2015. Diabetes education needs of Chinese Australians: A qualitative study. *Health Education Journal*. 74(2):197–208. DOI: 10.1177/0017896914523276.
- Chung, J. 2015. *Handbook of Smart Homes, Health Care and Well-Being*. J. van Hoof, G. Demiris, & E.J.M. Wouters, Eds. Cham: Springer International Publishing. DOI: 10.1007/978-3-319-01904-8.
- Cilliers, L., Viljoen, K.L.-A. & Chinyamurindi, W.T. 2017. A study on students' acceptance of mobile phone use to seek health information in South Africa. *Health Information Management Journal*. 1–11. DOI: 10.1177/1833358317706185.
- Cole, F. 1988. Content analysis: process and application. *Clinical Nurse Specialist*. 2(1):53–57.
- Creswell, J. 2013. *Research design: Qualitative, quantitative and mixed method approaches*. SAGE

Publications.

- Creswell, J. 2014a. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th ed. V. Knight, Ed. SAGE Publications Inc. DOI: 10.1007/s13398-014-0173-7.2.
- Creswell, J. 2014b. *Qualitative Inquiry & Research Design: Choosing among Five Approaches*. 4th ed. Thousand Oaks: CA: SAGE Publications.
- Cyr, D., Gefen, D. & Walczuch, R. 2017. Exploring the relative impact of biological sex and masculinity–femininity values on information technology use. *Behaviour & Information Technology*. 36(2):178–193. DOI: 10.1080/0144929X.2016.1212091.
- Daniels, M.A. & Greguras, G.J. 2014. Exploring the Nature of Power Distance: Implications for Micro- and Macro-Level Theories, Processes, and Outcomes. *Journal of Management*. 40(5):1202–1229. DOI: 10.1177/0149206314527131.
- Dao, J., Spooner, C., Lo, W. & Harris, M.F. 2019. Factors influencing self-management in patients with type 2 diabetes in general practice: A qualitative study. *Australian Journal of Primary Health*. 25(2):176–184. DOI: 10.1071/PY18095.
- Davis, F.D. 1989. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*. 13(3):319–340. DOI: 10.2307/249008.
- Davis, F.D., Bagozzi, R.P. & Warshaw, P.R. 1992. Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology*. 22(14):1111–1132. DOI: 10.1111/j.1559-1816.1992.tb00945.x.
- Deacon, A.J., Chee, J.J., Chang, W.J.R. & Harbourne, B.A. 2017. Mobile applications for diabetes mellitus self-management: A systematic narrative analysis. In *Successes and Failures in Telehealth Conference Telehealth Conference*. V. (SFT-17). 17–30. Available: <https://eprints.qut.edu.au/114369/1/SFT Presentation 2017 Final.pdf>.
- Dearden, A. & Klein, D. 2018. A proposal for minimum ethical standards in ICTD/ICT4D research.
- Dehzad, F., Hilhorst, C., de Bie, C. & Claassen, E. 2014. Adopting Health Apps, What’s Hinderering Doctors and Patients? *Health*. 06(16):2204–2217. DOI: 10.4236/health.2014.616256.
- Deng, Z., Mo, X. & Liu, S. 2014. Comparison of the middle-aged and older users’ adoption of mobile health services in China. *International Journal of Medical Informatics*. 83(3):210–224. DOI: 10.1016/j.ijmedinf.2013.12.002.
- Deng, Z., Hong, Z., Ren, C., Zhang, W. & Xiang, F. 2018. What predicts patients’ adoption intention toward mHealth services in China: Empirical study. *Journal of Medical Internet Research*. 20(8):1–14. DOI: 10.2196/mhealth.9316.
- Denzin, N. 1989. *Interpretive Interactionism*. Newbury Park: CA: SAGE Publications.
- Denzin, K.N. & Lincoln, S.Y. 2011. *The SAGE Handbook of Qualitative Research*. 4th ed. Thousand Oaks, California: SAGE Publications Inc.
- Denzin, N.K. & Lincoln, Y.S. 2007. Chapter 1: Introduction: The Discipline and Practice of Qualitative Research. In *The landscape of research*. 1–44.
- Department of Health. 2015. *mHealth Strategy 2015 - 2019*. South Africa. Available: <http://www.hst.org.za/publications/NonHST Publications/mHealth Strategy 2015.pdf> [2021, August 25].
- Desveaux, L., Shaw, J., Saragosa, M., Soobiah, C., Marani, H., Hensel, J., Agarwal, P., Onabajo,

- N.R., et al. 2018. A mobile app to improve self-management of individuals with type 2 diabetes: Qualitative realist evaluation. *Journal of Medical Internet Research*. 20(3). DOI: 10.2196/jmir.8712.
- Diabetes South Africa. 2021. *DIABETES SOUTH AFRICA*. Available: <https://www.diabetessa.org.za/about-us/> [2021, March 28].
- DiCarlo, J.M., Gopakumar, S., Dhillon, P.K. & Krishnan, S. J. M. 2016. Adoption of Information and Communication Technologies for Early Detection of Breast and Cervical Cancers in Low- and Middle-Income Countries', *Journal of Global Oncology*, 2(4), pp. 222–234. DOI: 10.1200/jgo.2015.002063.
- Dinbabo, M., Karriem, A., Penderis, S., May, J., Fulcher, C., Belebema, M., Mogatosi, T., Zinja, P., et al. 2017. Food choices and Body Mass Index (BMI) in adults and children : Evidence from the National Income Dynamics Study (NIDS) and empirical research from Khayelitsha and Mitchells Plain in South Africa. University of the Western Cape, South Africa.
- Dodds, W., Monroe, K. & Grewal, D. 1991. Effects of Price, Brand, and Store Information on Buyers. *Journal of Marketing Research*. 28(3):307–319.
- Dorfman, P.W. & Howell, J.P. 1988. Dimension of national culture and effective leadership patterns: Hofstede revisited. *Advances in International Comparative Management*. 3:127– 150.
- Dou, K., Yu, P., Deng, N., Liu, F., Guan, Y., Li, Z., Ji, Y., Du, N., et al. 2017. Patients' Acceptance of Smartphone Health Technology for Chronic Disease Management: A Theoretical Model and Empirical Test. *JMIR mHealth and uHealth*. 5(12):e177. DOI: 10.2196/mhealth.7886.
- Ducey, A.J. & Coovert, M.D. 2016. Predicting tablet computer use: An extended Technology Acceptance Model for physicians. *Health Policy and Technology*. 5(3):268–284. DOI: 10.1016/j.hlpt.2016.03.010.
- Duke, N. & Wigley, W. 2016. The self-management of diet, exercise and medicine adherence of people with type 2 diabetes is influenced by their spiritual beliefs. *Journal of Diabetes Nursing*. 20(5):184–190.
- Dunachie, S. & Chamnan, P. 2019. The double burden of diabetes and global infection in low and middle-income countries. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 113(2):56. DOI: 10.1093/TRSTMH/TRY124.
- Durmaz, Y. 2014. The Influence of Cultural Factors on Consumer Buying Behaviour and an Application in Turkey. *Global Journal of Management and Business Research: E Marketing*. 14(1).
- Dutta, M.J., Kaur-Gill, S., Tan, N. & Lam, C. 2018. mHealth, Health, and Mobility: A Culture-Centered Interrogation. In *Mobile Communication in Asia: Local Insights, Global Implications*. 91–107. DOI: 10.1007/978-94-024-1251-2_6.
- Dwivedi, Y.K., Shareef, M.A., Simintiras, A.C., Lal, B. & Weerakkody, V. 2016. A generalised adoption model for services: A cross-country comparison of mobile health (m-health). *Government Information Quarterly*. 33(1):174–187. DOI: 10.1016/j.giq.2015.06.003.
- Ebert, I.D., Steffens, M.C. & Kroth, A. 2014. Warm, but Maybe Not So Competent?—Contemporary Implicit Stereotypes of Women and Men in Germany. *Sex Roles*. 70:359–375.
- Eh, K., McGill, M., Wong, J. & Krass, I. 2016. Cultural issues and other factors that affect self-management of Type 2 Diabetes Mellitus (T2D) by Chinese immigrants in Australia. *Diabetes Research and Clinical Practice*. 119:97–105. DOI: 10.1016/j.diabres.2016.07.006.

- El-Gayar, O., Timsina, P., Nawar, N. & Eid, W. 2013. A systematic review of IT for diabetes self-management: Are we there yet? *International Journal of Medical Informatics*. 82(8):637–652. DOI: 10.1016/j.ijmedinf.2013.05.006.
- El-Sappagh, S., Ali, F., El-Masri, S., Kim, K., Ali, A. & Kwak, K.-S. 2019. Mobile Health Technologies for Diabetes Mellitus: Current State and Future Challenges. *IEEE Access*. 7:21917–21947. DOI: 10.1109/ACCESS.2018.2881001.
- Erasmus, R.T., Soita, D.J., Hassan, M.S., Blanco-Blanco, E., Vergotine, Z., Kengne, A.P. & Matsha, T.E. 2012. High prevalence of diabetes mellitus and metabolic syndrome in a South African coloured population: Baseline data of a study in Bellville, Cape Town. *South African Medical Journal*. 102(11):841. DOI: 10.7196/SAMJ.5670.
- Esposito, M., Minutolo, A., Megna, R., Forastiere, M., Magliulo, M. & De Pietro, G. 2018. A smart mobile, self-configuring, context-aware architecture for personal health monitoring. *Engineering Applications of Artificial Intelligence*. 67:136–156. DOI: 10.1016/j.engappai.2017.09.019.
- Farrar, T.J., Falake, K.A., Mebaley, A., Moya, M.D. & Rudolph, I.I. 2019. A mall intercept survey on religion and worldview in the Cape Flats of Cape Town, South Africa. *Journal for the Study of Religion*. 32(1):1–30. DOI: 10.17159/2413-3027/2019/v32n1a3.
- Feroz, A., Kadir, M.M. & Saleem, S. 2018. Health systems readiness for adopting mhealth interventions for addressing non-communicable diseases in low- and middle-income countries: a current debate. *Global Health Action*. 11(1):1–6. DOI: 10.1080/16549716.2018.1496887.
- Fishbein, M. & Ajzen, I. 1975. *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. MA: Addison-Wesley.
- Fusch, P.I. & Ness, L.R. 2015. Are We There Yet? Data Saturation in Qualitative Research. *The Qualitative Report*. 20(9):1408–1416.
- Gagnon, M.P., Orruño, E., Asua, J., Abdeljelil, A. Ben & Empananza, J. 2012. Using a modified technology acceptance model to evaluate healthcare professionals' adoption of a new telemonitoring system. *Telemedicine and e-Health*. 18(1):54–59. DOI: 10.1089/tmj.2011.0066.
- Garabedian, L.F., Ross-Degnan, D., LeCates, R.F. & Wharam, J.F. 2019. Uptake and use of a diabetes management program with a mobile glucometer. *Primary Care Diabetes*. 13(6):549–555. DOI: 10.1016/j.pcd.2019.03.010.
- Gatt, S. & Sammut, R. 2008. An exploratory study of predictors of self-care behaviour in persons with type 2 diabetes. *International Journal of Nursing Studies*. 45:1525–1533. DOI: 10.1016/j.ijnurstu.2008.02.006.
- Ginsburg, O.M., Chowdhury, M., Wu, W., Chowdhury, M.T.I., Pal, B.C., Hasan, R., Khan, Z.H., Dutta, D., Saeem, A.A., Al-Mansur, R., Mahmud, S., Woods, J.H., Story, H.H. & Salim, R. O. M. 2014. An mHealth Model to Increase Clinic Attendance for Breast Symptoms in Rural Bangladesh: Can Bridging the Digital Divide Help Close the Cancer Divide?’, *The Oncologist*, 19(2), pp. 177–185. DOI: 10.1634/theoncologist.2013-0314
- Glanz, K. & Bishop, D.B. 2010. The Role of Behavioral Science Theory in Development and Implementation of Public Health Interventions. *Annual Review of Public Health*. 31(1):399–418. DOI: 10.1146/annurev.publhealth.012809.103604.
- Google Maps. 2020. *Mitchells Plain, Cape Town*. Available:

<https://www.google.com/maps/place/Mitchells+Plain,+Cape+Town/@-34.048437,18.5679196,13z/data=!3m1!4b1!4m5!3m4!1s0x1dcc4721e60ec221:0xd3097704b4edb9ac!8m2!3d-34.0485946!4d18.6056873?hl=en> [2020, December 13].

- Guba, E. 1981. Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology Journal*. 29(2):75–91. DOI: 10.1007/bf02766777.
- Halpern, E. 1983. Auditing Naturalistic Inquiries: The Development and Application of a Model. Indiana University.
- Hartz, J., Yingling, L. & Powell-Wiley, T.M. 2016. Use of Mobile Health Technology in the Prevention and Management of Diabetes Mellitus. *Current Cardiology Reports*. 18(12):130. DOI: 10.1007/s11886-016-0796-8.
- Hasan, H. & Ditsa, G. 1999. The impact of culture on the adoption of IT: An interpretive study. *Journal of Global Information Management*. 7(1):5–15.
- Hassan, L.M., Shiu, E. & Parry, S. 2016. Addressing the cross-country applicability of the theory of planned behaviour (TPB): A structured review of multi-country TPB studies. *Journal of Consumer Behaviour*. 15(1):72–86. DOI: 10.1002/cb.1536.
- He, J. & Freeman, L. 2019. Are men more technology-oriented than women? The role of gender on the development of general computer self-efficacy of college students. *Journal of Information Systems Education*. 21(2):203–212.
- Hennigs, N., Wiedmann, K.P. & Klarmann, C. 2013. Consumer value perception of luxury goods: A cross-cultural and cross-industry comparison. In *Luxury Marketing: A Challenge for Theory and Practice*. Gabler Verlag. 78–99. DOI: 10.1007/978-3-8349-4399-6_5.
- Hodgetts, R.M., Luthans, F. & Doh, J. 2005. *International Management: Culture, Strategy and Behavior W/ OLC Card MP*. 6th ed. McGraw-Hill Companies.
- Hoehle, H., Zhang, X. & Venkatesh, V. 2015. An espoused cultural perspective to understand continued intention to use mobile applications: A four-country study of mobile social media application usability. *European Journal of Information Systems*. 24(3):337–359. DOI: 10.1057/ejis.2014.43.
- Hofstede. 2019. *Country Comparision- Hofstede Insights*.
- Hofstede, G. 1980a. *Culture's consequences: comparing values, behaviours, institutions and organisations across nations*. Thousand Oaks, California: Sage.
- Hofstede, G. 1980b. *Culture's Consequences: International Differences in Work-related Attitudes*. Beverly Hills, CA: Sage.
- Hofstede, G. 1984. *Culture's Consequences*. Newbury Park, California: Sage.
- Hofstede, G. 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations Across Nations*,. 2nd ed. Thousand Oaks, California: Sage.
- Hofstede, G., Hofstede, G.J. & Minkov, M. 2010. *Cultures and Organizations: Software of the mind*. 3rd ed. Mac-Graw Hill.
- Hoque, M.R. 2016. An empirical study of mHealth adoption in a developing country: The moderating effect of gender concern. *BMC Medical Informatics and Decision Making*. 16(1):1–10. DOI: 10.1186/s12911-016-0289-0.
- Hoque, M.R. & Bao, Y. 2015. Cultural Influence on Adoption and Use of e-Health: Evidence in

- Bangladesh. *Telemedicine and e-Health*. 21(10):845–851. DOI: 10.1089/tmj.2014.0128.
- Hoque, R. & Sorwar, G. 2017. Understanding factors influencing the adoption of mHealth by the elderly: An extension of the UTAUT model. *International Journal of Medical Informatics*. 101:75–84. DOI: 10.1016/j.ijmedinf.2017.02.002.
- Hou, C., Carter, B., Hewitt, J., Francisa, T. & Mayor, S. 2016. Do mobile phone applications improve glycemic control (HbA$\leq 1c$ $\leq 1c$) in the self-management of diabetes? A systematic review, meta-analysis, and GRADE of 14 randomized trials', *Diabetes Care*. American Diabetes Association Inc., pp. 2089–2095. DOI: 10.2337/dc16-0346.
- Huang, C.-Y. & Kao, Y.-S. 2015. UTAUT2 Based Predictions of Factors Influencing the Technology Acceptance of Phablets by DNP. *Mathematical Problems in Engineering*. 5:1–23. DOI: 10.1155/2015/603747.
- Huang, F., Teo, T., Sánchez-Prieto, J.C., García-Peñalvo, F.J. & Olmos-Migueláñez, S. 2019. Cultural values and technology adoption: A model comparison with university teachers from China and Spain. *Computers & Education*. 133:69–81. DOI:10.1016/j.compedu.2019.01.012.
- Hwang, Y., Al-Arabi, M. & Shin, D.-H. 2016. Understanding technology acceptance in a mandatory environment. *Information Development*. 32(4):1266–1283. DOI: 10.1177/0266666915593621.
- Im, I., Hong, S. & Kang, M.S. 2011. An international comparison of technology adoption: Testing the UTAUT model. *Information and Management*. 48(1):1–8. DOI: 10.1016/j.im.2010.09.001.
- International Diabetes Federation. 2017. *IDF Diabetes Atlas: Eighth edition*
- International Diabetes Federation. 2019. *IDF diabetes Atlas: Ninth edition*
- International Telecommunication Union. 2016. *Facts and Figures 2016*.
- International Telecommunications Union. 2019. *Measuring digital development: Facts and figures 2019*. Geneva Switzerland.
- Iregbu, S.C. & Iregbu, F.U. 2016. A review of self-management of diabetes in Africa. *African Journal of Diabetes Medicine*. 24(2):5–8. Available: <http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=120428063&site=ehost-live>.
- Iribarren, S.J., Cato, K., Falzon, L. & Stone, P.W. 2017. What is the economic evidence for mHealth? A systematic review of economic evaluations of mHealth solutions. *PLoS ONE*. 12(2):1–20. DOI: 10.1371/journal.pone.0170581.
- Istepanian, R.S.H. & Al-anzi, T.M. 2018. m-Health interventions for diabetes remote monitoring and self management: clinical and compliance issues. *mHealth*. 4:4–4. DOI: 10.21037/mhealth.2018.01.02.
- ITU News. 2018. *ICTs to achieve the United Nations Sustainable Development Goals*. Available: <https://www.itu.int/en/mediacentre/backgrounders/Pages/icts-to-achieve-the-united-nations-sustainable-development-goals.aspx> [2020, September 23].
- Izahar, S., Lean, Q.Y., Hameed, M.A., Murugiah, M.K., Patel, R.P., Al-Worafi, Y.M., Wong, T.W. & Ming, L.C. 2017. Content Analysis of Mobile Health Applications on Diabetes Mellitus. *Frontiers in Endocrinology*. 8:1–8. DOI: 10.3389/fendo.2017.00318.

- Jamshed, S. 2014. Qualitative research method-interviewing and observation. *Journal of Basic and Clinical pharmacy*. 5(4):87. DOI: 10.4103/0976-0105.141942.
- Jia, Y., Gao, J., Dai, J., Zheng, P. & Fu, H. 2017. Associations between health culture, health behaviors, and health-related outcomes: A cross-sectional study. *PLOS ONE*. 12(7):1–13.
- Jo, I.-Y., Yoo, S.-H., Lee, D.Y., Park, C.-Y. & Kim, E.M. 2017. Diabetes Management via a Mobile Application: a Case Report. *Clinical Nutrition Research*. 6(1):61. DOI: 10.7762/cnr.2017.6.1.61.
- Kanu, M. 2010. The Indispensability of the Basic Social Values in African Traditions: A Philosophical Appraisal. *a New Journal of African Studies*. 7.
- Kaplan, B. & Maxwell, J.A. 1994. Qualitative Research Methods for Evaluating Computer Information Systems. In *Evaluating the Organizational Impact of Healthcare Information Systems*. CA: Sage: Thousand Oaks. 45–68.
- Kaplan, B. & Maxwell, J.A. 2005. Qualitative Research Methods for Evaluating Computer Information Systems. In *Evaluating the Organizational Impact of Healthcare Information Systems*. Springer-Verlag. 30–55. DOI: 10.1007/0-387-30329-4_2.
- Kayyali, R., Peletidi, A., Ismail, M., Hashim, Z., Bandeira, P. & Bonnah, J. 2017. Awareness and Use of mHealth Apps: A Study from England. *Pharmacy*. 5(4):33. DOI: 10.3390/pharmacy5020033.
- Kebede, M.M. & Pischke, C.R. 2019. Popular diabetes apps and the impact of diabetes app use on self-care behaviour: A survey among the digital community of persons with diabetes on social media. *Frontiers in Endocrinology*. 10:1–14. DOI: 10.3389/fendo.2019.00135.
- Khan, R. & Qudrat-Ullah, H. 2021. Adoption of LMS in the Cultural Context of Higher Educational Institutions of the Middle East', in *Advances in Science, Technology and Innovation*. Springer Nature, pp. 1–5. DOI: 10.1007/978-3-030-50112-9_1.
- Khasawneh, A. M. 2008. Concepts and measurements of innovativeness: the case of information and communication technologies', *International Journal of Arab Culture, Management and Sustainable Development*, 1(1), p. 23. DOI: 10.1504/ijacmsd.2008.020487.
- Khatun, F., Heywood, A.E., Ray, P.K., Bhuiya, A. & Liaw, S.-T. 2016. Community readiness for adopting mHealth in rural Bangladesh: A qualitative exploration. *International Journal of Medical Informatics*. 93:49–56. DOI: 10.1016/j.ijmedinf.2016.05.010.
- Kirsch, C., Chelliah, J. & Parry, W. 2012. The impact of cross-cultural dynamics on change management. *Cross Cultural Management: An International Journal*. 19(2):166–195. DOI: 10.1108/13527601211219865.
- Klein, H. & Myers, M. 1999. A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information System. *MIS Quarterly*. 23(1):67–93.
- Kluckhohn, F.R. & Strodtbeck, F.L. 1961. *Variations in value orientations*. Evanston: Row, Peterson.
- Korstjens, I. & Moser, A. 2018. Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice*. 24(1):120–124. DOI: 10.1080/13814788.2017.1375092.
- Kovačić, Z. 2005. The Impact of National Culture on Worldwide eGovernment Readiness. *Informing Science*. 8:143–158.

- Kroeber, A.L. & Kluckhohn, C. 1952. Culture: a critical review of concepts and definitions. *Papers. Peabody Museum of Archaeology & Ethnology, Harvard University*. 47(1).
- Kueh, Y.C., Morris, T., Borkoles, E. & Shee, H. 2015. Modelling of diabetes knowledge, attitudes, self-management, and quality of life: A cross-sectional study with an Australian sample. *Health and Quality of Life Outcomes*. 13(1):129. DOI: 10.1186/s12955-015-0303-8.
- Kuhn, T.S. 1962. *The structure of scientific revolutions*. 3rd ed. Chicago: University of Chicago Press.
- Kvale, S. 2007. *Doing Interviews*. London,: SAGE Publications, Ltd. DOI: 10.4135/9781849208963.
- Lai, C., Wang, Q., Li, X. & Hu, X. 2016. The influence of individual espoused cultural values on self-directed use of technology for language learning beyond the classroom. *Computers in Human Behavior*. 62:676–688. DOI: 10.1016/j.chb.2016.04.039.
- Lee, I., Choi, B., Kim, J. & Hong, S.J. 2007. Culture-technology fit: Effects of cultural characteristics on the post-adoption beliefs of mobile internet users. *International Journal of Electronic Commerce*. 11(4):11–51. DOI: 10.2753/JEC1086-4415110401.
- Lee, S.G., Trimi, S. & Kim, C. 2013. The impact of cultural differences on technology adoption. *Journal of World Business*. 48(1):20–29. DOI: 10.1016/j.jwb.2012.06.003.
- Leidner, D.E., & Kayworth. T. 2006. Review: A Review of Culture in Information Systems Research: Toward a Theory of Information Technology Culture Conflict. *MIS Quarterly*. 30(2):357. DOI: 10.2307/25148735.
- Levesque, A. & Li, H.Z. 2014. The Relationship Between Culture, Health Conceptions, and Health Practices. *Journal of Cross-Cultural Psychology*. 45(4):628–645. DOI: 10.1177/0022022113519855.
- Lewis, P., Saunders, M. & Thornhill, A. 2009. *Understanding Research Philosophies and Approaches*. DOI: 10.1176/appi.ajp.162.10.1985.
- Li, D. 2004. Trustworthiness of think-aloud protocols in the study of translation processes. *International Journal of Applied Linguistics*. 14(3):301–313. DOI: 10.1111/j.1473-4192.2004.00067.x.
- Lin, H.-C. 2014. An investigation of the effects of cultural differences on physicians' perceptions of information technology acceptance as they relate to knowledge management systems. *Computers in Human Behavior*. 38:368–380. DOI: 10.1016/j.chb.2014.05.001.
- Lincoln, S.Y. & Guba, E. 1985. *Naturalistic inquiry*. Beverly Hills, CA: SAGE Publications.
- Lu, J., Yu, C., Liu, C. & Wei, J. 2017. Comparison of mobile shopping continuance intention between China and USA from an espoused cultural perspective. *Computers in Human Behavior*. 75:130–146. DOI: 10.1016/j.chb.2017.05.002.
- Mack, N., Woodsong, C., Macqueen, K.M., Guest, G. & Namey, E.E. 2005. *Qualitative Research Methods: A Data Collector's Field Guide*. North Carolina: Family Health International Family.
- Manasse, L.B. 2019. THE STATE'S OBLIGATION TO REALISE THE SOCIOECONOMIC RIGHTS OF VULNERABLE GROUPS: A CASE STUDY OF CHILDREN ON THE CAPE FLATS. University of the Western Cape.
- Maniam, A. & Dhillon, J.S. 2015. Barriers to the Effective Use of Diabetes Self-Management Applications. In *The 3rd National Graduate Conference (NatGrad2015)*. 315–320.

- Marshall, B., Cardon, P., Poddar, A. & Fontenot, R. 2013. Does Sample Size Matter in Qualitative Research?: A Review of Qualitative Interviews in is Research. *Journal of Computer Information Systems*. 54(1):11–22. DOI: 10.1080/08874417.2013.11645667.
- Martins, C., Oliveira, T. & Popovič, A. 2014. Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management*. 34(1):1–13. DOI: 10.1016/j.ijinfomgt.2013.06.002.
- Martinsons, M.G. & Davison, R.M. 2007. Strategic decision making and support systems : Comparing American , Japanese and Chinese management. *Decision Support Systems*. 43(1):284–300. DOI: 10.1016/j.dss.2006.10.005.
- Masimba, F., Appiah, M. & Zuva, T. 2019. A Review of Cultural Influence on Technology Acceptance. In *2019 International Multidisciplinary Information Technology and Engineering Conference (IMITEC)*. IEEE. 1–7. DOI: 10.1109/IMITEC45504.2019.9015877.
- Mason, M. 2010. Sample Size and Saturation in PHD Studies Using Qualitative Interviews. *Qualitative Social Research*. 11(3).
- Matima, R., Murphy, K., Levitt, N.S., BeLue, R. & Oni, T. 2018. A qualitative study on the experiences and perspectives of public sector patients in Cape Town in managing the workload of demands of HIV and type 2 diabetes multimorbidity. *PLOS ONE*. 13(3):e0194191. DOI: 10.1371/journal.pone.0194191.
- McCoy, S., Galleta, D. & King, W.K. 2005. Integrating national culture into individual IS research: adoption The need for individual level measures. *Communications of the Association for Information Systems*. 15(1):12–30. DOI: 0.17705/1CAIS.01512.
- Mehra, A., Paul, J. & Kaurav, R.P.S. 2020. Determinants of mobile apps adoption among young adults: theoretical extension and analysis. *Journal of Marketing Communications*.1–29. DOI: 10.1080/13527266.2020.1725780.
- Meier, C. & Hartell, C. 2009. Handling cultural diversity in education in South Africa. *South African Journal of Education*. 6(2):180–192.
- Merriam, S.B. 1998. *Qualitative Research and Case Study Application in Education*. 2nd ed. San Francisco: CA: Jossey-Bass.
- Merriam, S.B. 2009. *Qualitative research: A guide to design and implementation*. 2nd ed. San Francisco: Jossey-Bass.
- Mills, J., Bonner, A. & Francis, K. 2006. The Development of Constructivist Grounded Theory. *International Journal of Qualitative Methods*. 5(1):25–35. DOI: 10.1177/160940690600500103.
- Modzelewski, K.L., Stockman, M.C. & Steenkamp, D.W. 2018. Rethinking the Endpoints of mHealth Intervention Research in Diabetes Care. *Journal of Diabetes Science and Technology*. 12(2):389–392. DOI: 10.1177/1932296817733007.
- Mohamed, A.H., Tawfik, H., Norton, L. & Al-Jumeily, D. 2011. e-HTAM: A technology acceptance model for electronic health. In *2011 International Conference on Innovations in Information Technology, IIT 2011*. 134–138. DOI: 10.1109/INNOVATIONS.2011.5893804.
- Mohamed, A.H.H.M., Tawfik, H., Al-Jumeily, D. & Norton, L. 2011. MoHTAM: A Technology Acceptance Model for Mobile Health Applications. In *2011 Developments in E-systems Engineering*. IEEE. 13–18. DOI: 10.1109/DeSE.2011.79.

- Mohebi, S., Azadbakht, L., Feizi, A., Sharifirad, G. & Kargar, M. 2013. Review the key role of self-efficacy in diabetes care. *Journal of Education and Health Promotion*. 2(1):36. DOI: 10.4103/2277-9531.115827.
- Momani, A. & Jamous, M. 2017. The Evolution of Technology Acceptance Theories. *International Journal of Contemporary Computer Research (IJCCR)*. 1(1):51–58.
- Morse, S. & Peele, S. 1973. “Coloured power” or “Coloured Bourgeoisie?” Political attitudes among South African Coloureds. *Public opinion quarterly*. 38(3):317–334.
- Mthembu, J. 2015. *What it means to be a coloured man on the Cape Flats* / UCT News. Available: <https://www.news.uct.ac.za/article/-2015-07-30-what-it-means-to-be-a-coloured-man-on-the-cape-flats> [2020, September 23].
- Mukong, A.K., Van Walbeek, C. & Ross, H. 2017. Lifestyle and Income-related Inequality in Health in South Africa. *International Journal for Equity in Health*. 16(1):1–14. DOI: 10.1186/s12939-017-0598-7.
- Müller, A.M. 2016. Behavioural mHealth in Developing Countries: What About Culture? *European Health Psychologist*. 18(6):294–296.
- Mutunda, S. 2017. Luvalé Personal Names and Naming Practices?: A Socio- Cultural Analysis. *International Journal of Education, Culture and Society*. 1(3):75–81.
- Myers, M.D. 1997. Qualitative Research in Information Systems. *MIS Quarterly*. 21(2):241. DOI: 10.2307/249422.
- Myers, M.D. & Newman, M. 2007. The qualitative interview in IS research: Examining the craft. *Information and Organization*. 17(1):2–26.
- Nakata, C. 2009. *Beyond Hofstede: Culture Frameworks for Global Marketing and Management*. 1st ed. New York: Palgrave Macmillian.
- Nasi, G., Cucciniello, M. & Guerrazzi, C. 2015. The performance of mHealth in cancer supportive care: A research agenda’, *Journal of Medical Internet Research*, 17(2), p. e3764. DOI: 10.2196/jmir.3764.
- National Department of Health. 2019. *National Digital Health Strategy for South Africa 2019 - 2024*. <http://www.health.gov.za/wp-content/uploads/2020/11/national-digital-strategy-for-south-africa-2019-2024-b.pdf>.
- Negahban, A. & Chung, C.-H. 2014. Discovering determinants of users perception of mobile device functionality fit. *Computers in Human Behavior*. 35:75–84. DOI: 10.1016/j.chb.2014.02.020.
- Nelson, L.A., Mulvaney, S.A., Gebretsadik, T., Ho, Y.-X., Johnson, K.B. & Osborn, C.Y. 2016. Disparities in the use of a mHealth medication adherence promotion intervention for low-income adults with type 2 diabetes. *Journal of the American Medical Informatics Association*. 23(1):12–18. DOI: 10.1093/jamia/ocv082.
- Ng, S.I., Lee, J.A. & Soutar, G. 2007. Are Hofstede’s and Schwartz’s value frameworks congruent? *International Marketing Review*. 24(2):164–180.
- Nilsson, S. 2016. Coloured by Race: A study about the Making of Coloured Identities in South Africa. UPPSALA UNIVERSITET.
- Nnubia, U.I., Ibeanu, V.N. & Okechukwu, F.O. 2020. Characterizing female breadwinners among Nigerian primary school teachers. *Community, Work & Family*. (July, 28):1–15. DOI:

10.1080/13668803.2020.1797634.

- Nuq, P.A. & Aubert, B. 2013. Towards a better understanding of the intention to use: The case of developing countries. *International Journal of Healthcare Management*, 6(4):217–236.
- Olasina, G. & Mutula, S. 2015. The influence of national culture on the performance expectancy of e-parliament adoption. *Behaviour & Information Technology*. 34(5):492–505. DOI: 10.1080/0144929X.2014.1003326.
- Orb, A., Eisenhauer, L. & Wynaden, D. 2001. Ethics in Qualitative Research. *Journal of Nursing Scholarship*. 33(1):93–96.
- Orlikowski, W.J. & Baroudi, J.J. 1991. Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research*. 2(1):1–28. DOI: 10.1287/isre.2.1.1.
- Othman, M., Halil, N.M., Yusof, M.M., Mohamed, R. & Abdullah, M.H.A. 2018. Empowering Self-Management through M-Health Applications. *MATEC Web of Conferences*. 150:05018. DOI: 10.1051/mateconf/201815005018.
- Özbilen, P. 2017. The Impact of National Culture on New Technology Adoption by Firms: A Country Level Analysis. *International Journal of Innovation, Management and Technology*. 8(4):299–305. DOI: 10.18178/ijimt.2017.8.4.745.
- Ozturk, A.B., Nusair, K., Okumus, F. & Hua, N. 2016. The role of utilitarian and hedonic values on users' continued usage intention in a mobile hotel booking environment. *International Journal of Hospitality Management*. 57:106–115. DOI: 10.1016/j.ijhm.2016.06.007.
- Park, H.S. & Lee, D.W. 2009. A Test of Theory of Planned Behavior in Korea: Participation in Alcohol-related Social Gatherings. *International Journal of Psychology*. 44(6):418–433. DOI: 10.1080/00207590802644741.
- Park, J., Yang, S. & Lehto, X. 2007. Adoption of mobile technologies for Chinese consumers. *Journal of Electronic Commerce Research*. 8(3):196–206.
- Parrinello, C.M., Rastegar, I., Godino, J.G., Miedema, M.D., Matsushita, K. & Selvin, E. 2015. Prevalence of and Racial Disparities in Risk Factor Control in Older Adults With Diabetes: The Atherosclerosis Risk in Communities Study. *Diabetes Care*. 38:1290–1298. DOI: 10.2337/dc15-0016.
- Peek, S.T.M., Wouters, E.J.M., van Hoof, J., Luijkx, K.G., Boeije, H.R. & Vrijhoef, H.J.M. 2014. Factors influencing acceptance of technology for aging in place: A systematic review. *International Journal of Medical Informatics*. 83(4):235–248. DOI: 10.1016/j.ijmedinf.2014.01.004.
- Petersen, F. 2011. The realisation of business benefits when implementing mandatory software in an IT department: A case study in a South African financial services organisation A. University of the Western Cape.
- Petersen, F., Pather, S. & Tucker, W.D. 2018. User acceptance of ICT for diabetes self-management in the Western Cape, South Africa. In *African Conference of Information Systems and Technology (ACIST)*. Cape Town. 1–11.
- Petersen, F., Brown, A., Pather, S. & Tucker, W.D. 2019. Challenges for the adoption of ICT for diabetes self-management in South Africa. *The Electronic Journal of Information Systems in Developing Countries*. 86(5):1–14. DOI: 10.1002/isd2.12113.

- Petersen, F., Pather, S. & Tucker, W.D. 2019. Using ICT to achieve developmental goals in low socio-economic communities: Diabetic patients in the Western Cape, South Africa. In *South Africa - Sweden University Forum (SASUF)*. Available: https://www.researchgate.net/publication/335292357_Using_ICT_to_achieve_developmental_goals_in_low_socio-economic_communities_Diabetic_patients_in_the_Western_Cape_South_Africa
- Petersen, F., Jacobs, M. & Pather, S. 2020. Barriers for User Acceptance of Mobile Health Applications for Diabetic Patients: Applying the UTAUT Model. In *IFIP International Federation for Information Processing 2020*. V. 12067 LNCS. Springer. 61–72. DOI: 10.1007/978-3-030-45002-1_6.
- Pheiffer, C., Pillay-Van Wyk, V., Joubert, J.D., Levitt, N., Nglazi, M.D. & Bradshaw, D. 2018. The prevalence of type 2 diabetes in South Africa: A systematic review protocol. *BMJ Open*. 8(7):1–4. DOI: 10.1136/bmjopen-2017-021029.
- Pichitchaisopa, N. & Naenna, T. 2013. Factors affecting the adoption of healthcare information technology. *Excli J*. 12:413–436. DOI: 10.17877/DE290R-5602.
- Polit, D.F., Beck, C.T. & Hungler, B. p. 2006. *Essentials of nursing research: methods, appraisal, and utilization*. V. 13. New York. DOI: 10.7748/nr.13.4.91.s11.
- Praveena, A. & Thomas, S. 2014. Continuance Intention to Use Facebook: A Study of Perceived Enjoyment and TAM. *Bonfring International Journal of Industrial Engineering and Management Science*. 4(1):24–29. DOI: 10.9756/bijiems.4794.
- Presidential Infrastructure Coordinating Commission. 2012. *A summary of the South African national infrastructure plan*.
- Rasinger, M.S. 2013. *Quantitative Research in Linguistics: An introduction*. 2nd ed. Bloomsbury Academic.
- Rebolledo, J.A. & Arellano, R. 2016. Cultural Differences and Considerations When Initiating Insulin: TABLE 1. *Diabetes Spectrum*. 29(3):185–190. DOI: 10.2337/diaspect.29.3.185.
- Reid, M., Walsh, C., Raubenheimer, J., Bradshaw, T., Pienaar, M., Hassan, C., Nyoni, C. & Le Roux, M. 2018. Development of a health dialogue model for patients with diabetes: A complex intervention in a low-/middle income country. *International Journal of Africa Nursing Sciences*. 8:122–131. DOI: 10.1016/j.ijans.2018.05.002.
- Reyes, J., Tripp-Reimer, T., Parker, E., Muller, B. & Laroche, H. 2017. Factors Influencing Diabetes Self-Management Among Medically Underserved Patients With Type II Diabetes. *Global Qualitative Nursing Research*. 4(1–3):1–13. DOI: 10.1177/2333393617713097.
- Rohner, R. 1984. Toward a conception of culture for cross-cultural psychology. *Journal of Cross-Cultural Psychology*. 15(2):111–138.
- Rossmann, C., Riesmeyer, C., Brew-Sam, N., Karnowski, V., Joeckel, S., Chib, A. & Ling, R. 2019. Appropriation of Mobile Health for Diabetes Self-Management: Lessons From Two Qualitative Studies. *JMIR Diabetes*. 4(1):e10271. DOI: 10.2196/10271.
- Roux, M. le, Walsh, C., Reid, M. & Raubenheimer, J. 2018. Diabetes-related knowledge, attitude and practices (KAP) of adult patients with type 2 diabetes mellitus in the Free State province, South Africa. *South African Journal of Clinical Nutrition*. 32(4):83–90. DOI: 10.1080/16070658.2018.1468536.
- Sachdeva, S., Khalique, N., Ansari, M., Khan, Z., Mishra, S. & Sharma, G. 2015. Cultural

- determinants: Addressing barriers to holistic diabetes care. *Journal of Social Health and Diabetes*. 3(1):33–38. DOI: 10.4103/2321-0656.140885.
- Sambasivan, M., Esmaeilzadeh, P., Kumar, N. & Nezakati, H. 2012. Intention to adopt clinical decision support systems in a developing country: Effect of Physician's perceived professional autonomy, involvement and belief: A cross-sectional study. *BMC Medical Informatics and Decision Making*. 12(1):1–8. DOI: 10.1186/1472-6947-12-142.
- Sandelowski, M. 1986. The problem of rigor in qualitative research. *Advances in Nursing Science*. 8(3):27–37. DOI: 10.1097/00012272-198604000-00005.
- Sandelowski, M. 1995. Sample size in qualitative research. *Research in Nursing and Health*. 18(2):179–183.
- Saunders, M., Lewis, P. & Thornhill, A. 2012. *Research Methods for Business Students*. 4th ed. Pearson Education Limited.
- Saunders, M., Lewis, P. & Thornhill, A. 2016. *Research Methods for Business Students*. 7th ed. Pearson Education Limited.
- Saunders, M., Lewis, P. & Thornhill, A. 2019. *Research Methods for Business Students*. 8th ed. Pearson Education Limited.
- Scheibe, M., Reichelt, J., Bellmann, M. & Kirch, W. 2015. Acceptance Factors of Mobile Apps for Diabetes by Patients Aged 50 or Older: A Qualitative Study. *Medicine 2.0*. 4(1). DOI: 10.2196/med20.3912.
- Scupin, R. 2008. Chapter Three. In *Cultural Anthropology: A Global Perspective*. 8th ed.
- Shiu, E., Walsh, G., Hassan, L.M. & Parry, S. 2015. The direct and moderating influences of individual-level cultural values within web engagement: A multi-country analysis of a public information website. *Journal of Business Research*. 68(3):534–541. DOI: 10.1016/j.jbusres.2014.09.009.
- Shukri, M., Jones, F. & Conner, M. 2016. Work Factors, Work-Family Conflict, the Theory of Planned Behaviour and Healthy Intentions: A Cross-Cultural Study. *Stress and Health*. 32(5):559–568. DOI: 10.1002/smi.2662.
- Simons, H. 2009. *Case study research in practice*. 1st ed. Los Angeles: CA: SAGE Publications.
- South African History Online. 2011a. *Cape Town the Segregated city*. Available: <https://www.sahistory.org.za/article/cape-town-segregated-city>.
- South African History Online. 2011b. *Cape Flats, Cape Town*. Available: <https://www.sahistory.org.za/place/cape-flats-cape-town> [2020, December 07].
- South African History Online. 2020. *Mitchells Plain, Cape Flats*. Available: <https://www.sahistory.org.za/place/mitchells-plain-cape-flats> [2020, September 23].
- Srite, M. 2006. Culture as an explanation of technology acceptance differences: An empirical investigation of Chinese and US users. *Australasian Journal of Information Systems*. 14(1):30–52.
- Srite & Karahanna. 2006. The Role of Espoused National Cultural Values in Technology Acceptance. *MIS Quarterly*. 30(3):679. DOI: 10.2307/25148745.
- Sriwindono, H. & Yahya, S. 2012. Toward Modeling the Effects of Cultural Dimension on ICT

Acceptance in Indonesia. *Procedia - Social and Behavioral Sciences*. 65(ICIBSoS):833–838. DOI: 10.1016/j.sbspro.2012.11.207.

Sriwindono, H. & Yahya, S. 2014. The Influence of Cultural Dimension on ICT Acceptance in Indonesia Higher Learning Institution. *Australian Journal of Basic and Applied Sciences*. 8(5):215–225.

Stake, R. 2006. *Multiple case study analysis*. New York: Guilford.

Statista. 2019. *Africa number of internet users by country 2019*. Available: <https://www.statista.com/statistics/505883/number-of-internet-users-in-african-countries/> [2020, November 18].

Statista. 2020. *Worldwide internet users by region 2020*. Available: <https://www.statista.com/statistics/265147/number-of-worldwide-internet-users-by-region/> [2020, November 18].

Statistics South Africa. 2011. *Local Municipality | Statistics South Africa*. Available: http://www.statssa.gov.za/?page_id=993&id=city-of-cape-town-municipality [2020, October 06].

Statistics South Africa. 2013. *City of Cape Town-2011 Census Suburb Mitchells Plain*. Compiled by Strategic Development Information and GIS Department. City of Cape Town.

Statistics South Africa. 2016a. *Mortality and causes of death in South Africa*. Pretoria. DOI: Statistical release P0309.3.

Statistics South Africa. 2016b. *Provincial profile: Western Cape*. Available: www.statssa.gov.za/info@statssa.gov.za%0Awww.statssa.gov.za.

Statistics South Africa. 2018. *General Household Survey, 2018*. Statistical release P0318.

Statistics South Africa. 2019. *General Household Survey, 2019*. Statistical release P0318.

Straub, E.T. 2009. Understanding Technology Adoption : Theory and Future Directions for Informal Learning. *Review of Educational Research*. 79(2):625–649.

Straub, D., Keil, M. & Brenner, W. 1997. Testing the technology acceptance model across cultures: A three country study. *Information & Management*. 33(1):1–11.

Strauss, A. & Corbin, J. 1990. *Basics of Qualitative Research*. 2nd ed. SAGE Publications.

Su, Z. & Sauers, D.A. 2009. THE APPLICABILITY OF WIDELY EMPLOYED FRAMEWORKS IN CROSS-CULTURAL MANAGEMENT. *Journal of Academic Research in Economics*. 1–24.

Sun, S., Lee, P. & Law, R. 2019. Impact of cultural values on technology acceptance and technology readiness. *International Journal of Hospitality Management*. 77:89–96. DOI: 10.1016/j.ijhm.2018.06.017.

Sun, Y., Wang, N., Guo, X. & Peng, Z. 2013. Understanding the acceptance of mobile health services: A comparison and integration of alternative model. *Journal of Electronic Commerce Research*. 14(2):183–201.

Surendran, P. 2012. Technology Acceptance Model: A survey of Literature. *International Journal of Business and Social Research (IJBSR)*. 2(4):175–178. DOI: 10.1016/j.biortech.2015.06.132.

Swierad, E., Vartanian, L. & King, M. 2017. The Influence of Ethnic and Mainstream Cultures on

- African Americans' Health Behaviors: A Qualitative Study. *Behavioral Sciences*. 7(4):49. DOI: 10.3390/bs7030049.
- Ta'amneh, A. 2012. EXAMINING THE IMPACT OF CULTURE AND LANGUAGE ON THE USER ACCEPTANCE OF THE MEDIA WEBSITE IN JORDAN ISLAM YAHYA AHMAD TA'AMNEH DOCTOR OF PHILOSOPHY UNIVERSITI UTARA MALAYSIA 2012. Universiti Utara Malaysia.
- Taherdoost, H. 2018. A review of technology acceptance and adoption models and theories. *Procedia Manufacturing*. 22:960–967. DOI: 10.1016/j.promfg.2018.03.137.
- Tamilmani, K., Rana, N. P. and Dwivedi, Y. K. 2017. A systematic review of citations of UTAUT2 Article and its usage trends', in *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*. Springer Verlag, pp. 38–49. DOI: 10.1007/978-3-319-68557-1_5.
- Tamilmani, K., Rana, N. P. and Dwivedi, Y. K. 2020. Consumer Acceptance and Use of Information Technology: A Meta-Analytic Evaluation of UTAUT2', *Information Systems Frontiers*. DOI: 10.1007/s10796-020-10007-6.
- Tan, M.L., Prasanna, R., Stock, Kristin, Doyle, E., Johnson David & Leonard, G. 2018. Usability Factors Affecting the Continuance Intention of Disaster Apps. In *ISCRAM Asia Pacific 2018: Innovating for Resilience – 1st International Conference on Information Systems for Crisis Response and Management Asia Pacific*. Wellington. 1–12. Available: https://www.researchgate.net/publication/330765243_Usability_Factors_Affecting_the_Continuance_Intention_of_Disaster_Apps [2020, October 19].
- Tarhini, A. 2013. The Effects of Cultural dimensions and Demographic Characteristics on E-learning acceptance. Brunel University. Available: <https://arxiv.org/abs/1607.01492>.
- Tarhini, A., Hone, K. & Liu, X. 2014. The effects of individual differences on e-learning users' behaviour in developing countries: A structural equation model. *Computers in Human Behavior*. 41:153–163. DOI: 10.1016/j.chb.2014.09.020.
- Tarhini, A., Hone, K. & Liu, X. 2015. A cross-cultural examination of the impact of social, organisational and individual factors on educational technology acceptance between British and Lebanese university students. *British Journal of Educational Technology*. 46(4):739–755. DOI: 10.1111/bjet.12169.
- Tarhini, A., Hone, K., Liu, X. & Tarhini, T. 2017. Examining the moderating effect of individual-level cultural values on users' acceptance of E-learning in developing countries: a structural equation modeling of an extended technology acceptance model. *Interactive Learning Environments*. 25(3):306–328. DOI: 10.1080/10494820.2015.1122635.
- Taylor, S. & Todd, P.A. 1995. Understanding Information Technology Usage: A Test of Competing Models. *Information Systems Research*. 6(4):144–176.
- Tchombe, T. 1995. *Handbook of African Educational Theories and Practices A Generative Teacher Education Curriculum*. V. 6.
- Tennant, B., Stellefson, M., Dodd, V., Chaney, B., Chaney, D., Paige, S. & Alber, J. 2015. eHealth literacy and Web 2.0 health information seeking behaviors among baby boomers and older adults. *Journal of Medical Internet Research*. 17(3):1–12. DOI: 10.2196/jmir.3992.
- Teo, T. & Huang, F. 2018. Investigating the influence of individually espoused cultural values on teachers' intentions to use educational technologies in Chinese universities. *Interactive*

Learning Environments. 27(5–6):813–829. DOI: 10.1080/10494820.2018.1489856.

The Local Government Handbook. 2017. *City of Cape Town Metropolitan Municipality*.

Thowfeek, M.H. & Jaafar, A. 2012. The Influence of Cultural Factors on the Adoption of E-learning: A Reference to a Public University in Sri Lanka. *Applied Mechanics and Materials*. 263–266:3424–3434. DOI: 10.4028/www.scientific.net/AMM.263-266.3424.

Traina, S., Mathias, S., Colwell, H., Crosby, R. & Abraham, C. 2016. The Diabetes Intention, Attitude, and Behavior Questionnaire: evaluation of a brief questionnaire to measure physical activity, dietary control, maintenance of a healthy weight, and psychological antecedents. *Patient Preference and Adherence*. (February):1–213. DOI: 10.2147/PPA.S94878.

Triandis, H.C. 1989. The Self and Social Behavior in Differing Cultural Contexts. *Psychological Review*. 96(3):506–520. DOI: 10.1037/0033-295X.96.3.506.

Triandis, H.C. 1995. *Individualism and collectivism*. Boulder, CO: Westview Press.: Westview Press.

Trompenaars, F. 1993. *Riding the Waves of Culture*. London: Nicholas Brealy.

Trompenaars, A. & Hampden-Turner, C. 1997. *Riding the Waves of Culture: Understanding Cultural Diversity in Global Business*. 2nd ed. London: Nicholas Brealey.

Tseng, J., Halperin, L., Ritholz, M. & Hsu, W. 2013. Perceptions and management of psychosocial factors affecting type 2 diabetes mellitus in Chinese Americans. *Journal of Diabetes and its Complications*. 27(4):383–90.

Tylor, E.B. 1871. *PRIMITIVE CULTURE: RESEARCHERS INTO THE DEVELOPMENT OF MYTHOLOGY, PHILOSOPHY, RELIGION, ART, AND CUSTOM*. London.

UNESCO. 2014. Roadmap Education for Sustainable Development. *Unesco*. 37.

Ung, S.K. 2017. Role of Cultural and Psychological Factors Influencing Diabetes Treatment Adherence. Loma Linda University.

United Nations. 2015. *Sustainable Development Goals*.

Vaportzis, E., Giatsi Clausen, M. & Gow, A.J. 2017. Older Adults Perceptions of Technology and Barriers to Interacting with Tablet Computers: A Focus Group Study. *Frontiers in Psychology*. 8:1687. DOI: 10.3389/fpsyg.2017.01687.

Venkatesh, V. & Davis, F.D. 2000. A Theoretical Extension of the Technology Acceptance Model : Four Longitudinal Field Studies. *Management Science*. 46(2):186–204.

Venkatesh, Thong & Xu. 2012. Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*. 36(1):157. DOI: 10.2307/41410412.

Venkatesh, V., Morris, M.G., Davis, G.B. & Davis, F.D. 2003. User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*. 27(3):425–478.

Venkatesh, V., Davis, F. & Morris, M. 2007. Dead Or Alive? The Development, Trajectory And Future Of Technology Adoption Research. *Journal of the Association for Information Systems*. 8(4):267–286. DOI: 10.17705/1jais.00120.

Venkatesh, V., Thong, J.Y.L. & Xu, X. 2016. Unified Theory of Acceptance and Use of Technology: A Synthesis and the Road Ahead. *Journal of the Association for Information Systems*.

17(5):328–376. DOI: 10.1080/1097198X.2010.10856507.

Waki, K., Fujita, H., Uchimura, Y., Omae, K., Aramaki, E., Kato, S., Lee, H., Kobayashi, H., et al. 2014. DialBetics. *Journal of Diabetes Science and Technology*. 8(2):209–215. DOI: 10.1177/1932296814526495.

Walsham, G. 1993. *Interpreting Information Systems in Organizations*. Chichester, England: John Wiley and Sons Ltd.

Western Cape Government. 2017. *Socio-economic Profile*.

Williams, R. 1985. *Keywords: A vocabulary of culture and society*. New York: Oxford University Press.

Woods, F.N. & Catanzaro, M. 1988. *Nursing Research: Theory and Practice*. Michigan: Mosby.

World Health Organisation. 2018. *Facts sheet*.

World Health Organization. 2011. mHealth: New horizons for health through mobile technologies. *Observatory*. 3(June):66–71. DOI: 10.4258/hir.2012.18.3.231.

World Health Organization. 2016. *Global Report on Diabetes*. Geneva. DOI: 10.1371/journal.pone.0127954.

World Health Organization. 2018. *NCD mortality and morbidity*. World Health Organization.

World Health Organization. 2020. *Diabetes Key Facts*. Available: <https://www.who.int/news-room/fact-sheets/detail/diabetes> [2020, October 02].

Xin, H., Techatassanasoontorn, A.A. & Tan, F.B. 2015. Antecedents of consumer trust in mobile payment adoption. *Journal of Computer Information Systems*. 55(4):1–10. DOI: 10.1080/08874417.2015.11645781.

Yavwa, Y. & Twinomurizi, H. 2018. Impact of Culture on E-Government Adoption Using UTAUT: A Case of Zambia. In *2018 International Conference on eDemocracy & eGovernment (ICEDEG)*. IEEE. 356–360. DOI: 10.1109/ICEDEG.2018.8372350.

Yin, R.K. 2014. *Case study research: Design and methods*. Los Angeles: 4th ed. Los Angeles: SAGE Publications Inc.

Yin, R.K. 2018. *Case study research and application: Design and Methods*. 6th ed. Los Angeles: SAGE Publications Inc.

Yuan, S., Ma, W., Kanthawala, S. & Peng, W. 2015. Keep Using My Health Apps: Discover Users' Perception of Health and Fitness Apps with the UTAUT2 Model. *Telemedicine and e-Health*. 21(9):735–741. DOI: 10.1089/tmj.2014.0148.

Yun, D. & Park, H.S. 2010. Culture and the Theory of Planned Behaviour: Organ Donation Intentions in Americans and Koreans. *Journal of Pacific Rim Psychology*. 4(2):130–137. DOI: 10.1375/prp.4.2.130.

Zayyad, M.A. & Toycan, M. 2018. Factors affecting sustainable adoption of e-health technology in developing countries: an exploratory survey of Nigerian hospitals from the perspective of healthcare professionals. *PeerJ*. 6:2–15. DOI: 10.7717/peerj.4436.

Zeng, B., Sun, W., Gary, R., Li, C. & Liu, T. 2014. Towards a Conceptual Model of Diabetes Self-Management among Chinese Immigrants in the United States. *International Journal of*

Environmental Research and Public Health. 11(7):6727–6742. DOI: 10.3390/ijerph110706727.

Zhang, X. & Maruping, L.M. 2008. Household technology adoption in a global marketplace: Incorporating the role of espoused cultural values. *Information Systems Frontiers*. 10(4):403–413. DOI: 10.1007/s10796-008-9099-y.

Zhang, Y., Weng, Q. & Zhu, N. 2018. The relationships between electronic banking adoption and its antecedents: A meta-analytic study of the role of national culture. *International Journal of Information Management*. 40:76–87. DOI: 10.1016/j.ijinfomgt.2018.01.015.

Zhao, J., Freeman, B. & Li, M. 2016. Can mobile phone apps influence people's health behavior change? An evidence review. *Journal of Medical Internet Research*. 18(11):1-7. DOI: 10.2196/jmir.5692.

Zhao, Y., Ni, Q. & Zhou, R. 2018. What factors influence the mobile health service adoption? A meta-analysis and the moderating role of age. *International Journal of Information Management*. 43:342–350. DOI: 10.1016/j.ijinfomgt.2017.08.006.

Zheng, X., Ghoul, S. El, Guedhami, O. & Kwok, C.C.Y. 2013. Collectivism and corruption in bank lending. *Journal of International Business Studies*. 44(4):363–390. DOI: 10.1057/jibs.2013.19.





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Appendix A: Research Project Information Sheet

Project Title:	<i>The role of culture in mobile application adoption amongst diabetes patients in previously disadvantaged communities in the Western Cape.</i>
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What is this study about?

My name is Mariam Jacobs, a student at the University of the Western Cape (South Africa) pursuing a Masters' Degree in Information Systems. I am conducting a study based on diabetes patients and how they self-manage their condition. This study is solely for academic purposes. The results of this research will also be used to inform policymakers such as the United Nations develop a greater insight into how diabetes patients manage their condition

Is it compulsory to participate in in this research and may I stop participating at any time?

Your participation in this research is completely and entirely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, there is no penalty.

What will I be asked to do if I agree to participate?

If you agree to participate in this research project, you will be asked to complete an interview guide to examine your intention to use mobile health applications for diabetes self-management. This could potentially take up to approximately 30 minutes. If you choose not to answer any question, you do not have to.

Would my participation in this study be kept confidential and is my anonymity protected?

You are not required to provide any personal details, such as your name or clinical information, such as blood glucose readings. All other details such as your age, education, type of diabetes etc is therefore anonymous. This interview guide will be in a form of a semi-structured interview. Data will be stored in a private Google drive account and only the supervisors assigned to this study will have access to the information. Your responses are therefore anonymous. The study will use coding software, Atlas.ti 8 to facilitate the analysis and provide an overall view of the results. This will be presented in themes pertaining to culture and technology acceptance.

What are the risks of this research?

There are zero known risks associated with participating in this research process. This research will not expose you to any harm as a result of your participation.

What are the benefits of this research?

The outcomes of this study will serve to inform policy makers about the influence that culture has on mobile health acceptance and use amongst diabetes patients. The outcome of the study will serve to inform and improve current m-health related intervention which would result in improved or successful adoption and uptake of ICT.

What if I have questions?

If you have any questions feel free to contact Mariam Jacobs, the researcher. My cell-phone number is 084 334 7500 and my e-mail address is 3462668@myuwc.ac.za.

You may also contact study leader: Prof Shaun Pather, University of the Western Cape, Department of Information Systems, Telephone: +27 21 9593248, Email: spather@uwc.ac.za

NOTE: This research project has received ethical approval from the Biomedical Ethics Research Committee of the University of the Western Cape (BM19/8/6), Tel. 021 959 2988, email: research-ethics@uwc.ac.za



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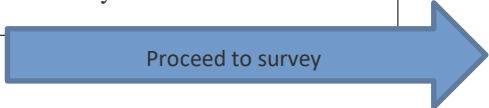
Appendix B: Research Participant Consent Form

Project Title:	<i>The role of culture in mobile application adoption amongst diabetes patients in previously disadvantaged communities in the Western Cape.</i>
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Please tick Yes or No to each of the following

	Yes	No
1. I confirm that I have read and understand the information sheet explaining the above research project and I have had the opportunity to ask questions about the project.		
2. I confirm that I am over the age of 18 years.		
3. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences.		
4. I understand that should I not wish to answer any particular question or questions, I am free to decline.		
5. I understand my responses and personal data will be kept strictly confidential.		
6. I give permission for members of the research team to have access to my anonymised responses.		
7. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the reports or publications that result for the research.		
8. I agree for the data collected from me to be used in future research.		
9. I understand that there are no risks or harm to myself by participating in the interview guide.		
10. I agree to take part in the above research project.		

If you have indicated YES to all the above, click on the arrow to continue to the Survey

Proceed to survey 

Please direct all queries to:

- Mariam Jacobs, the researcher. My cell-phone number is 084 334 7500 and my e-mail address is 3462668@myuwc.ac.za.
- You may also contact study leader: Prof Shaun Pather, University of the Western Cape, Department of Information Systems, Telephone: +27 21 9593248, Email: spather@uwc.ac.za

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Appendix C: The research instrument - Interview Guide

This interview aims to improve the self-management of diabetic patients by assessing how diabetic patients in marginalized communities manage their condition. This interview consists of questions of two theoretical frameworks; Hofstede's cultural dimensions and the Unified-Theory-of-Acceptance and Use of Technology 2 (UTAUT2). Furthermore, the AADE7™ Self-Care Behaviors related to diabetes <https://www.diabeteseducator.org/living-with-diabetes/aade7-self-care-behaviors> were incorporated to understand participants' attitudes towards managing their self-care activities with the assistance of a mobile application. Moreover, the biographical information will be recorded last to ensure validity of the results. The information provided by the participants will be kept confidential and no information will be given to any third parties. This interview guide is for patients with type 2 diabetes mellitus residing in disadvantaged communities. The interview should take between forty-five minutes to an hour to complete.

Introductory comments to interviewee

Good day and thank you for participating in my study which is about diabetes patients and how they self-manage their conditions.

I would like to commence by discussing 7 self-care activities that you may or may not be already aware of.

Diabetes self-management is based on 7 self-care behaviour activities. During our interview, I will be referring to "self-care activities" - This is explained as follows:

- 1. Healthy eating** – This is described as understanding the food groups that may or may not have a negative impact on your condition. This will help to maintain your blood glucose levels.
- 2. Being active** – May be perceived as any form of exercise such as walking and/or running.
- 3. Monitoring** – self-monitoring includes activities to help manage diabetes complications such as foot checks and blood glucose levels.
- 4. Taking prescribed medication** – consuming medication provided by a registered health professional.
- 5. Problem-solving** – is a strategy to attain each of the seven self-care behaviours and includes following a sequence of steps to effectively self-manage diabetes.
- 6. Healthy coping** – This is described as participating in activities that help diabetes patients cope with their condition. This includes, faith-based groups, forming part of diabetes support groups and/or taking up hobbies.
- 7. Reducing risks** – This is described as implementing risk reduction behaviours in your daily life to prevent or slow down the advancement of diabetes complications.

During our interview I will also be referring to mobile health applications. **Therefore, I would also like to explain to you what a mobile health application is and provide you with examples of what an app for diabetes self-management looks like.**

An m-health application is something that you use on your mobile phone and sometimes on tablet computers as well. mHealth applications may be used to self-manage diabetes. It has functionalities that can assist you in doing self-care activities (Healthy eating, exercise etc).

Examples of a diabetes app is provided at the end of this document.

GENERAL:

- a. Do you have a mobile phone?
- b. Do you use any application on your mobile phone? If yes, which app/s
Prompt: Social media apps (Facebook, Whatsapp), Email, Healthy apps (diabetes app, walking app, diet app)?
- c. How do you feel about using an app to help you manage your diabetes?
 - i. **Probing:** Would you be keen on trying an application for diabetes self-care activities

Question	Source
<p>1. Current users of a diabetes management app: When you made the decision to use APP X, what expectation did you have about how it would help you improve the way you did your daily diabetes management? Please explain your answer.</p> <p>2. Respondents who are not using an app: Consider the examples of applications that I showed you. What is your expectation as to how it will help you with your daily diabetes self-management activities? Explain.</p>	<p>UTAUT2 (Performance expectancy)</p>
<p>3. Current users of a diabetes management app: When you made the decision to use APP X, how have you benefited from using the app for diabetes self-management. Please explain</p> <p>4. Respondents who are not using the app: What do you think of using an APP for diabetes self-management activities?</p> <p>5. Respondents who are not using the app: What are the reasons for not using an app for diabetes management?</p> <p>6. Probing: How you balance time spent on your diabetes self-management and family time?</p>	<p>UTAUT2 (Performance expectancy)</p>
<p>7. Current users of a diabetes management app: When you first started using APP X, did you think that using an application would be difficult? Please explain your answer.</p> <p>8. Probing: Think about the time when you first started using APP X, do you think you would have kept on using the APP even if it might have been a little difficult at the beginning? Explain</p>	<p>UTAUT2 (Effort expectancy)</p>
<p>9. Respondents who do not use an app: Do you think it that using an APP for diabetes self-management will be easy?</p>	<p>UTAUT2</p>

<p>Explain?</p> <p>10. PROBING: Do you believe that you could in future become skilful at using an APP for diabetes self-management? Explain</p>	(Effort expectancy)
<p>11. Current users of a diabetes management app: Think about the time before you started using APP X. Were there any people (e.g., family, friends, people in the community, work colleagues) who were influential in getting you to start using APP X? Explain why.</p> <p>12. Probing: Do you think that the quality of your diabetes related decisions is normally better than that of making decisions with your doctors/nurses at the clinic? Explain</p>	<p>UTAUT2 (Social influence)</p>
<p>13. Respondents who do not use an app: In what ways does/did your family (or close friends / associates) support you in your diabetes self-management?</p> <p>14. Probing: Do you prefer making decisions about your diabetes related activities on your own or do you prefer to consult your doctor? Please explain?</p> <p>15. Probing: In your opinion, do you feel uncomfortable if you disagree with your doctors/health team regarding diabetes self-management? Explain</p>	<p>UTAUT2 (Social influence)</p>
<p>16. Current users of a diabetes management app: When you first started using your app, what do you think were the factors that made it easy for you to start? Prompt: skills, access to a network, affording cost of data</p> <p>17. Probing: If any of your circumstances had to change that will prevent you from using the app, what would they be?</p> <p>18. Respondents who do not use an app: What are the factors that would make you use an app for diabetes self-care activities. Prompt: skills, access to a network, affording cost of data</p>	<p>UTAUT2 (Facilitating conditions)</p>
<p>19. Current user and non-current user: are there anyone available to assist you in using an app, if so, what assistance is available? Prompt: Family, help desk, tech supporter</p> <p>20. Non- User: Probing: Does the idea of using an APP for diabetes self-management stress you out?</p>	<p>UTAUT2 (Facilitating conditions)</p>
<p>21. Current users of a diabetes management app: Think about a time when you started using APP X, did you find the application is fun, enjoyable, entertaining? Please explain</p> <p>22. Respondents who do not use an app: Do you think using an application for diabetes self-care activities will be fun, enjoyable, entertaining? Please explain</p> <p>23. Probing: Do you care more about living a healthier lifestyle with diabetes than some people you know? Please explain</p>	<p>UTAUt2 (Hedonic Motivation)</p>
<p>24. Current users of a diabetes management app: Think about a</p>	<p>UTAUT2</p>

<p>time before you started using APP X. Did the issue of the cost of obtaining the app, and the ongoing costs of using it worry you at all? Explain</p> <p>25. Probing: Would you keep using the APP even if it's not free?</p> <p>26. Respondents who do not use an app: Would you download a diabetes APP that you have to pay for?</p> <p>27. Probing: How important is saving money to you?</p>	(Price Value)
<p>28. Current users of a diabetes management app: Think about the time when you started using APP X. Since then would you say you use it regularly? If so, how regularly? Explain</p> <p>29. Probing: Do you think that the app became easier to use over time? Please explain</p>	UTAUT2 (Habit)

Demographic Questions:

- What is your age? _____
- Male / Female? _____
- What are you currently doing? _____
- What type of diabetes do you have?
 - Type 2- insulin resistant, using oral diabetes medication e.g., metformin or
 - Type 2- using oral diabetes, medication and insulin
- What is your race group? _____
- What is your marital status? _____
- What is your educational level? _____
- Which language do you speak? _____
- Do you have medical aid? _____
- Which area do you currently reside in? _____



Appendix D: Example of a diabetes mobile application - MySugr



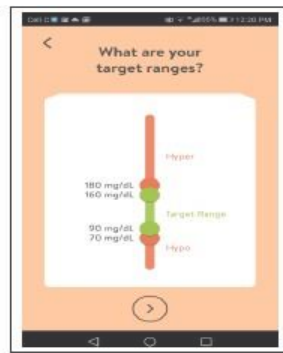
Once you download the app and sign in the app will ask you this question.



Once you state the type of diabetes you have the app will ask you this question



The app will ask you which measurement you use. For eg in SA we use grams



You will put your finger on the target area and press the arrow



Click which meter you use and press on the arrow



if you don't use a glucose sensor, scroll down and click non



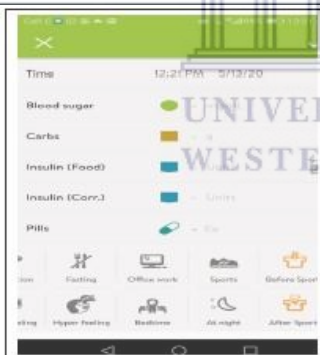
Once all information is completed you will come to this screen as you can connect your accu- chek to the app



Press the menu button- three lines in the left corner (previous picture). Once you do this you will see this page above. Press logbook



This is where you insert your readings for the day. If you connected your accu- chek to the app the glucose readings will be automatically on here



Once you have your information in you can press on the options below for eg, if you fasting you tap on the option.



You can scroll across the options as well. Eg, if you cleaning you tap on the option. You can also customize the cells



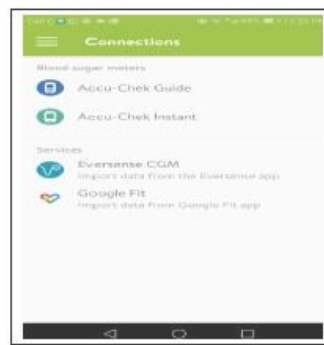
As you can see right on top, you can set reminders as well 😊



You may also insert your information here. Once you click on the calculator next to insulin (food). The bolus calculator will pop up



The Bolus calculator suggest the right amount of insulin to get in your blood sugar range



As I mentioned earlier, go to the menu option and connect your Accu-check to your phone via Bluetooth. There is a step by step guide



Once all your information is captured the app will look like this but with your information

Appendix E: Example of an interview transcript

INTERVIEWER: Do you have a mobile phone?

INTERVIEWEE: Yes, I do have cell phone

INTERVIEWER: Do you use any application on your mobile phone? For example,

Social media apps like Facebook, WhatsApp or healthy apps like a diabetes app, walking app that track the steps you take per day or a diet app?

INTERVIEWEE: Yes, I do.

INTERVIEWER: Which apps do you use?

INTERVIEWEE: I use all of the social media apps such as Facebook, Instagram, LinkedIn and WhatsApp.

INTERVIEWER: Do you use any apps for diabetes self-management? Such as walking app or apps that have the self-care activities functionalities?

INTERVIEWEE: You know the phone comes with a step tracker, so I use that. I also use an app called Mysugr which tracks your food intake, blood sugar levels and many other things.

INTERVIEWER: How do you feel about using the app to help you manage your diabetes

INTERVIEWEE: I like it uhm. it's interesting

INTERVIEWER: When you made the decision to use MySugr, what expectation did you have about how it would help you improve the way you did your daily diabetes management? Please explain your answer.

INTERVIEWEE: I expected it to be very easy to use, very user friendly not complex with lots of unnecessary functions that serves no purpose and I expected it to track my progress like the step tracker that comes on the phone does.

INTERVIEWER: When you made the decision to use MySugr, how have you benefited from using the app for diabetes self-management. Please explain

INTERVIEWEE: The app provided loads of benefits. For example, I was able to keep track of my glucose levels which helped me decide what I could eat on a daily basis [giggles].

INTERVIEWER: When you first started using MySugr, did you think that using an application would be difficult? Please explain your answer.

INTERVIEWEE: I didn't think It would be difficult. For me, it was just something that I had to get used too. I would say I'm good with technology so using the app is easy and very convenient.

INTERVIEWER: Think about the time when you first started using the app, do you think you would have kept on using the APP even if it might have been a little difficult at the beginning? Explain

INTERVIEWEE: Yes, I would have because my family especially my mother and wife want a report of how I manage my diabetes [giggles]. So I show them the app so they can get off my case. I'm a working man so I don't always have time to write down my glucose levels and keep track of everything so I knew having an app on my phone would help me in that regard that is what would kept me trying to use the app because I know the benefit of it.

INTERVIEWER: Think about the time before you started using the app. Were there any people such as family, friends, people in the community or even your work colleagues who were influential in getting you to start using the app?

INTERVIEWEE: My family and my work colleagues. When I was diagnosed with diabetes my wife would read up on it and send me links to lots of information and that is how we (me and my wife) came across a diabetes app. My family supports me in using the app. They remind me to use the app every time and I'm Indian so we eat lots of oily foods so they would always tell me to watch what I eat and do because my kids will follow what I do.

INTERVIEWER: Do you think that the quality of your diabetes related decisions is normally better than that of making decisions with your doctors/nurses at the clinic? Explain

INTERVIEWEE: I don't think the decisions I make will be better than a doctor. A doctor is qualified even though he does not know my body, his advice is always much more better. I do think that I manage my diabetes better when I use the app because I can take all the things, I do such as my eating habits and medication intake, like you call it self-care activities.

INTERVIEWER: Do you prefer making decisions about your diabetes related activities on your own or do you prefer to consult your doctor? Please explain?

INTERVIEWEE: A bit of both. I like to consult my doctor when I visit him but when I am not around him, I will use my own advice and do what I think best. If I am unsure and my doctor is not available, I will just research it by looking on google and see what there is.

INTERVIEWER: Google doesn't always provide accurate information

INTERVIEWEE: Yes, I know, but I also check on the diabetes support group Facebook page if what I am doing is okay or if someone had the same concern as me previously

INTERVIEWER: In your opinion, do you feel uncomfortable if you disagree with your doctors/health team regarding diabetes self-management? Explain

INTERVIEWEE: I don't feel uncomfortable. We are all people. I have nothing to be afraid of. _

INTERVIEWER: When you first started using your app, what do you think were the factors that made it easy for you to start? Factors such as skills, access to a network, affording cost of data.

INTERVIEWEE: My family encouraged me to use the application so that made it easier. Also, I have access to the internet so that is a plus. Also, I'm from the younger generation who knows how to work a cell phone. So, having the skills made it much easier.

INTERVIEWER: If any of your circumstances had to change that will prevent you from using the app, what would they be?

INTERVIEWEE: Situations that will make this hard will be, If my family grows any bigger, if the application receives any feature updates and if I no longer have data bundles to use the application I wouldn't bother with it. This is because the application takes up my time and also money for data that I could have rather spent on my children.

INTERVIEWER: are there anyone available to assist you in using an app, if so, what assistance is available for eg; family, help desk, tech supporter.

INTERVIEWEE: yes, my family is available they will always support and help me where they can because they know diabetes is a life-long condition and they always try to encourage me to seek any help I can get if it's via an app, support group or just researching

INTERVIEWEE: Think about a time when you started using APP X, did you find the application fun, enjoyable, entertaining? Please explain

INTERVIEWEE: yes, it was cool, I started watching my phone as I took steps just to see if it works but now it's just part of my daily life. So yes, it was fun and enjoyable at first. Regarding my sugar app, uhm it wasn't fun because everything I ate I had to record on the app.

INTERVIEWER: Think about a time before you started using APP X. Did the issue of the cost of obtaining the app, and the ongoing costs of using it worry you at all?

INTERVIEWEE: nah, the step count app comes with the phone and my sugar app had to be downloaded but it was free on the app store. There is a paid version of the sugar app, but it isn't needed.

INTERVIEWER: Would you keep using the APP even if it's not free?

Interviewee: not at all. The free apps are just convenient and helps me manage my daily diet and blood glucose level.

INTERVIEWER: Think about the time when you started using APP X. Since then would you say you use it regularly? If so, how regularly? Explain

INTERVIEWEE: the day I realised it was on my phone, which was immediately. For the sugar app, I use it every day to record my diet so that when I go to the doctor for anything diabetes related, I will show him my diet and my blood glucose history.

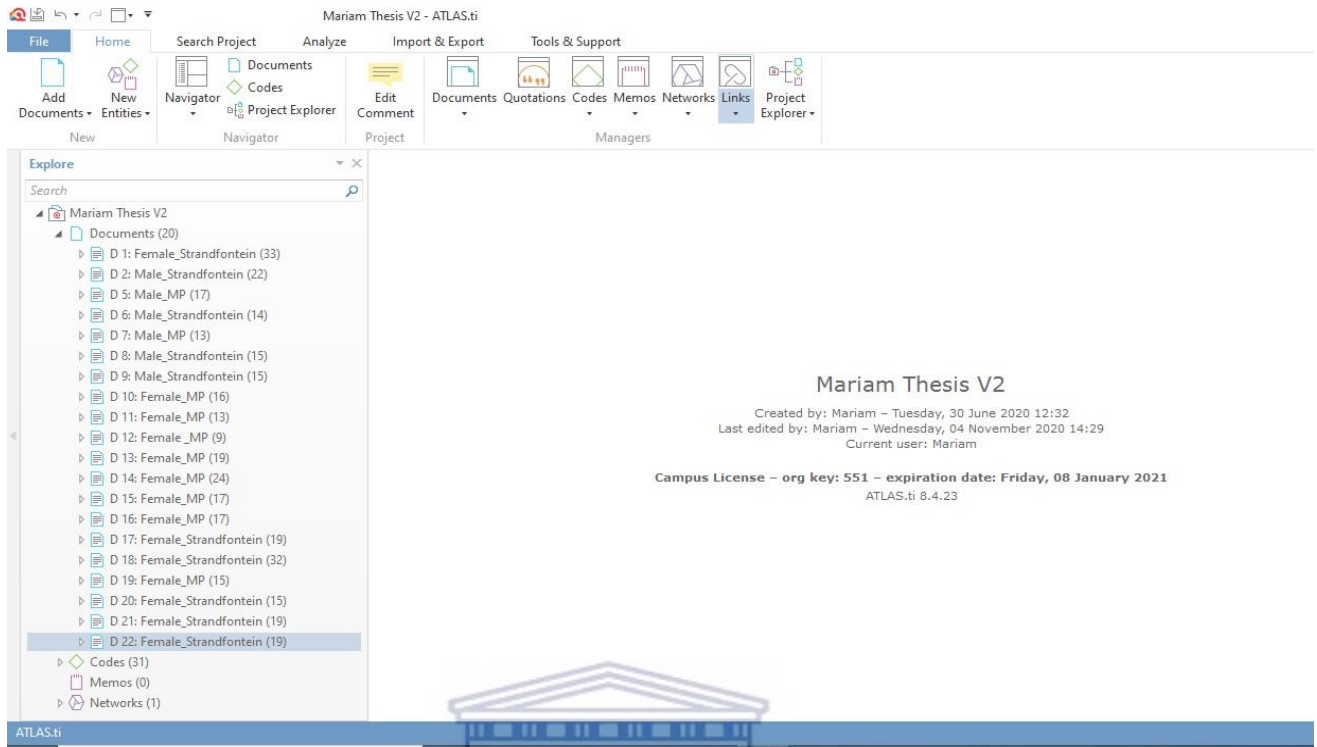
INTERVIEWER: Do you think that the app became easier to use over time? Please explain

INTERVIEWEE: yes, at first it was a little tough because I was not sure what to expect but now it's very simple because I know what the apps do and how it functions.



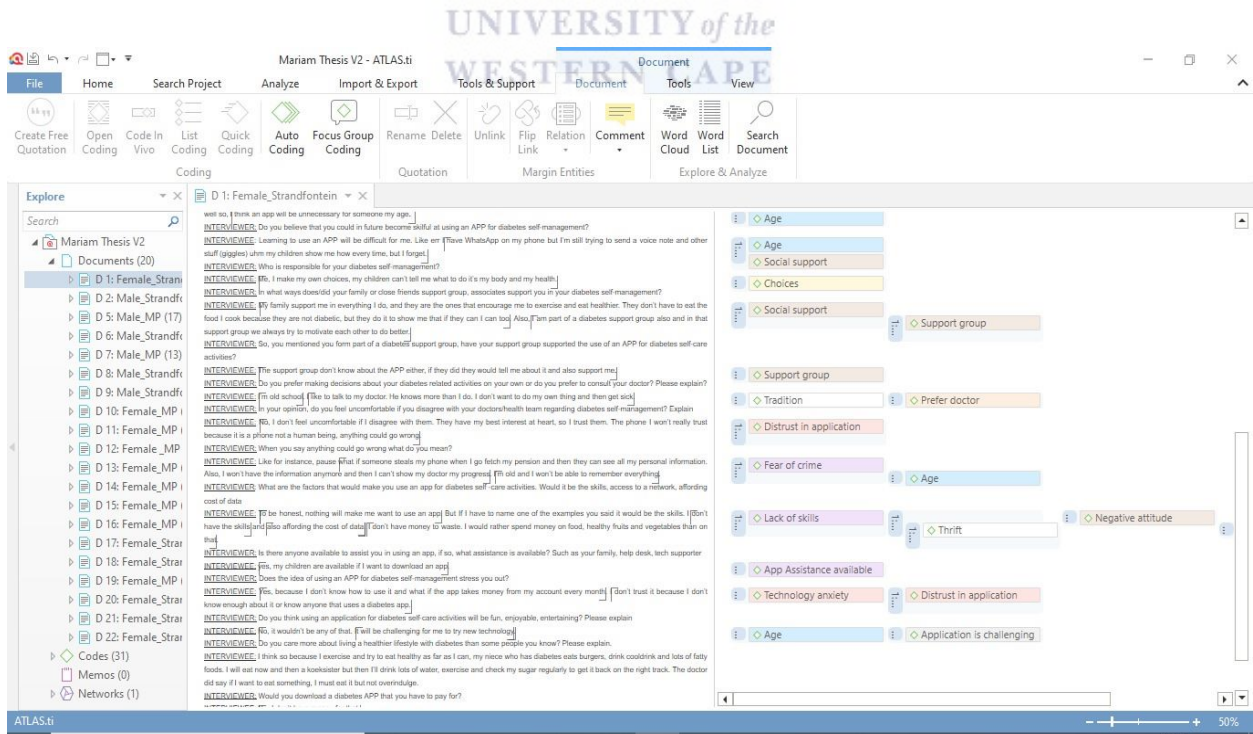
Appendix F: Screenshots from Atlas.ti 8

Uploaded documents to Atlas.ti



The screenshot shows the Atlas.ti interface for a project named 'Mariam Thesis V2 - ATLAS.ti'. The 'Explore' panel on the left lists 20 documents under 'Documents', categorized by gender and location (e.g., 'D 1: Female_Strandfontein (33)'). The right panel displays information for the selected document 'Mariam Thesis V2', including creation and last edit dates, user information, and license details.

Codes and the associated quotes from interview transcripts



This screenshot shows a document view in Atlas.ti with interview transcripts and associated codes. The 'Explore' panel on the left shows the document 'D 1: Female_Strandfontein'. The main area displays the transcript text, and the right panel shows a list of codes applied to the text, such as 'Age', 'Social support', 'Support group', 'Tradition', 'Prefer doctor', 'Distrust in application', 'Fear of crime', 'Lack of skills', 'Thrift', 'Negative attitude', 'App Assistance available', 'Technology anxiety', and 'Application is challenging'.

Codes with the associated categories

The screenshot shows the ATLAS.ti interface with the 'Code Manager' window open. The window displays a list of codes and their associated categories. The 'Code Groups' pane on the left shows a hierarchical view of the project's content, including 'Documents (20)', 'Codes (31)', 'Memos (0)', 'Networks (1)', 'Document Groups (0)', 'Code Groups (15)', 'Memo Groups (0)', 'Network Groups (0)', and 'Multimedia Transcripts (0)'. The 'Search Codes' pane on the right shows a list of codes with their associated categories, grounded status, density, and groups. The 'Comment' field at the bottom indicates 'Zero or multiple items selected'.

Name	Grounded	Density	Groups
Caregiver Influence	10	0	[Caregiver Obligations]
Choices	27	0	[Personal regulation]
Comfortable with doctor	4	0	[Opinions toward medical practitioners]
Compatibility of cellphone	4	0	[Technological convenience]
Disagreement with doctor	16	0	[Opinions toward medical practitioners]
Distrupt in application	6	0	[Technology Impediments]
Doctor provide advice	23	0	[Medical practioner influence]
Fear of crime	3	0	[Pre-disposing factors]
Find alternative application	4	0	[Technological convenience]
Lack of skills	8	0	[Pre-disposing factors]
Manage diabetes with app	5	0	[Personal regulation]
Negative attitude	2	0	[Individual responsibility]
Prefer doctor	13	0	[Medical practioner influence]
Pricing of application	33	0	[Traditional mindset]
Saving - low priority	5	0	[Monetary mindset]
Social support	31	0	[Social Cohesion]
Support group	7	0	[Social Cohesion]
Technology anxiety	22	0	[Technology Impediments]
Thrft	15	0	[Monetary mindset]
Time management	9	0	[Breadwinner Obligations]
Traditional mindset	4	0	[Traditional mindset]

All codes with the associated categories colour coded

