



**UNIVERSITY OF NAIROBI**

**SCHOOL OF COMPUTING AND INFORMATICS**

**USING MOBILE MESSAGING TO SUPPORT AFTERCARE FOR  
RECOVERING ALCOHOL ADDICTS**

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**REG NO. : P51/86134/2016**

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*A project submitted in partial fulfillment of the requirements for the award of  
Master of Science in Applied Computing of the University of Nairobi*

July 2018

## **DECLARATION**

I declare that this project report is my original work except where due references are cited. To the best of my knowledge, this it has not been submitted for any other award in any University.

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Date

This project report has been submitted in partial fulfillment of the requirement of the Master of Science Degree in Applied Computing of the University of Nairobi with my approval as the University supervisor.

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Professor Peter W. Wagacha  
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Date

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## **DEFINITION OF TERMS**

**ADS** - Alcohol Dependence Syndrome

**Addicts** - An addict is a man or woman whose life is controlled by drugs. We are people in the grip of a continuing and progressive illness whose ends are always the same: jails, institutions, and death.

**Addiction** – It is defined as a chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences.† It is considered a brain disease because drugs change the brain—they change its structure and how it works. These brain changes can be long-lasting, and can lead to the harmful behaviors seen in people who abuse drugs. (Drs. N. Volkow and H. Schelbert, 2013 NIDA)

**Aftercare**- This is the ability to be maintained at a certain rate or level

**Alcohol abuse** – It is a disorder or a disease that is characterized by the sufferer having a pattern of drinking excessively despite the negative effects of alcohol on the individual's work, medical, legal, educational, and/or social life.

**AUD** - Alcohol Use Disorder

**Messaging** - The sending and processing of email and similar electronic communications.

**Relapse** – This is when a person who's trying to stop using alcohol can make mistakes, feel bad, and start using again. This return to alcohol use is called a relapse. Relapse is common and normal and happens to a lot of people recovering from drug addiction. People will often have one or more relapses along the way because it takes practice to learn how to live without alcohol.

## **ABSTRACT**

**Background:** The use of mobile texting has grown dramatically in the world including in Kenya. It has been suggested that the technology influences people's behaviors including alcoholic addiction. Many studies have been done in developed world to investigate the effects of using mobile texting in supporting alcoholic addicts from relapse and it has proved to be effective. The same technology if used here in Kenya would also help in reducing the cases of relapse among the alcoholics.

**Method/design:** This was a cross sectional descriptive study of recovering alcoholic addicts and their caregivers in a rehabilitation center of ages above between 18 and 50 years. Quantitative data was obtained from 39 addicts and their caregivers using a self-administered semi structured questionnaire. One Focus Group Discussion (FGDs) with 12 caregiver and addicts which discussion was conducted to obtain qualitative data. Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS) software version 20, while qualitative data was analyzed using content analysis. Secondly design of an android based application individually tailored with automated text message-based for alcohol relapse self-care support application intervention in addition to usual care.

**Discussion:** This study will provide information on the effectiveness of a text message-based self-management support tool for people with alcoholics. If found to be effective it has the potential to provide individualized support to people with alcoholism across other counties in Kenya, thus extending care outside the clinic environment.



## **CHAPTER ONE - INTRODUCTION**

### **1.1 Background of the Study**

Stopping alcohol use is like trying many diets to lose weight. Just like all awful conduct it is difficult to learn to do matters in a different way, like consuming much less, exercise more, and avoiding your favourite ingredients. It is simple to slide, consume an excessive amount of, and advantage again once more the load misplaced. But then you definitely don't give up but to attempt again. ([https://easyread.drugabuse.gov/content material/what-relapse](https://easyread.drugabuse.gov/content/material/what-relapse))

it is the identical with quitting alcohol. People with alcohol addictions gets remedy, slip up, and then cross returned to rehab treatment frequently before it they're alcohol free. If this occurs, the individual need to get lower back into remedy as quickly as possible. (<https://www.eatingdisorderhope.com/treatment-for-ingesting-problems/co-happening-dual-prognosis/alcohol-substance-abuse>)

For some alcoholics, a relapse can be very dangerous even deadly. If a person drinks as much as they used to before quitting, they can easily relapse because their bodies are no longer used to having the same amount of alcohol in their system. An evaluation via Ekern et al (2017) characterizes alcoholism to by way of a robust craving or compulsion to drink, incapacity to break drinking once beginning, a bodily dependence on alcohol to prevent signs and symptoms of withdrawal, and a need for greater quantities of alcohol because of extended tolerance. Alcohol abuse is a global fitness hassle and purpose of excess mortality and morbidity, in addition to a supply of personal disruption for every abuser and their families. A representative survey-primarily based study of America population determined that excessive consumption of alcohol increased danger of mortality over a 14-12 months duration Ulrich U. et al (2012).

There are set up studies evidence for the use of short brief message service (SMS) textual content messages to remind addicts of scheduled clinical appointments , coordinate medical body of workers, deliver scientific check outcomes, promote smoking cessation, improve self-monitoring some of the kids with kind 1 diabetes, sell weight reduction among overweight topics and screen addict aspect results following remedy (Examples are Self-control help for blood Glucose (SMS4BG) for diabetes with the aid of Dobson et al (2016) and Weight management in Iranian overweight and obese ladies a observe by Faghanipour et al (2013). Appreciably,

cellular telephones have become included into honestly all components of society, and may offer a possibility to enhance health associated behaviors, especially via using mobile message. A study by Keoleian et al (2015) shows how individuals in search of treatment for dependency frequently reveling boundaries because of charge, loss of nearby remedy belongings, or each faculty or art work time table conflicts. Their overview identifies textual content-messaging-primarily based interventions as having ability to be widely reachable in actual time.

In a 2011 document, the Kenyan countrywide campaign against Drug Abuse Authority, or NACADA ([nacada.go.ke](http://nacada.go.ke)), reviews that alcohol and drug abuse are the important social issues in Kenya, with critical public health ramifications. A survey of alcohol and drug addiction treatment and rehabilitation centres by way of NACADA (2007) suggests that there has been a constant growth in demand for admission because of the growing population of drug addicts in the use of alcohol. The report shows that there has been an exponential growth inside the range of rehabilitation centres in Kenya inside the latest beyond. Whereas there were most effective thirteen centres which had been operational through 1999. There was an increase of up to 48 in 2007. No matter this development, there is evidence from research in other nations that about 90 percent of alcoholics are probably to experience at the least one relapse over the four-year length following remedy. The use of technology for aftercare assistance can provide the people with the training they need to understand the triggers that threaten all the tough work put in at the same time as in rehabilitation. (Academia.edu)

A study by Macharia (2016) looks on the blueprint of vision of Kenyan government inside the health region is to enhance the existence of Kenyans by way of the 12 months 2030. The government hopes to offer healthcare services of the best standards feasible. It intends to set up enterprise for entities for presenting specialized health offerings in Kenya. Such offerings ought to consist of nation of the technological know-how hospitals, telemedicine offerings, e-fitness offerings, mobile health (m-health), and nursing homes for worldwide addicts, retirement homes, and clinical tourism.

President Uhuru Kenyatta during his Jamhuri Day speech on the Kasarani stadium unveiled what he termed as “The massive 4” He stated that his administration would consciousness on meals security, low-cost housing, manufacturing and cheap healthcare as key pillars during his 2nd time period in office.(Citizen.co.ke)

## **1.2 Statement of the Problem**

Alcoholism is becoming a major source of social & health challenge in Kenya Today. Efforts to deal with the problem have had mixed results. Many rehabilitation centers have been established to assist the alcoholics but are unable to deal with the increase in relapse cases upon leaving the rehab centres.

Technology has been used to offer support and aftercare for people with other ailments like: - diabetes, weight loss and depression. We presently do not have technology enable tools to support relapsing alcoholics. Other countries have sufficient technology tools to support relapsing alcoholics. These tools may not be acceptable for the Kenyan addict.

## **1.3 Specific Research Objective**

The overall aim of this analysis was to “explore ways in which of supporting the addicts by examine the underlying issues that cause the addicts to relapse once treatment and to see the viability of exploitation mobile electronic messaging as a way of intervention of individuals with alcoholic addiction”.

### **The specific objectives are to:**

- To identify factors that cause recovering alcoholics to relapse
- To identify models that can be used to support recovering addicts
- Identify ways that technology can be used to support recovering addicts
- To design a mobile application that can support recovering alcoholics so they do not relapse.
- To test and validate the mobile application

## **1.4 Research Questions**

The following are the research questions:

- What are the factors that cause recovering alcoholics to relapse?
- What models are being used in developing and developed countries to support recovering alcoholic addicts from relapsing?
- What are the challenges faced in using mobile messaging in those countries?
- What are the benefits in using the mobile messaging applications?

- What steps can be taken to ensure acceptance of the mobile app here in Kenya?

### **1.5 Scope of the Study**

The study will focus on alcoholic addicts who are currently in rehab centres, ones who are recovering from addiction, and their caregivers. It will consider the problems facing them, their needs, in regards to messaging technology uses on content and activities.

### **1.6 Significance of the Study**

The findings of this study will be of good benefit to the alcoholic addicts for the following reasons:

- Mass messaging and high penetration – The caregivers will improve their communication through mass messaging thereby reaching as many members by just one message duplicated.
- Personalized messages – this will enable the addict and the caregivers to address the real underlying issues that force them back to relapse by personalizing messages based upon an individual's quitting phase and whether they had relapsed during the intervention.
- Encouraging addicts to an iterative message response-based craving helpline and slip prevention system through participation in forums and by creating awareness through message alerts.
- Make friends with other addicts who are also going through alcohol rehabilitation problem.

### **1.7 Limitation of this Study**

Considering most rehab centres in Kenya focus mainly on treatment and thereafter, discharge their addicts to their families, there is a challenge in keeping in close contact with them so this study will only limit its scope on just a few addicts.

The available literature focuses mainly on developed countries, and may not be easily adopted because it does not reflect on the real situation here in Kenya.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.0 Introduction**

Use of mobile messaging is a very common activity these days including among the society. The mobile messaging that is commonly used includes internet, text messaging, SMS, WhatsApp and chat online. Other networking sites such as Facebook and Myspace, video sites such as You Tube and blogs such as Twitter (Boyd and Ellison, 2008). The key features of these media that make them different from the old traditional media such as television, and radio is that they are social, interactive, malleable and portable hence mobile Brown et al (2009), this means that users can use them anytime and anywhere, hence their popularity among the society. Facebook one of the most common SNSs had more than 500 million members in 2011. Livingstone (2008). Many web services such as Yahoo and Hotmail also incorporate social networking features that allow users to interact and participate in discussions when online. The mobile messaging plays a large part in socialization of the society L'Engle et al (2006).

### **2.1 Alcohol Behaviors among Addicts**

A take a glance at by manner of Acad Sci (2009) suggests that there could also be tremendous proof from populace-primarily based mostly undoubtedly and medical studies serving to a pleasant affiliation between psychosocial adversity, terrible result, and chronic distress and dependancy vulnerability. The types of adverse events appreciably associated with addiction vulnerability had been parental divorce or struggle, abandonment, forced to remain excluding oldsters, lack of bambino through the usage of loss of lifestyles or removal, infidelity of huge one-of-a-kind, lack of domestic to natural disaster, lack of lifetime of a detailed to at least one, emotional abuse or forget, sex offense, rape, physical abuse via parent, caregiver, loved one, associate, or tremendous alternative, sufferer of gun taking images or distinctive violent acts, and perceptive violent victimization. Those represent quite nerve-racking and showing emotion distressing events, which can be usually uncontrollable and unpredictable in nature. Every other examine through Yeh et al (2008) indicates how the abstinence method is an ongoing process, in which the alcohol-dependent free them of addiction step by step. This manner in no way ends or resolves in whole recovery. they have recognized three degrees in the struggle against

alcoholism: the Indulgence, Ambivalence and try (IAA) cycle, in which the sufferer is trapped in a cycle of attempting to give up and failing; the Turning point, in which a non-public Nadir is reached, and the continuing method of abstinence, wherein a steady attempt is made to stay sober through strength of mind and with the help of support corporations.

<p>Table one summarizes the styles of existence events, chronic stressors, mistreatment, and individual degree variables related to dependancy probability</p> <p>sorts of unfavorable existence occasions, Trauma, chronic Stressors, and man or woman-level Variables</p> <p>Predictive of dependancy probability</p>		
<p>Loss of parent</p> <p>Parental divorce and conflict</p> <p>Isolation &amp; abandonment</p> <p>Single-parent family structure forced to measure excluding mother and father</p> <p>loss of baby by method of death or elimination</p> <p>Unfaithfulness of sizeable alternative</p> <p>loss of home to flavoring disaster</p> <p>death of considerable different/near family member</p> <p>sufferer of gun shooting or totally different violent acts</p> <p>observing violent victimization</p>	<p>physical neglect</p> <p>bodily abuse by determine/caregiver/family</p> <p>Member/partner/tremendous one-of-a-kind</p> <p>Emotional abuse and neglect</p> <p>Sexual abuse</p> <p>Rape</p>	<p>bad emotionality</p> <p>bad behavioral manage</p> <p>poor emotional manage</p>

## **2.2 Patterns of using Mobile Messaging**

The usage of cellular messaging by means of people in search of treatment for addiction regularly experience limitations because of cost, Keoleian et al (2015) messaging-based dependency treatment is less expensive and has the ability to be broadly available in real time. studies aimed at lowering alcohol intake have been promising although more facts is wanted to assess the feasibility, acceptability, and efficacy of this approach for other substance use problems. Chih et al (2014) studies analyzed, 3 A-CHESS machine (AUD App) by using the usage of styles—inactive, passive, and energetic customers the findings determined that the passive users (with the highest hazard of the preliminary lapse), the energetic users (with the lowest hazard of such behaviour) participated more in online social activities, used extra periods, regarded extra pages, and used A-CHESS longer. The outcome of the take a look at is that addicts who participated extra treatment periods, stepped forward their coping capabilities, and built more potent assist community usually skilled better recovery consequences. Addicts who suffer from alcohol addiction want continuous help in order to recover from their addiction with the assist of ubiquitous cell generation, like a cellphone, may be beneficial to supply such interventions. studies through Gonzales et al (2014) tested thematic facts exploration by manner of exposing seven issues related to the forms of textual content messages teenagers advise for assisting them avoid relapse after remedy, it consists of exquisite appraisal (ninety%), way of lifestyles trade hints (85%), motivational reinforcing (80%), coping recommendation(75%), self-assurance boosters (65%), suggestion encouragement (55%), and informational resources (50%). kids opinions approximately key logistical functions of textual content messaging programs, together with frequency, timing, sender, and duration are also tested. The study's findings provide insights for the development and enhancement of recovery help interventions with alcohol abuse a number of the addicts. Effects mean that text messaging may also moreover serve as a promising opportunity for recovery assist for people with alcohol abuse problems.

## **2.3 Existing Technologies**

Numerous researches displays that clever mobile phone packages (“apps”) may also additionally help narrow the divide among traditional fitness care and addict desires. Meredith et al (2015) identifies a few appropriate radiophone apps that assist to cut

back alcohol consumption or adjust AUD which can be evaluated for practicableness, acceptableness, and/or successfully.

Trudeau et al (2012), Six were recognized as follows:

of those apps (A-CHESS and LBMI-A) promoted self-mentioned reductions in alcohol use, (Promillekoll and PartyPlanner) didn't promote self-cautioned reductions in alcohol use, (HealthCall-S and Chimpshop) want equally evaluation and checking out previous to any conclusions regarding correctly are regularly created. Dulin et al (2013) despite the very truth that advances in clever mobile technology keep promise for diffusive interventions amongst volatile drinkers and oldsters with AUD, a number of systematic evaluations region units important to verify that smart smartphone apps vicinity unit clinically useful.

**Table 2: List of alcohol support application in developed countries and their features**

AUD Application	Features
ACHES (Addiction Comprehensive Health Enhancement Support System)	<ul style="list-style-type: none"> <li>•GPS detection for when an addict has entered a potential high risk location.</li> <li>•A variety of content for the addict to engage with, save and reflect upon.</li> <li>•Addicts can locate the nearest support and see the contact information.</li> <li>•Addicts can create personal goals for themselves and also create mini discharge plans with their caregiver.</li> <li>•The addict can log their thoughts and experiences to later reflect upon in a personalized recovery journal.</li> <li>•Reminders for medications and important appointments.</li> </ul>



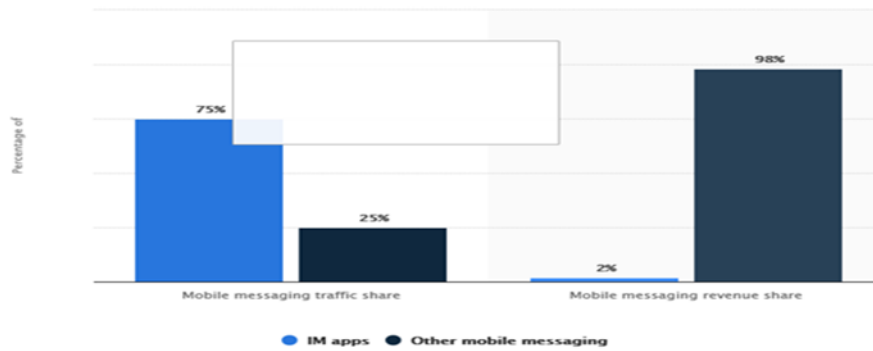
<p>(LBMI-A) Tracking app “Step Away”</p>	<ul style="list-style-type: none"> <li>•Emerge as greater aware about your ingesting patterns and triggers.</li> <li>•Set an usual ingesting objective (to both stop consuming OR slight your drinking) as well as smaller intermediate desires to help you achieve stages.</li> <li>•Praise yourself whilst you meet your goals.</li> <li>•Live in control whilst you are feeling tempted to drink by using imparting immediately available equipment.</li> <li>•Research new and helpful techniques for managing cravings, awful moods and tedium.</li> <li>•Live on the right track throughout your individually defined “high threat instances” for drinking.</li> <li>•Remind yourself approximately your motives for making a exchange when you are feeling like consuming or are in a tempting state of affairs.</li> <li>•Set up a support group and reach out for assist whilst you need it.</li> <li>•Share your development with others (own family, buddies or fitness care company).</li> </ul>
<p>Promillekoll Developed by the Swedish government app</p>	<ul style="list-style-type: none"> <li>•It offers actual-time remarks approximately envisioned BAC (blood alcohol content) records of a beverage ensuing.</li> <li>•It additionally incorporates different smethods to help clients hold their dinking at a fee that might save them in accomplishing low levels.</li> <li>•allows one to easily tune consumption at some point of the night, to better get an concept of whilst to prevent.</li> <li>•It has an incredible focus and usability. With a black background and stark colors which shines at night.</li> <li>•The controls are easily managed, even as approaching one’s limit.</li> </ul>

<p>Party Planner Developed by Gajecki</p>	<ul style="list-style-type: none"> <li>•It presents actual-time estimates of BAC based on consumer enter.</li> <li>•It permits clients to simulate a deliberate eating event (eg, a party) previous to the real event. users can then evaluate anticipated levels expected through the simulation to stages from real-time alcohol consumption at some degree within the event.</li> <li>•The app is designed to growth consciousness and manipulate of drinking behaviour by way of permitting customers to evaluate predicted alcohol consumption to real consumption.</li> </ul>
<p>HealthCall-S Australian</p>	<ul style="list-style-type: none"> <li>•This app is designed to assist in motivational interviewing</li> <li>•The responses are brought each day; questionnaires are entered thru a phone touchpad display.</li> <li>•The app moreover allows addicts to view a graph displaying the widespread fashion of each day liquids over the preceding 7 days, and it affords an desire for addicts to the touch their caregivers while at-danger consuming is typically advocated</li> <li>•Obtains better addict engagement associated with decreased eating. In HIV primary care settings,</li> <li>• It gives a manner to enhance consuming outcomes after short intervention thru extending addict engagement with little additional wishes on employees time.</li> </ul>

<p>Chimpshop UK App</p>	<ul style="list-style-type: none"> <li>•Chimpshop is a gamified model of the alcohol hobby-manipulate schooling utility, automatic intrusion created to reduce alcohol intake thru schooling customers to conquer alcohol attentional bias.</li> <li>•it is a pc recreation to help the addicts combat lengthy-term addictions</li> <li>•It does now not forestall people from consuming, however discourages the immoderate consumption that can cause more serious issues.</li> <li>•The gamers can earn points by selecting healthful products and keeping off alcohol-associated products in a digital grocery save placing. The interference is concept to reduce alcohol clients' attentional bias in the direction of alcohol-associated stimuli.</li> <li>•it's far currently delivered through android and commercially to be had at Google Play and iTunes stores.</li> </ul>
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## 2.4 Access to Mobile Messaging

The sites and preferences for accessing mobile messaging varies according to a number of factors such as availability and location, while some services require internet access it means that a mobile user will require to buy bundles or access internet from internet cafes or area with open free Wi-Fi. Consistent with a take a look at posted by using statista on on-line sports it offers records on data on the most famous messaging apps global as of January 2017, based totally on quantity of month-to-month active users. As of that month, 217 million customers had been gaining access to the line messenger app on a month-to-month foundation. The appearance of smart phone and the following explosion of cell apps, low-value or loose chat and social messaging apps have established themselves as a reasonably-priced opportunity to operate text primarily based messaging through SMS. Many messenger apps offer capabilities consisting of organization chats, the exchange of pictures, video or even audio messages as well as stickers or emoticons.



Immediately messaging app share of cell messaging site visitors and revenues global in 2018

Figure 1: Chart on Mobile Messaging traffic by Dr. Antonella Mei-Pochtler - Sstatista.com

This statistic presents a forecast concerning the immediate messaging app percentage of cellular messaging site visitors and sales global. In 2018, IM apps such as WhatsApp or LINE are projected to account for seventy five percent of all mobile messaging traffic, in advance of SMS or cellular e-mail and different mobile messaging options.

## 2.5 Effects of mobile messaging on the behaviors of the addicts

The actual value of mobile approach depends on its ability to overcome specific methodological barriers that impedes understanding of various aspects of addiction aetiology, chronicity, and treatment efficacy. Swendsen et al (2016) the barriers are numerous and often interdependent, explaining why mobile technology use has often addressed several limitations simultaneously. Addicts with any form of substance dependence can participate in investigations of their daily life experiences using mobile technologies, without major biases, if the investigator understands the particular characteristics and risks of the study population. Sawares et al (2017). Assesses the effectiveness of cellular apps in reducing alcohol consumption for individuals with AUD and understand the psychological effects of using the apps (ie, client empowerment, self-efficacy, and so forth). The study noticed that there is a vast shift within the mHealth discipline, transferring mostly from smartphone calls and brief message provider (SMS) interventions to a huge scope of mobile apps with a couple of functions and features these strong mHealth interventions can now provide consumer-friendly and on hand gear along with proof-primarily based data and

guidelines, personalised reminders, self-evaluation gear, goal placing and monitoring tools, on line resources (eg, webpages, dialogue corporations, and so forth.), and, with consumer's consent, geolocation offerings to alert customers of "high chance" places using those cellular apps have a big role in overcoming limitations that cause attrition of addict participation in traditional AUD treatment packages. Crombie et al (2014). The individuals who binge drink maximum often, younger to center-aged, have less contact with fitness services and there's a want for an opportunity approach of intervention transport. Text messaging has been used correctly to regulate other destructive fitness behaviors. Fraim (2016) says that the use of digital technologies and social network sites (SNSs) has grown dramatically across the world. More young people these days own or have access to some form of digital technology such as cell phones or computers which they use for activities such as interacting on SNSs or texting. A study by Klinger et al (2016) looks at distance and travel time as barriers to attending and completing drug and alcohol treatment. Recovering addicts face geographical challenges in relations to recovering from addiction because the distance makes it impossible for them to access the aftercare service.

## **2.6 Exposure to Content and Activities on Mobile Messaging**

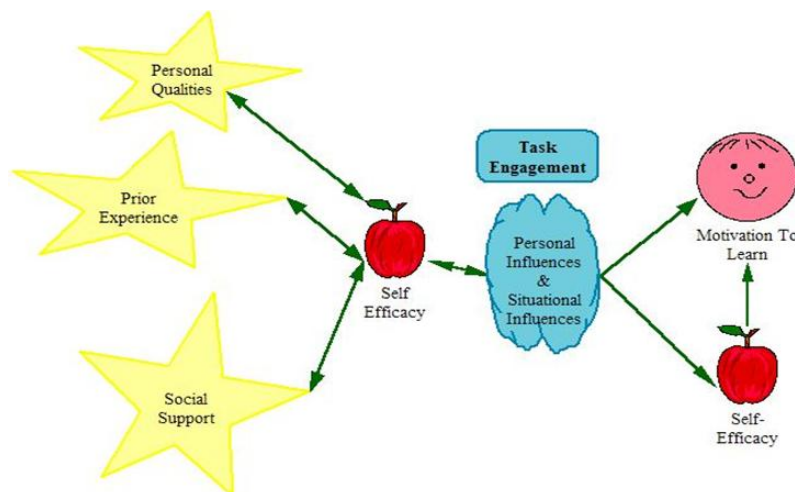
The addicts,' access and use mobile messaging for different reasons including communication, entertainment, information gathering and persuasion and self-presentation Hall (2015). The media has been reported as a preferred source of information on health issues. Scott et al (2013) study proves that in healthcare, mobile technologies have already been used to deliver reminders or provide education about different treatment options. Just as with other chronic conditions such as hypertension, diabetes, and congestive heart failure, recovery from substance use can be managed by applications that provide a user-friendly tool that requires little or no staff time over an extended period. Milward et al (2015) cell telephones are broadly available amongst people receiving community drug treatment and have to be taken into consideration as a viable touch method through provider providers, especially textual content-messaging. However, addicts won't have get admission to to sophisticated features which includes cell phone apps, and, up to date facts of touch numbers have to be often maintained. Developers need to be sensitive to issues of privacy and invasiveness around geo-vicinity tracking and frequency of contact. McClure et al (2013) outcomes propose that cellular phone and texting programs can

be feasibly applied for use in application-purchaser interactions in substance abuse treatment. Careful attention should receive to common cellphone wide variety adjustments, access to technology, and motivation to have interaction with communiqué era for treatment purposes.

## 2.7 Theoretical Frameworks

### 2.7.1 Bandura Self- Efficacy Theory Model

Self-Efficacy Psychologist Albert Bandura (1993) has described self-efficacy as one's perception in a single's capability to succeed in specific situations or accomplish a task. One's feel of self-efficacy can play a major function in how one tactics desires, duties, and demanding situations. The possibility of self-adequacy is important to therapist Albert Bandura's social psychological thought, which accentuates the normal for observational perusing, social experience, and proportional determinism in creating somebody. In advance with Bandura, a man's mentalities, abilities, and psychological capacities incorporate what is known as the self-machine. This machine plays out a best position by the way we perceive conditions and how we carry on because of mind boggling circumstances. Self-viability is an imperative a piece of this self-gadget. Bandura and others have verified that somebody's self-adequacy plays a main component in how objectives, obligations, and requesting circumstances are drawn closer. People with a strong delight in of self-viability see troublesome inconveniences as obligations to be aced. They extend further enthusiasm for the games exercises wherein they take an interest. Frame a more grounded feel of devotion to their interests and games exercises. Show signs of improvement brief from mishaps and disillusionments.



## **Figure 2: Bandura Self-Efficacy Model**

Consistent with Bandura, there are 4 primary property of self-efficacy:

### 1. Mastery reports

"The handiest manner of developing a strong enjoy of efficacy is through mastery critiques," Bandura described. Performing a task efficaciously strengthens our revel in of self-efficacy. However, failing to correctly address a project or undertaking can undermine and weaken self-efficacy.

### 2. Social Modeling

witnessing other people correctly completing a task is a few other critical supply of self-efficacy. Consistent with Bandura, "Seeing humans similar to oneself be successful through sustained effort will increase observers' beliefs that they too non-public the competencies to master similar sports activities to succeed."

### 3. Social Persuasion

Bandura moreover asserted that human beings may be persuaded to accept as genuine with that they've the skills and talents to be successful. Take into account a time on the same time as someone stated something notable and provoking that helped you bought a cause. Getting verbal consolation from others empowers people overcome self-question and on the other hand influences a claim to fame of giving their confidence to endeavor to the mission close by.

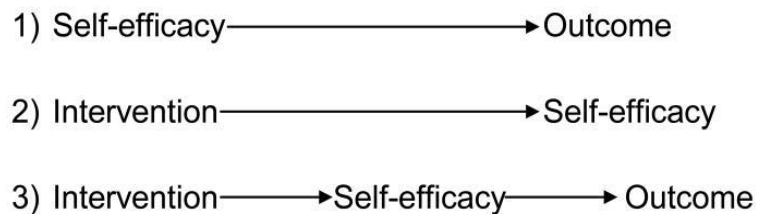
### 4. Scholarly Responses

Our extremely individual reactions and enthusiastic responses to conditions furthermore play a vital capacity in self-viability. Dispositions, enthusiastic states, real responses, and stress degrees would all be able to impact how somebody feels roughly their non-open abilities in a chose situation. Someone who turns into highly involved in advance than communicate me in personal may additionally additionally amplify a susceptible experience of self-efficacy in those conditions.

On the subject of substance use problems, numerous studies have confirmed a robust relationship among self- efficacy beliefs (frequently called abstinence self-efficacy) and ingesting/drug-use outcomes, following a diffusion of treatments. As mentioned through Bandura (1986), humans who have both the essential abilities and sturdy coping efficacy are possibly to mobilize the attempt had to effectively face up to conditions of excessive-hazard for eating or drug use. Within the occasion of a slip, especially self-efficacious humans are inclined to treat the slip as a brief setback and

to reinstate control, whilst the ones who have low self-efficacy are more likely to keep to a complete-blown relapse.

**Table 3 – Self-Efficacy Chart**



### **Causal pathways**

The table above shows a evaluate of various studies in which self-efficacy has been shown to be related to final results, which might be by using some distance the maximum common sort of research. It considers studies wherein numerous interventions had been shown to beautify self-efficacy, followed via studies in which self-efficacy has been proven to be a mediator between treatment and outcome.

### **2.7.2 Bandura Social Learning Theory**

Research has been led for the span of the years helping the idea that liquor abuse depends on each subjective and ecological components Peele (1984). There are just a couple of bundles that offer treatment fundamentally in view of the models of the social intellectual guideline Peele (1984). Greatest bundles base their treatment at the idea that a dipsomaniac can't control their inclination to drink and along these lines, entire restraint is fundamental Peele (1984). Social scholars consider that people have a decision and when given legitimate adapting aptitudes, uplifting feedback and revision of convictions, it will aid the cure of liquor addiction Cooper et al (1988).

The social learning concept studies by using Horvath et al (2016) show those interactions that have the highest influence effect are with the individuals who mattered to us as we grew up. This consists of mother and father and different circle of relatives members. It'd moreover encompass a neighbour or instructor. Perhaps we determined our dad and mom great ever secure and had fun when they gambled (probable gambling cards with friends). Maybe they coped with pressure by using way of smoking pot. Perhaps we positioned them in no way socialized till they had been consuming. If we determined the ones types of topics then we are capable of be



much more likely to attempt out those behaviours as nicely. This is because of the reality we've got located out thru commentary that playing, smoking pot, and eating completed high-quality result. Within the absence of different more healthy examples, it would appear the ones sports have been suitable approaches to lighten up, have amusing, and decrease pressure. We will feature this to social analysing.

Human beings have an effective want for social interaction. Therefore, it turns into important to endure in thoughts the compelling social nature of many addictions. Many sorts of addiction require as a minimum the cooperation of different human beings. a few types of addictions find the cash for opportunities for eye-catching social discourse and interaction as well. As an example, heroin addicts regularly help every specific acquire and use the drug. Alcohol is a common and often important function of many social venues. Gambling casinos try and provide an interesting social environment. As addiction progresses, there are fewer possibilities for the addicted person to have interaction with wholesome, non-addicted humans. That is because buddies and circle of relatives subsequently disengage from the addict. Concurrently, the addiction occupies increasingly of the addict's time. Regularly, the addict's entire social circle becomes unique folks that are associated with the dependancy. It's a ways nearly no longer feasible to unfasten yourself from a dependancy without forming new relationships with healthier people, whilst disengaging from people who are not. That is one of the motives that resource companies are useful in addiction recovery. Those companies (which encompass AA) straight away provide a source of social aid. Resource businesses (selling moderation or abstinence) date again at the least to the 1500s White et al (2012). Time spent with others in recuperation reduces the quantity of peer strain to engage in addiction. From a social studying attitude, help organizations provide opportunities to study and have interaction with more healthy people. At the same time as we have a look at social studying idea to addictions remedy, the equal antique remedy goals encompass:

- 1) Amplify a ultra-current, healthier network of friends.
- 2) Test and adopt the high-quality coping abilities of those new buddies.
- 3) Study refusal talents to reply to look stress. The ones refusal abilities are very critical due to the truth getting better humans cannot altogether put off contact with their former addicted

### 2.7.3 Self-Esteem Tree Model



Figure 3: (Source: [psychologia.co](http://psychologia.co))

Self-esteem displays a person's average subjective emotional assessment of his or her personal really worth. it is a judgment of oneself in addition to an mindset towards the self. Self-encompasses beliefs approximately oneself, (for example, "i am able", "i am worthy"), as well as emotional states, which include triumph, melancholy, pleasure, and shame. Smith et al (2007) described it by means of pronouncing "The self-idea is what we think about the self; self- vanity, are the high quality or bad opinions of the self, as in how we feel approximately it. Many folks who suffer from a dependancy that has emerge as known to their cherished ones feel embarrassed and judged, specifically if their cherished ones have never struggled with dependancy themselves. Those emotions regularly cause a sense of insignificance. While someone is continuously surrounded by way of human beings who have never abused drugs or alcohol, they'll sense as though they are not as robust as their cherished ones. This feel of insignificance may be a cause for low self-esteem.

Smith & Mackie (2007) defined it by saying "The self-concept is what we think about the self; self-esteem is the positive or negative evaluations of the self, as in how we feel about it. Self-esteem is attractive as a social psychological construct because researchers have conceptualized self-esteem as an influential predictor of certain outcomes, such as academic achievement, happiness, satisfaction in marriage and relationships, and criminal behaviour. A have a look at via Cast et al (2002) endorse that self-esteem is a final results of, and necessary aspect in, the self-verification procedure that occurs within agencies, keeping both the person and the organization. Verification of role identities will increase a character's well worth-based and

efficacy-primarily based self-esteem. The self-esteem built up by means of self-verification buffers the negative feelings that arise while self-verification is difficult, as a result allowing persisted interaction and continuity in structural arrangements all through intervals of disruption and alternate. Ultimate, a choice for self-esteem, produced in thing through self-verification, stabilizes the enterprise because it motivates individuals to form and maintain relationships that verify identities. Research on alcohol and drug use traditionally, centred on the person and an animal experimentation, and has started to understand the wider relationships concerning social corporations, ethnicity, and society. For instance, Straus et al (1986), in writing approximately converting perceptions of the use of alcohol, shows the need for enhancing social insurance and social responses to recognize the significance of sociocultural norms and group pressures.

The concept of self-esteem may be associated with the AA concept of turning one's drinking problem over to a "better power," in that the alcoholic views himself or herself as powerless to fore stall eating. It's a ways with utter humility, in place of cocky self-perception, that the alcoholic asks for assist to end. Actual self-esteem therefore comes via admitting one's vulnerabilities.

#### **2.7.4 Social Support Theory Model**

Social influence analysis has become one of the most important technologies in modern information and service industries. Thus, how to measure social influence of one user on other users in a mobile social network is also becoming increasingly important. It is helpful to identify the influential users in mobile social networks, and also helpful to provide important insights into the design of social platforms and applications. Asch et al (1951) showed how a person could be influenced by others in a group to claim that a clearly shorter line in a group of lines was, in fact, the longest. Social guide indicates components through which relational seeking engages individuals to overcome destructive outcomes of stress. Fantastic research presently demonstrates that social helpful asset diminishes or cradles the adverse mental impact or presentation to awful life exercises and progressing ways of life strains (Turner (1983), Cohen (1985) and Kessler (1985). A few research demonstrate the effect of apparent social help on strategies related with wellness and confusion, further to its valuable effect at the advancement of infirmities as various as gloom, joint pain and diabetes (Cobb (1976 and Haber et al (2007). The presence of social help means the

supply of people round us on whom you'll depend and the individuals who respond our qualities and love Sarson (1983). Social help fortifies the capacity to look up to pressure and overcome dissatisfaction.

### **2.7.5 Self-Care Management**

Although maximum alcoholic remedy programs provide aftercare offerings, including referrals to AA meetings, individuals in recuperation are in the long run chargeable for their own lives. Help is important, but self-care is essential. There are a couple of characteristics that can assist an addict of their healing method:

- Discover aid: whether it's a peer support organization, recuperation fellowship, sober buddies or supportive family contributors, social interactions are vital to our lives. To exercise authentic self-care, we should allow others into our lives.
- Communicate to someone: For a few, touring a caregiver plays a chief role in self-care, mainly in early healing. For others, a close buddy with an attentive ear might also suffice. Regardless, it's critical to permit your emotions to breathe.
- Set limitations: allow others recognize you're dwelling a sober life-style. There's no want to shout it from the rooftops, however self-care is about protecting yourself and your sobriety. If others understand you're in healing, it can prevent uncomfortable social situations and create new relationships with like-minded human beings.
- Love yourself: attempt day by day morning affirmations or renowned your very own accomplishments. Self-care calls for a knowledge, accepting and loving yourself to sell a more fit and better you.

### **2.7.6 Sober Outcome**

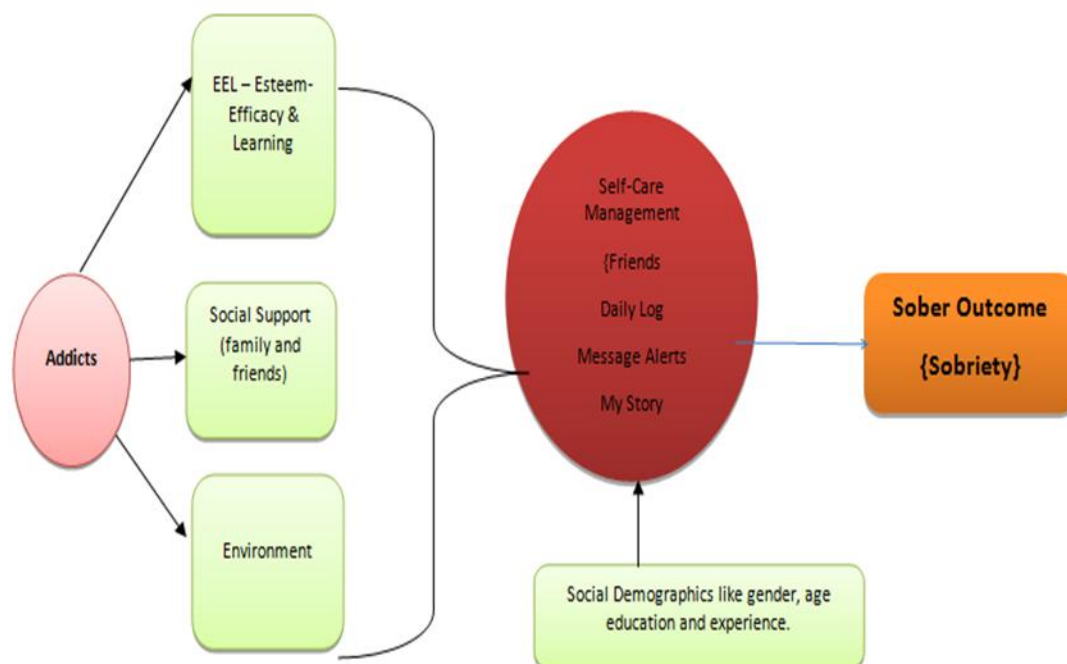
McLellan et al (2007) gives final results as "recuperation" They advocate that outcomes of any remedy are the adjustments in addicts' signs, behaviours, and functioning that can be attributed to the remedy. Final results measures are typically grouped collectively via the domain of functioning that they constitute. While addicts revel in abstinence or a large reduction in use of drugs/alcohol as well as improvement in functioning in different domains (e.g., circle of relatives, social, schooling, financial, and so forth.) this may be called "recuperation. The three variables which are regularly offered as "recovery" domain names are substance use, employment/self-support, and crook activity. The anticipated outcome from this model is sobriety.

**Table 4: Conceptual Model of Alcohol Relapse Support**

Conceptual Constructs	Potential Operational Measures	Literature Review
Esteem- Efficacy – Learning	Awareness and education of the benefits of being sober Praise, recognition, feeling of self-worth, achievements and experiences psychological well-i.e. (positive well-being) and as depression (negative well-being) focused coping strategies, i.e. problem-focused, emotion-focused, and seeking social support strategies	Albert Bandura (1993) Peele (1984) Cooper & Russell (1988) Horvath (2016) White (2011) Smith & Mackie (2007) Cast & Burke (2002) Strauss et al (1986)
Social Support	AA – Social types, Social networks, Sources of Social Networks, Role of the environment	Asch et al (1951) Turner (1983), Cohen (1985) and Kessler (1985) Cobb (1976) and Haber et al (2007) Sarson (1983)
Environment	Surrounding PPT (People places and Things) that trigger relapse	Persons et al (2001)
Social Demographics	Age, gender, experience, religion and education have a profound effect on the behaviors of the alcoholics.	

The constructs selected above in the framework present a model which will be designed to achieve a simple, interactive and useful application that captures the needs of the users.

The model outlines the theoretical basis for alcohol reduction by introducing awareness and message alerts through learning, social support in making friends, self-esteem in sharing experiences and stories with others and self-efficacy by keeping a daily log of events and challenges and finally having a community to offer holistic support.



**Figure 4: Conceptual Model**

This examination proposed the utilization of the wellbeing offering Self-Care framework demonstrate as a structure for making sense of and clarifying successive styles among components which affect alcoholic addicts from backsliding. much the same as various sicknesses like diabetes and scholarly wellness it advances solid ways of life results.

The model is based upon a synthesis of elements comprising constructs of the Self-Care principle. The five constructs chosen make contributions to the aim of improving the health and nicely-being of the addicts in social contexts.

The five constructs are Esteem-Efficacy-learning, Social aid, Demographics and surroundings, self-care and sober final results.

## Study Variables

Dependent Variables; this is the health outcome expected from this app

Independent Variables or Mediating; this is the support a user requires; it includes esteem-efficacy-learning, social support, demographics and environment, etc.

Self-care Management or Intervening Variable; acts as a link between the mediating data, of the addict and the expected outcome.

# **CHAPTER THREE - RESEARCH METHODOLOGY**

## **3.0 Introduction**

This chapter describes the methodology and design that will be adopted by the study in carrying out research. It covers site selection and description, research design, sampling procedure, data collection techniques, unit of analysis and data analysis. Kothari (2004) outlines, in a study research design will aim at answering the following questions: What the study is about; Why the study is being made; what type of data is required; Where can the data be found; Periods of time the study includes; Techniques of data collection; Methods of data presentation and analysis.

The research design that will be used in this study is cross-institutional; it allows data to be collected from different key informants and respondents so as to represent a good number of people who will be interviewed within the study period.

The main survey instruments are questionnaires (for respondents) and interview guides (for key informants). The study employs both qualitative and quantitative techniques in data collection and analysis. Demographic items included: caregivers, addicts, social workers and family members. All returned questionnaires will be subjected to data analysis. Quantitative data will be analyzed using descriptive statistics and other standard quantitative methods. Data collected from the survey will be entered using SPSS to provide descriptive statistics.

The study will be carried out in the period, October to March, 2018. Research questionnaires will be developed and hand delivered to the selected rehabilitation center. The researcher will collect the questionnaires after they are completed by the respondents. No names or identifying information will be indicated on the questionnaires, and all participants will be assured of absolute confidentiality.

## **3.1 System Development Methodology**

This modified user-centered model will be used in the development of this system.

This is a by-product of the traditional consumer-targeted layout version but with versions relative to fast iterations among ranges. The consumer-targeted version is a sequential design system used in software program improvement that seeks to actively contain stakeholders (e.g. addicts, caregivers and family participants) within the

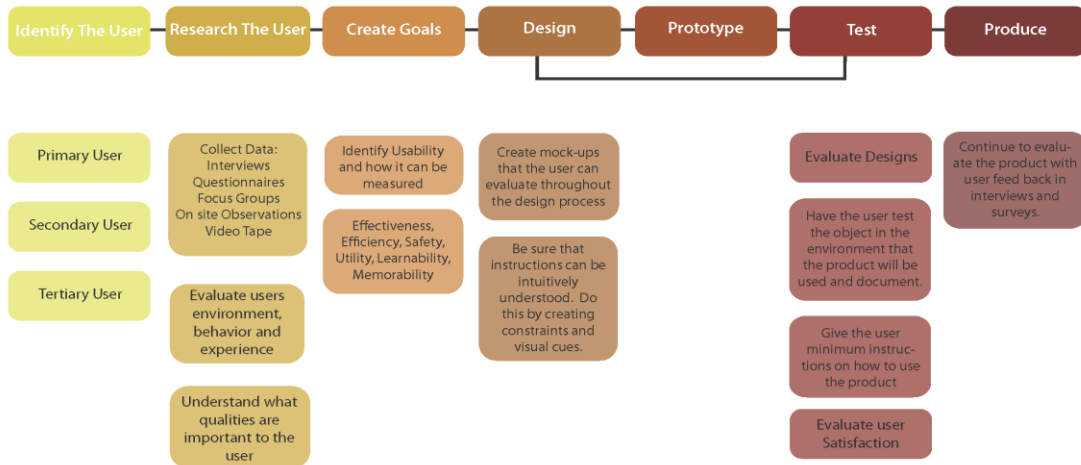


layout manner to help make sure the result meets their wishes and is usable. The discern underneath indicates the primary steps of the version.

## 7 Phases of User-Centered Design

When the user becomes the Co-Designer

Britt Wilcox  
Kyun Hur  
Mary Elizabeth Miller



Works Cited:  
Sanders, Elizabeth B. "From User-Centered to Participatory Design Approaches." In *Design and the Social Science*. Rpt. in Taylor & Francis Limited, 2002  
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\*User-Centered Design\*, Wikipedia.org, 10 Jan. 2010. Web, 16 Jan. 2010

Figure 5: Flowchart on 7 Phases of User-Centered Design.

Model

by

sketchplanations.com

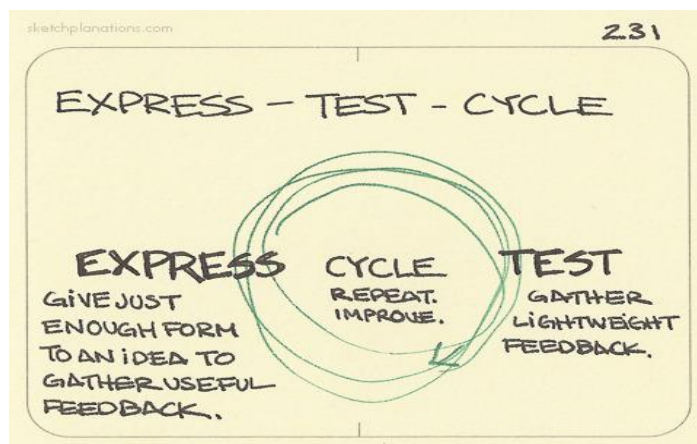


Figure 6: A modified design thinking model process by Robert McKim's phrase "Express-Test-Cycle".

A rapid design approach based on doing the minimum you can to create a testable prototype fast. Testing, Learning, and Iterating. Rather than, say, taking longer and trying to design it all right first time.

## **KISS**

KISS is an acronym for "preserve it simple, silly" as a layout precept stated by the U.S. navy in 1960. The KISS principle states that most structures paintings great if they are stored easy in place of made complicated; consequently simplicity have to be a key intention in design and unnecessary complexity should be prevented. The phrase has been associated with aircraft engineer Kelly Johnson (1910–1990). The time period "KISS principle" was in popular use via 1970. Variations on the word include: "keep it simple, stupid", "keep it quick and easy", "maintain it easy and simple", "keep it small and simple" and "keep it stupid, simple".

### **3.1.1 Design Process**

1. Specify context of use: find out whom the number one users of the product, why they will use the product, what are their necessities and below what environment they'll use it.
2. Specify requirements: as soon as the context is specific, it's miles the time to come to be aware about the granular necessities of the product. That is an important technique which could similarly facilitate the designers to create storyboards, and set important dreams to make the product a fulfillment.
3. Create format solutions and development: based on product goals and requirements begin an iterative procedure of product layout and improvement.
4. Have a look at Product: Product designers do usability checking out to get users' feedback of the product. Product assessment is a vital step in product development which offers vital remarks of the product.

### **3.2 Target Population**

This definition should include the geographical area (country, region, town, etc.) covered by the target population as well as the age group and gender. In this study the participants will be aged 18 years and over and therefore legally eligible to consent. Information regarding the study will be given before the participants give consent. Information will include content related to all aspects of detoxification and rehabilitation. Permission to conduct the study will be obtained prior from the participants. In this case the key informants and respondents will be the most affected that is recovering addicts, caregivers, family members and health workers of the center.

### **3.3 Sample Design**

A representative sample is drawn from a population of interest and has demographics and characteristics that match those of the population in as many ways as possible. The study will employ a small number of addicts that accurately reflects the larger entity. An example is when a small number of people accurately reflect the members of an entire population.

### **3.4 Data Collection Techniques and Methods**

The term techniques of data collection is used to designate a practical way of collecting data and for analysing the information obtained in the research process Mikkelsen (2005). The techniques that will be used in this study includes; questionnaire and observation guide. Descriptive statistics will enable organization of data in an effective and meaningful way. This included; the use of percentage, frequency distribution tables and charts. This research will largely use questionnaire to gather data from the respondents. It is important to note that both qualitative and quantitative approaches will be used in data collection. Data collected through, self-administered questionnaires. Observation methods will be used to capture data related to this study. Questionnaires will be distributed to all participants. Completed questionnaires will be collected and kept safely, to await sorting and coding. The coded data will be entered in the computer and analysed using SPSS. After analysis of these data, study tools will be stored safely as reference material for possible verification in future. Main instruments for data collection are: questionnaire; interview guide; pens; paper; erasers. In summary, triangulation method will be used in this research.

### **3.5 Ethics and Informed Consent Procedures**

Cordasko (2013) characterizes educated assent as the procedure whereby the fanatic and the medicinal services specialist take part in an exchange about a proposed therapeutic treatment's temperament, results, hurts, advantages, dangers, and options. Educated assent is a major standard of medicinal services. According to Shamoo and Resnik (2009) ethics can also be defined as a method, procedure or perspective for deciding how to act and for analysing complex problems and issues. In carrying out research, there are ethical issues that are to be taken into consideration such as; confidentiality, dissemination of findings, non-discrimination, voluntary and informed

consent, anonymity, and respect for colleagues. It is imperative that consent is sought before approaching respondents to participate in the study in the center. The collected data should be kept confidential to protect the addicts. An evidence may be given to sampled participants that participation inside the look at is voluntary, and they would now not revel in any bodily damage in the event that they selected to participate within the take a look at. Apart from explaining to them, participants will be given the informed consent form for them to read and sign if they consent to participation in the study. Consenting participants will be then given the semi structured questionnaire to fill.

### **3.6 Hypothesis Formulation**

A hypothesis formulation is a likely solution to a studies question. it's far a presumption or a hunch on the idea of which a have a look at has to be carried out. This speculation is examined for possible rejection or approval. If the hypothesis gets usual it indicates that your slump become proper if it get rejected it nevertheless does no longer imply that your research was not legitimate, however it means that it's miles the alternative manner you concept and perceived. whether it is authorized or not it offers you a few conclusion and adds to the available rame of information.

Any such mechanism is used to make critical differences across a heterogeneous populace of people for the functions of:

- Acquiring a higher expertise of the conditions and occasions of these in search of assist with specific problems or issues
- Improving conversation amongst practitioners about the traits of these groups
- developing appropriate interventions for these organizations Maisto et al (1995).

The intent of this module is to provide an evidence-based overview of key methods currently used in the diagnosis and assessment of alcohol relapse disorders. The focus here will be on addicts who experience relapse after rehabilitation treatment and if mobile texting intervention will help in supporting their recovery process.

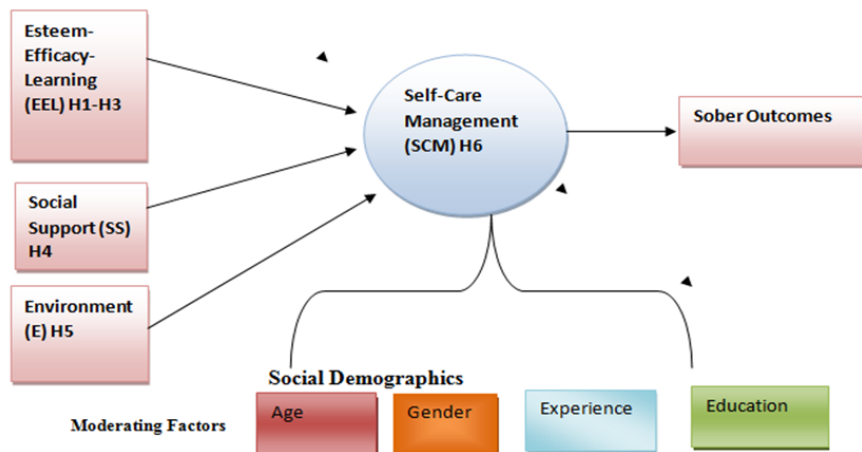


Figure 7: Study Concept Diagram with causal Relationships between variables

Moderators are variables that have strong effects on the relationships between independent (mediating) and dependent (Sober outcome) variables. In the AUD model age, experience and period of sobriety as moderators. For the model we propose three, age, experience and sobriety as moderators of the variable relationships for testing the model above:

### 3.6.1a Esteem

Markus and Wurf (1987) have nowadays contributed a entire assessment of research on self-idea. They make a remark that, from the angle of a e-book on self-esteem, is as a substitute disquieting: "most of the people of self-idea research might also need to terrific be defined as an attempt to relate very complex worldwide behavior, collectively with delinquency, marital pleasure, or university fulfillment, to a single issue of the self-concept, generally self-esteem" (1987, 300). This example shows that efforts to fill up self-esteem without regard to growing a wholesome self-instance or identity is mis-directed. People who constantly are seeking out reward and adulation to enhance their self-esteem are only in brief glad. They desperately want as an alternative to have interaction in a system of personal growth that allows them to internalize their enjoyment of self, if you want to feel self-esteem without non-forestall bolstering from others or from alcohol and tablets.

with a view to apprehend the connection between self-esteem and sub-stance use, a principle approximately how self-esteem is generated and maintained inside the character is wanted. To truly verify that people drink or use drugs excessively because

of the truth they have got low self-esteem tells us no longer something approximately prevention and remediation except we also understand the origins of self-esteem.

**H1:** Esteem will have positive effect on the addict's self-care management and willingness to use the App. It will be moderated by age, experience and gender.

### **3.6.1b Efficacy**

A cognitive mechanism, self-efficacy, (proposed by the use of Albert Bandura in 1977) can help inside the prediction of relapse and in designing programs for relapse prevention (Marlatt and Gordon, 1985). Self-efficacy opinions seem to have fee in determining which topics are probable to hold behavioral adjustments and which might be probable to enjoy relapse. It's been confirmed and that tiers of self-efficacy might also assumetreatment final outcomes in substance abusers. Condiotte et al (1981, DiClemente (1986), Coon et al (1998). Cognitive-behavioral techniques to addictive behaviors declare that coping plays a major role in know-how the connection amongst excessive-danger situations and relapse Annis et al (1998). In addition exam of coping and self-efficacy is warranted for the reason of determining the roles of those variables in relapse. With the aid of gaining a extra entire information of the effect of self-efficacy and coping on substance use conduct, remedy can interest on aspects that allows you to higher serve the client during and following treatment. Further, the moderating position of age, gender and revel in on self-efficacy might be the identical among addicts, coping capability is a idea essential to the social analyzing concept models of relapse and its prevention. Some empirical proof indicates that the provision and use of coping abilities are related to styles of substance use and relapse. Annis et al (1998), Shiffman et al (1985). To beautify statistics approximately the connection among coping talents and relapse, it could be important to indicate the situations underneath which stress, coping abilities, and substance use courting holds.

**H2:** Efficacy will positively influence the alcohol addict's self-care management intention to use the AUD App and will be moderated by age, and experience and gender.

### **3.6.1c Learning**

Social learning idea proposes that people' behavior is shaped via their interactions with others of their private social networks, e.g., own family and peers. Social

mastering theory might be expecting that an person's substance use conduct develops due to their interactions with circle of relatives and buddies who model substance use behaviors and offer positive reinforcements that inspire substance use. Moos (2007). The maximum long lasting issue relies within the dialogue of alcoholism treatment reluctance is stigma. It's some distance perception that alcoholics resist treatment due to the fact the popularity of the designation "alcoholic" brings upon him incredible discredit. "As other stigmatized statuses, the alcoholic is concept to be decreased in our minds from a whole and regular person to a tainted, discounted one" Goffman (1963, p. three). In component due to alcoholism's social stigma, due to the fact the repeal of countrywide Prohibition most advocates of reform within the social management of alcoholism have centered their efforts at the diffusion of the belief that "alcoholism is an infection." If alcoholism had been perception of as a contamination, the reasoning may additionally move, then, that neither the alcoholic himself nor the ones round him might blame him for this situation. And if he has been now not blamed for his alcoholism behaviors, then the ethical stigma on alcoholism might be predicted to dissipate. And, in time, the barrier to treatment supplied through the stigma on alcoholism is probably decreased or even disappear.

However, rather, the general public additionally had to be educated to the perception that alcoholism became a contamination: the disorder thought of alcoholism hardly may provide a protection towards public stigma if simplest the alcoholics themselves within the network happened to hold the illness view. Stigma, in the end, is first an assets of public ideals and attitudes. Riley (1949, p. 303), upon reporting that great 20% of the yank public in 1946 perception the alcoholic unwell, clearly said the significance of public opinion: "If the alcoholic ought to appearance upon himself as sick in preference to as a spineless failure, he could manifestly be more likely to are in search of assist. However with 80% of most people unwilling to concede this point, it is tough for him to do apart from receive this definition of himself." And for such reasons early opinion frequently placed a tremendous deal of significance on remolding every the opinions of alcoholics and of the general public in preferred. Anderson (1942), as an example, wrote, "The leader impediment to development in the scientific answer of troubles regarding alcohol lies in public opinion."

**H3:** Learning will positively be affected by social support and community education and will promote and encourage the addicts' to use the AUD App. so as to improve their self-care management. They will be moderated by age, education and

experience, such that the effect will be much stronger for addicts who have been sober for longer periods.

### **3.6.2 Social Support**

Social support is defined as “the social ties to one or more individuals in a person’s environment (Beattie & Longabaugh, 1997) while social support has been defined as the resources provided by other people (Cohen & Wills, 1985). Social science researchers conceptualize social support as having a structural domain and a functional domain (Cohen & Wills, 1985; Beattie & Longabaugh, 1997; Dobkin, De Civita, Paraherakis, & Gill 2002). Various hypothesis have been proposed to explain how social support factors into the recovery of substance use disorder. as an instance, the social strain model of substance abuse (Rhodes & Jason, 1990) proposes that substance abuse is a feature of environmental pressure (e.g., excessive poverty, availability of medication, violence) moderated thru various factors, which include social resource. A related idea is the strain buffering hypothesis (Cohen & Wills, 1985) which indicates that social assist intervenes in places. First, social aid intervenes within the appraisal and perception of a worrying occasion; therefore the person may not understand the occasion as demanding and may ultimately bolster coping mechanisms. 2nd, social help may additionally alleviate the effect of a stress appraisal or belief thru offering answers to the hassle, with the aid of decreasing the perceived significance of the problem, by tranquilizing the neuroendocrine device just so people are lots less reactive to stress, or by means of manner of facilitating fitness behaviors or coping behaviors. Another model, the dynamic model of relapse (Witkiewitz & Marlatt, 2004), incorporates the concepts of the systems theory (e.g., self-organization, feedback loops, reciprocity) to explain the complex interaction of intrapersonal and interpersonal factors involved in the phenomenon of relapse. For the dynamic model of relapse, social relationships are stable predispositions that increase an individual’s vulnerability to relapse consistent with the systemic nature of the model, the model also suggests reciprocity between factors, i.e., that social support can be affected also by other factors like length of drug use or the individual’s affective state. These models, along with other models found in the relapse prevention, health, wellness and social support literature, suggest that social support serves as protective factors, shielding an individual from the risk factors regardless of theoretical models subscribed to; empirical evidence has shown the significance of



social support in the dynamic of substance abuse and recovery. Studies have shown that social support serves as a protective factor, thereby limiting the effects of risk factors. For example, individuals with higher perceived social support during treatment for alcoholism reported fewer symptoms of depression Booth et al (1992). Studies have also shown that social support lowers the chances of succumbing to relapse, Havassy et al (1995). And finally, studies have suggested that the active inclusion of interventions that promote, support, and enhance social support greatly improves, not only abstinence and the reduction in relapse rates, but also motivation and retention in therapy and other beneficial treatment outcomes, Finney et al (1980), Coppotelli et al (1985), Epstein et al (1998), Morgenstern et al (1997).

Aside from serving as protective factors, social relationships and social support can also serve as risk factors. Conflict within the social network, particularly within the family network, increases the probability of relapse Cummings et al (1980). Addiction researchers suggest that conflict increases stress and depression in a recovering substance abuser, factors closely related to relapse. Strain to utilize drugs or the nearness of medication use inside the informal community was additionally embroiled as a hazard factor. Rather than shielding from chance factors, these kinds of interpersonal organizations inundate the person in dangerous circumstances, circumstances that expansion the likelihood of backslide Marlatt (1985).

Subsequently, not exclusively is the non-attendance of social help unfriendly to substance mishandles recuperation, yet in addition struggle inside the informal organization and strain to utilize drugs originating from the individual's interpersonal organization.

**H4:** Social Support will positively affect the addict's self-care management and the desire to use AUD App and will be moderated by education, age and experience

### **3.6.3 Demographics**

Social demographics play crucial role in describing alcohol use disorders in any given population. Several factors beyond the confines of treatment settings influence treatment outcome in alcohol dependence syndrome. They will be used to describe the nature and distribution of the sample study. The variables include age, gender, religion, education and experience. Their purpose here is to investigate and examine the influence on the dependent variable through the self-care management and the desire to use the AUD App.

### 3.6.4 Environment

Environment condition assumes a key part in evoking and activating convictions and brain, sentiments and practices. One fundamental zone of thought is the connection among standards about mental disease (maniacal signs and manifestations, suspicion, despairing) and amphetamine utilize (conduct).

A segment by people et al (2001), if utilized therefore in this case should cover:

1. Abridgement of the providing inconvenience/s (would perhaps include an inconvenience posting).
2. Essential concern
3. Inclining factors: those are the components that blast a buyer's defenselessness to medicate utilize, for example, having father and mother who utilized pills, having a psychological well-being disorder, and holding certain center convictions around themselves.
4. Hastening factors: these are the elements which are prompt triggers for tranquilize utilize, for example, sentiments of outrage or sadness, being revealed to pills, and encountering withdrawal side effects.
5. Keeping factors: these are the elements that hold utilize, which incorporates having a hover of medication the utilization of buddies, thought processes in the use of (tranquilize hopes), having a sidekick who utilizes, past fizzled endeavors to hinder, now not thinking about change, and lightening of withdrawal signs and manifestations with sedate utilize.
6. Relationship among scholarly wellbeing inconveniences and medication utilize:
  - I. what's the association among the customer's substance utilize and scholarly wellness issue?
  - II. What are the hyperlinks inside the beliefs the character holds about their medication utilize and scholarly medical issues?
  - III. What reasonable connections are there among the buyer's substance utilize, recommended pharmaceutical and consistence with the medications schedule?
7. A treatment plan that tends to every one of the above zones.

**H5:** Environment will positively affect the self-care management and access to use the AUD App by addicts. They will be moderated by age, education and experience.

### 3.6.5 Self-Care

"Self," as utilized in "self-care" and "self-protection," refers to the broader meaning of self- referring to the entire character. Self-esteem and self-regard are also associated with self-care. It can additionally be distinguish with the aid of manner of self-care functions associated with safety and survival from self-soothing. Self-soothing sports maintain subjective states of comfort and nicely-being. Earlier than he developed his structural principle of the thoughts, Freud (1913, p 182) attempted to embody what we'd now remember fundamental capabilities of the ego internal his concept of instincts. Self-renovation, self-care, self-safety, etc. were at the start grouped collectively with the aid of Freud as self-preservative or ego instincts. He cited the ones as "instincts which serve the upkeep of the person" in place of "those which serve the survival of the species"

The exploration of self-care behaviors will capitalize upon the countervailing influences that offset poor behaviors, main to extra wholesome consequences which can be derived from these interactions. Engagement with a worrying, autonomy supportive platform will result in more mental nicely-being, lowering signs of relapses. greater mental nicely-being and greater supportive peer interactions will in flip reduce associated factors that give a boost to alcohol relapse amongst individuals, selling greater receptivity and internalization of alcohol abuse-related components of the intervention, main to much less alcohol relapse submit-intervention.

Hypothetically, the impact of this app will promote secure exits from addiction with the aid of lowering the have an impact on of negativity amongst friends and drinking cultures, reducing psychological dysfunction, and reducing alcohol abuse, leaving improving addicts extra successful and inspired to reach their desires.

Self-care as a developed gadget of features includes the following factors:

1. A libidinal funding in being concerned approximately or valuing oneself—enough satisfactory self-esteem to experience oneself to be really really worth protecting
2. The capacity to anticipate risk situations and to answer to the cues which tension gives
3. The capacity to manipulate impulses and surrender pleasures whose outcomes are risky
4. Delight in mastering inevitable situations of chance, or wherein dangers are correctly measured

5. Self-esteem approximately the outside global and oneself enough for survival in it
6. The capability to be sufficiently self-assertive or aggressive sufficient to protect oneself
7. Sure competencies in object relationships, specifically the ability to pick others who, ideally, will decorate one's protection, or at the least will not jeopardize one's lifestyles.

**H6:** Self-Care Management will have a significant positive influence on use behavior of AUD App for alcoholic addicts' so as to get a good sober outcome.

### **3.7 Construct Measures**

Construct measurement will be on a four-point Likert Scale defined as D = Disagree, SD = Strongly Disagree, SA = Strongly Agree, A = Agree.

#### **3.7.1a Esteem**

In order to measure 'Addicts' opinion on the usefulness of AUD App in promoting Esteem will be measured using four statements (5-point Likert scale):

E1: Overall, I find AUD App useful to my tasks

E2: Using AUD App enables me to conveniently interact with other addict better

E3: Using AUD App improves my self esteem

E4: Using AUD App will allow me to make more friends who share common objectives

#### **3.7.1b Efficacy**

Efficacy in relation to AUD App will be measured using four statements (5-point Likert scale):

E1: My interaction with the AUD App is easy and understandable

E2: It is easy for me to share experiences using AUD App

E3: Overall, I find AUD App easy to use

E4: Learning to operate AUD App is easy for me

E5: AUD App is user friendly

#### **3.7.1c Learning**

Learning will be measured using four statements below (5-point Likert scale):

Which of these statements maximum almost describes alcoholism?

- L1. an contamination that strikes without warning; humans do no longer have personal manage over whether or not they get it or now not;
- L2. an illness humans have little private manipulate over whether they get it or now not;
- L3. an infection that people have a terrific deal of private manage over whether they get it or now not;
- L4. It's now not a real infection.

### **3.7.2 Social Support**

Social support will be measured using four statements below (5-point Likert scale):

SS1: I am interested in using the AUD App

SS2: I would like my family and friends to use the AUD App

SS3: I would prefer to interact with my Caregivers through the AUD App

SS4: My Peers have encouraged me to use the App.

### **3.7.3 Environment**

Environment will be measured using four statements (5-point Likert scale):

‘Which of the following environmental factors will increase the likelihood of alcohol use?’

E1 economic disadvantage,

E2 family conflicts, (e.g. Parents, husband, wife)

E3 attitudes towards alcohol use, as well as conduct and emotional

E4 problems experienced at an early age

### **3.7.4 Self-Care**

Self-Care behaviors will be measured using two statements (5-point Likert scale):

SC1: I intend to use AUD App

SC2: I will always use AUD App

## **3.8 Data Analysis**

The data analysis approach would be to use the Descriptive menu and calculate frequency distributions, and possibly generate charts showing the responses using SPSS 20.

### 3.8.1 Interpretation and Presentation

Qualitative data collected will also be presented in the form of, a persona and scenarios representing the user. A persona is a consumer archetype used to assist manual decisions approximately product capabilities, navigation, interactions, or even visible layout. In maximum cases, personas are synthesized from a chain of ethnographic interviews with real people; they encompass conduct patterns, goals, competencies, attitudes, and environment, with some fictional personal details to bring the persona to lifestyles.

Situations could be used to tell a simple story of specific occasions happening that relate to the issues of the number one stakeholder institution they will be about the everyday request and responses about the users who might be the usage of the cell app. They will be include small details of the events and may include emotional or physical characteristics

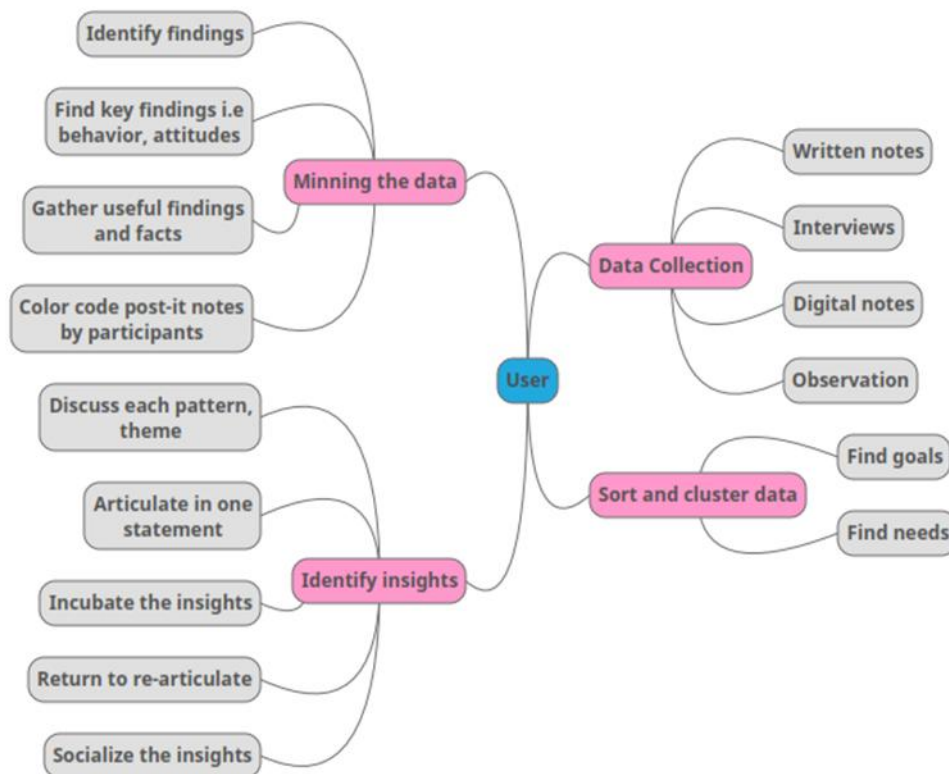


Figure 8: Mindmup

## **CHAPTER FOUR: PROTOTYPE DESIGN AND ANALYSIS**

### **4.1 INTRODUCTION**

This chapter presents a mobile application prototype that can help to support addicts from relapsing and managing their condition at home. The development of this prototype was based on the understanding from the literature review, discussions and similar apps being used in the developing world. The goal here is to develop an app that will enable addicts to communicate with each other through a web application and a cross-platform mobile app. Addicts and their peers will be able to make friends, share their experiences through the mobile app thus, opening up more communication among them. Addicts will get useful tips; follow up alerts, educational materials from the Caregivers and even sponsors on how to avoid slip ups. Caregivers will also be able to keep track of activities of their addicts with the intention of helping them make full recovery,

#### **4.1.1 Currents System**

The current system that is available is mostly based on SMS and text that is shared on one on one amongst the addicts and their caregivers. However there are limitations in this method. There is difficulty in making new friends, inclusivity of other addicts' experiences whereby they are able to comment and give responses, receiving alerts through mass messages.

#### **4.1.2 Proposed System**

This study introduces the service-orientated system architecture, the software design and implementation of the component used in the system and communication technologies among different components. Since the prototype was to be used on Java-Android for mobile client and PHP for server side communication was used. The technologies that were used for development of the proposed prototype are:

Java SDK and Android Studio IDE for creating Android executable application  
Java which a general-purpose, concurrent, strongly typed, class-based object-oriented language

XML for designing android interface layouts

MySQL RDMS for database administration.

PHP for handling server side processing

## **4.2 Technologies**

### **4.2.1 MYSQL RDMS**

In the attempt to store addicts' data, MySQL database was used. MySQL RDMS is the most popular open source database server, enabling the cost-effective delivery of reliable, high-performance and scalable Web-based and embedded database applications. It is very commonly used in conjunction with PHP scripts to create powerful and dynamic server-side applications. To create the database for the application MySQL browser IDE was used. MySQL Query Browser is a graphical tool provided by MySQL AB for creating, executing, and optimizing queries in a graphical environment. It is designed to help you query and analyze data stored within your MySQL database.

### **4.2.2 PHP**

In order for the android mobile client to connect with the MySQL database, server scripting language, PHP, was used. PHP is a general-purpose scripting language that is especially suited to server-side web development where PHP generally runs on a web server. Any PHP code in a requested file is executed by the PHP runtime, usually to create dynamic web page content. PHP is integrated with a number of popular databases, including MySQL, PostgreSQL, Oracle, Sybase, Informix, and Microsoft SQL Server.

### **4.2.3 Android Studio IDE and Android SDK**

Android SDK software development kit was used to create the Android platform. It includes sample projects with source code, development tools, an emulator, debugger, required libraries, relevant documentation for the Android APIs, tutorials for the Android OS to build Android applications. Applications are written using the Java programming language and run on Dalvin, a custom digital gadget designed for embedded use which runs on pinnacle of a Linux kernel. Even though the SDK can be used to put in writing Android programs in the command prompt, the most common method is through the usage of an IDE. The advocated IDE is Android Studio with the Android ADB plug-in. other IDEs, along with NetBeans or IntelliJ, can also work. Maximum of these IDEs provide a graphical interface allowing developers to carry out improvement tasks faster. Considering the fact that Android applications are written in Java code, a consumer have to have the JDK set up.



#### 4.2.4 Android Framework

This is an android software stack that describes how android device components interact. It is divided into five layers consisting of the Kernel and low level tools, native libraries, the Android Runtime, the framework layer and on top of all the applications.

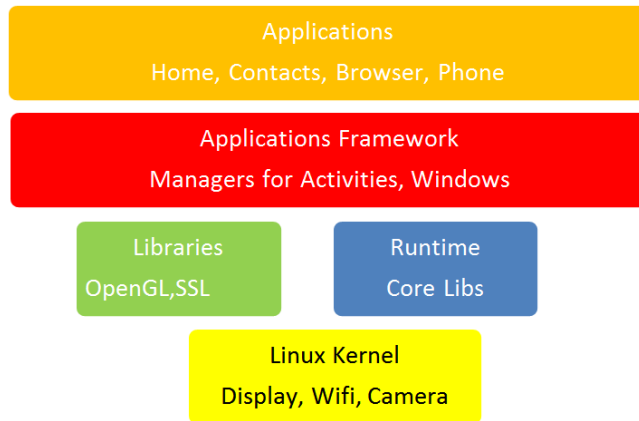


Figure 9 Android Framework

#### 4.3 Prototype Design

This section describes the implementation of the Mobile system for alcohol management. This application has been developed purely on android platform. The Android SDK provides all the library packages which are used to interact with hardware and make the Android application. The application is coded in Java language and Android Studio IDE provides the developing environments, this system is purely an executable android application which is installed on the mobile phone. This application handles all the client-side processing. The client can be an addict, caregiver or an administrator. When the administrator logs in to the system he/she is able to access the administrator's dashboard from where he/she can register new caregivers and view all the users of the system. On the other hand, the caregiver will access the addict's dashboard where he/she can register new addicts and review the messages and provide feedback. The addicts are able to access the addict's dashboard from where they can send messages and also view their histories.

The development of this prototype was based on Google Android operating system. Android API 7 (Nougat) was used. Nougat is the latest refinement by Google and it is

now the world's most popular OS on new smart phones. Android 7.1 is found on newer devices. However, the mobile application was able to run on Android 2.3.

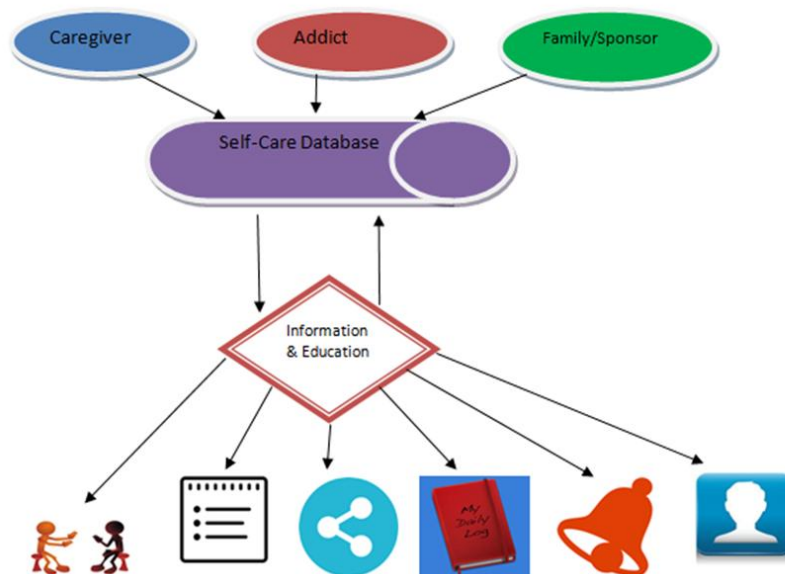


Figure 10 Prototype Design

#### 4.4 Android Manifest File

Every android software wants to have an AndroidManifest.xml document (with precisely that name) in its root listing. This report gives vital records approximately the utility to the Android tool, records the device must have before it can run any of the utility's code.

Amongst other matters, the show up does the following:

- It names the Java package deal for the utility. The package deal call serves as a completely unique identifier for the utility.
- It describes the components of the software program — the sports, offerings, broadcast receivers, and content fabric providers that the application includes. It names the training that put in force every of the additives and publishes their talents (for instance, which purpose messages they could deal with). These declarations permit the Android tool realize what the additives are and under what conditions they may be launched.

It determines which techniques will host software additives.

- It broadcasts which permissions the software should have in an effort to access covered parts of the API and engage with other programs.

- It pronounces the permissions that others are required to have so that you can engage with the utility's additives.
- It lists the Instrumentation classes that provide profiling and other information because the software is walking. Those declarations are gift inside the display up simplest whilst the software program is being evolved and examined; they will be eliminated before the software is published.
- It proclaims the minimum degree of the Android API that the application calls for.
- It lists the libraries that the software have to be related against.

#### **4.4.1 Specifications**

##### Functional Requirements

Register new addicts

Create connection to other users

Enable addicts to connect to their caregivers through messaging and vice versa.

Allow information sharing with others

Check on daily updates

Enable addicts to create a repository that can be used in the future

Leave group

##### Non Functional Requirements

Usability – The tool will be easy to use by everyone since it will consist of a user-friendly website and a cross platform mobile app

Reliability – The tool will be reliable since it will always be available as there is a web service available.

Supported ability – The tool supports all devices be it personal computer or a smart device

Implementation – The tool will be implemented using various programming languages and web technologies each with specific role to play.

Interface – Each device will have a user friendly interface. The interaction interfaces are through a website displayed on a web browser, or a mobile app that can be installed in your handset.

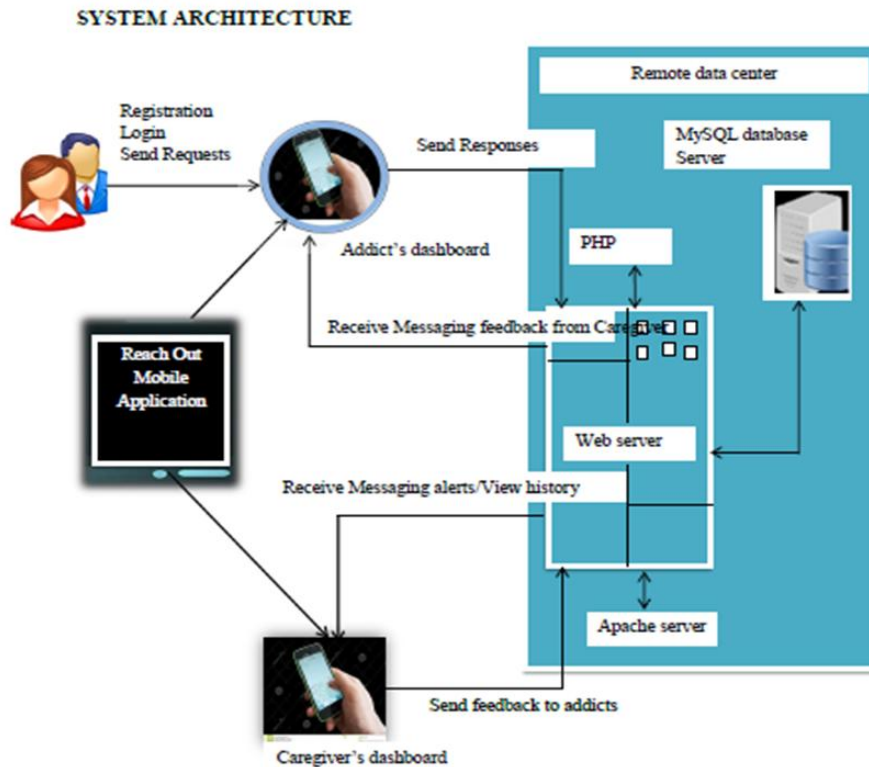
Packaging – the tool will be packaged in two ways, a mobile app and a website.

Performance – The performance of the tool will depend on the hardware specifications of the device, amount of bandwidth available and the strength of network connectivity.

#### **4.5 System Architecture**

The system consists of different components such as web server which is basically known as a XAMPP server and it is completely open source. This web server is the central part of the entire system.

Before using the system all the users must be registered via the user registration interface in the mobile application. Firstly, the administrator will register a caregiver and provide him/her with a registration id. The caregiver will then login the system using the credentials given in order to access the caregiver's module. On a successful login the caregiver will then register all the addicts who shall be reporting to him. He will also provide each addict with a unique username. The addict will use the details given to access the addict's module. The data collected from addicts via the mobile application is sent to the web server. The Web server will then process the collected data and stores it to the MySQL database server. Every time the addict sends a request the caregiver will receive a notification in form of an SMS. The caregiver will review the history of the addict's status and consequently provide feedback on the condition.



**Figure 11: System Architecture Diagram**

Figure 11: System Architecture Diagram

#### **4.6 Process Flow**

When any users launch the android application, a login screen is started. Addicts enter the login credentials and clicks on the login button which establishes web connection with the remote PHP sever. The username and password are then sent to the server for validation. If the credentials are correct, the server sends a successful login message in the form of JSON objects to the mobile device. The application then launches a welcome screen and then starts the addict's feed.

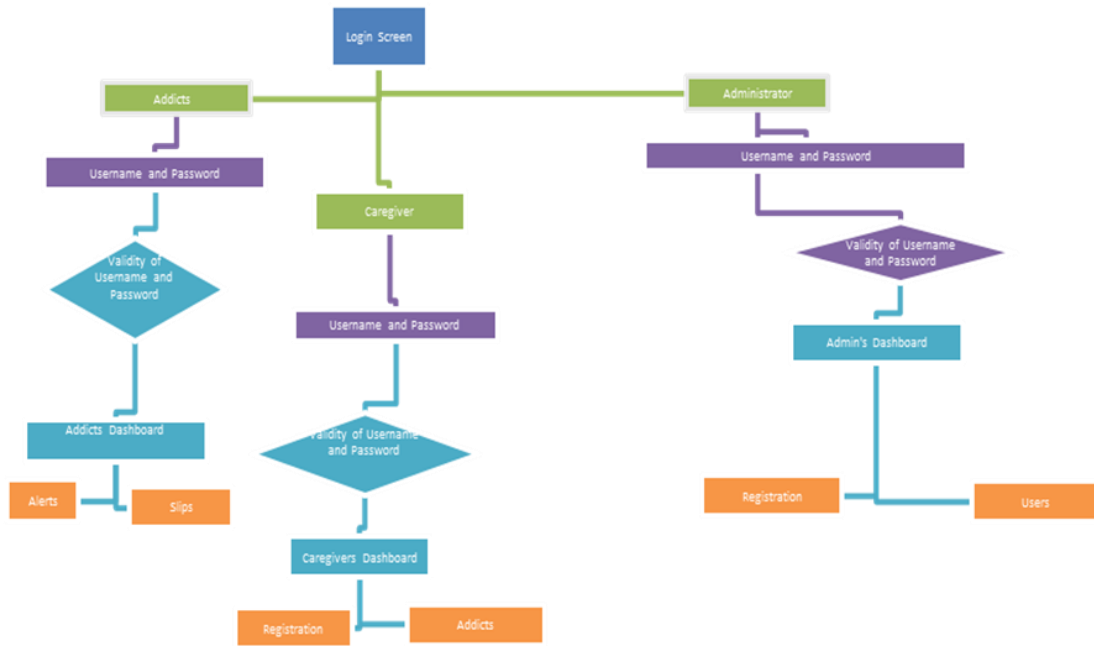
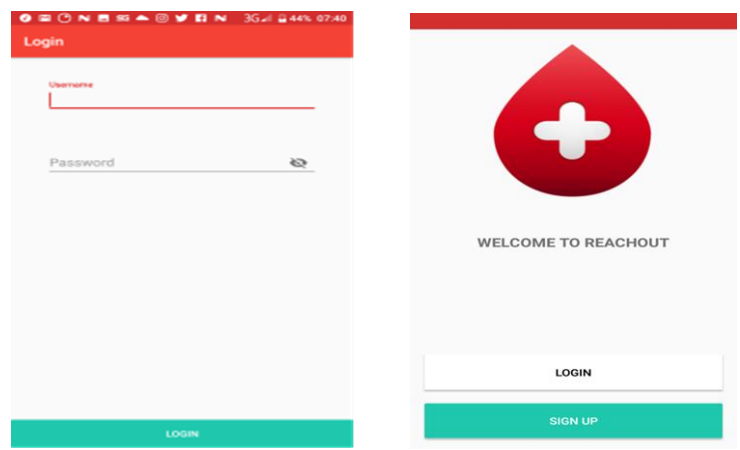


Figure 12: Process Flow Diagram

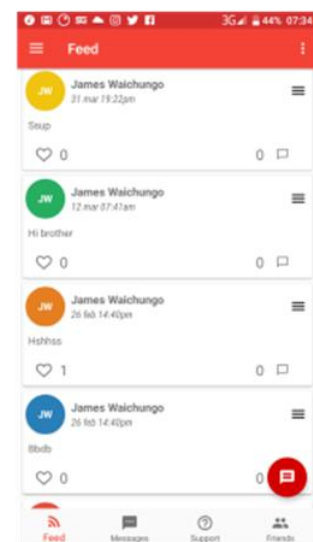
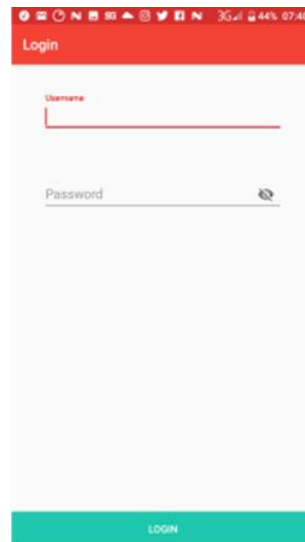
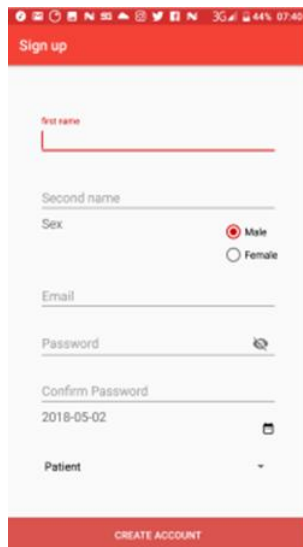
### 4.6.1 Login Module

This module was used to login the user.

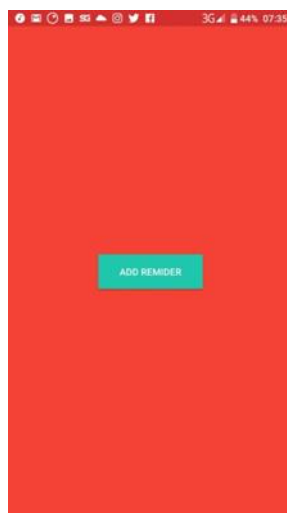
The login screen also has a username and password edit text and a login button.



Addict Login process on Real Android Device



## 4.6.2 Output Design



## 4.6.3 Service Modules

Addict registrations (Bio Data)

Esteem-Efficacy-Learning

Social support

Environment

Self-care management

Synchronization                      web-based

Backup

## 4.6.4 Actors of the System

The main actors are as follows

a) Users

Addicts both recovering and seeking treatment, who will be registering and more likely to use this app. Other users include caregivers and family members

b) Sponsors

These are people who are free of alcohol and offer support to the addicts. (Big brother)

c) Caregivers

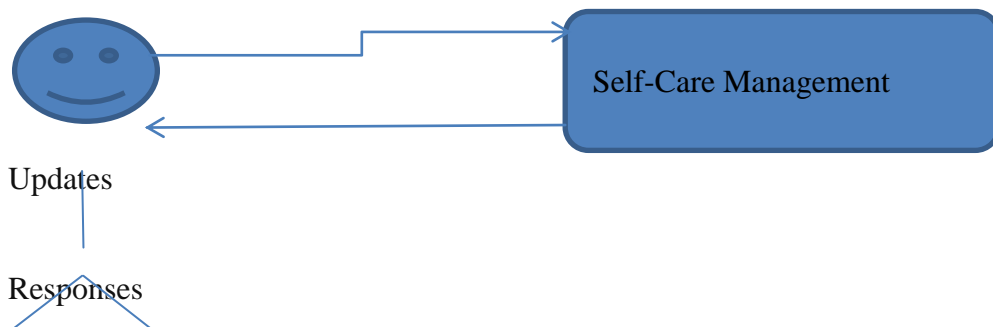
These are people who facilitate in follow ups and sending alerts that the addicts need.

d) Family

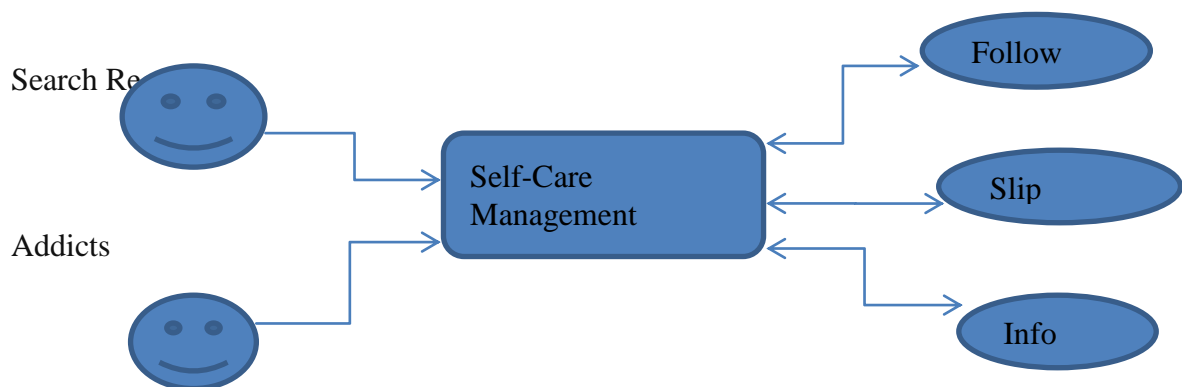
They are people who provide home base support.

#### 4.4.2 Use Case Scenarios

1. Addicts will daily check into the self-care system to look for support in order to empowering themselves, seek social support and other updates which will help them to keep free from alcohol.



2. An addict sends out a message requesting for updates, the message goes to the self-care system to check if there is information to share, and then it sends back an acknowledgment to the addict. I.e. follow ups, slip support e.tc



#### 4.6.5 Assumptions/Actions - Scenarios



The analysis of the above scenarios points out the need for the following assumptions/actions;

Alcoholic addicts should be equipped with an android enabled phone, be able to download the app, a real time data entry application that gives options of sending message automatically to the self-care database and an acknowledgment is sent back.

#### **4.6.6 Persona**



Simon is an eloquent full of life caregiver working with recovering addicts. He is 35 years old and very ambitious. He has been sober for the last 8 years and still remains very strong. His dream is to open a children's home in the near future since he was one and he knows that what the children need is a little love and support to stay away from crime, drugs and alcohol. Due to a busy schedule Simon has programmed his day with the assistance of a diary. He is woken up at 5.00am by an alarm clock, He likes to stay healthy and fit so he goes to the gym and then joins his support group for breakfast at 8.00am. Later he goes through his phone and responds to messages starting with the urgent ones and end with the least urgent. He then proceeds for his morning counseling session with patients in the rehab center. Since alcoholics approach to life is to take one day at a time he is mainly interested in how their night has been and also tries to manage their expectations. He then has sharing session where he hears their problems then using his past experiences he tries to address their concerns the best way he can. After the morning session he turns to his favorite hobby which is listening to good music especially reggae music with Bob Marley being his favorite musician. "The songs are about real life and real struggles" he says. Later he will join his patients again for lunch in the hall where they will continue with their conversions of the day. In the afternoon he spends most of his time in the field, but before the meetings he will prepare for presentations using his diary and a note book. He will also respond to text messages on his phone starting from the urgent ones to the least urgent. He says that all messages have to be responded to before the end of the day so no one is left out. Cases are also shared among the caregivers so that they

can meet their targets for the day. After the field visits he goes back to his office to type the findings on his stand alone Computer. After work he winds down by having some quite time with his young family and then prepares to go to bed after planning his next day activities.

#### 4.7 Entity relationship diagram (ER-D)

Entity relationship diagram(ER-D) is a relational schema database modeling method used to model a system requirement in a top down approach. The diagram below is a summarized method of raw database that is contained in tables which are merged to illustrate the interrelationships between entities before the information is stored in the database.

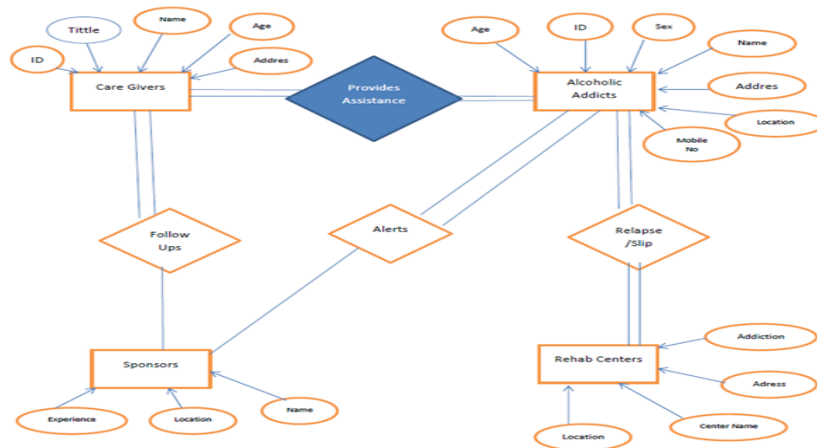
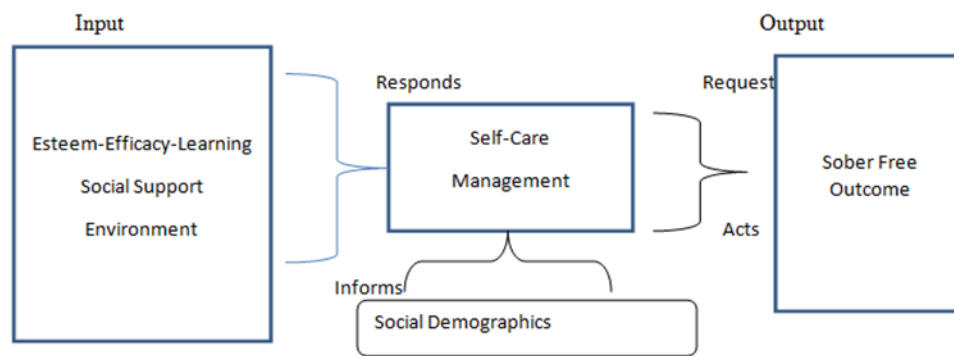


Figure 13: Entity Relationship – Diagram

#### Context diagram of the system

Context diagram shows the tool's boundaries, external entities that interact with the system, and information flows between entities and the system



4.6 Figure 14: Context diagram of the system

## 4.8 Mobile App Overview

The App has two parts – the Input process (sharing and informing) and the self-care database server as shown in above. Each activity will have a device to share and request in real-time. The information is saved in the self-care database. The data is stored for future use in the database. When an alcoholic addict requests to be connected to another they will get a response immediately from the sponsor/caregivers.

### System Requirements

-Android enabled device- An Android enabled mobile phone is used for communication.

-Computer/Server

-Power adapter

-Internet

-Interoperability of the systems

-Standards, Security & Safety

Suggested software requirements

Tools for building up the service:

-Operational platform

-Domain: 4gwebtechnologies.com

-Pls Java, Php, IntelliJ IDEA android studio

## 4.9 System Interface

The mobile application is designed in a way that it can link the modules/units for efficient exchange of information on follow-ups, slip support and alerts. This can be managed very well by appointed key contact persons.

The system is designed and separated into two main components, client (recovering alcohol addicts) (android enabled device), and the server which will be developed using MIT Appinventor.

#### **4.10 Operationalization of the System**

In order for the tool to be put in place or used, the following are additional requirements needed besides the system by users like the transporters:

- Domain for storing information.
- Internet is also needed.
- Installation of software system. The designed system should be installed in the computer that works as server and there should be a system controller.
- Training should be offered to the addicts so as to maximize the use of the app and it should be done preferably by the care givers who are often in contact with the addicts.

#### **4.11 Evaluation and System Testing**

While a system is superior it's far with the desire that it plays well. In exercise but some mistakes constantly arise. The primary cause of assessment and machine sorting out is to find the errors and accurate them. Major dreams of device trying out are:

- The device will carry out as consistent with specification.
- The gadget meets individual requirements
- affirm that the controls protected inside the machine characteristic as meant
- To look that the corrected inputs are fed to the machine and correct outputs are acquired
- During operation wrong inputs processing and output may be deleted.

In the website in the starting the addict needs to test in and be a part of a hard and fast that suite him or her. He'll want to login into his account using valid username and password.

The subsequent are the functionalities of the device:

##### **Unit testing**

Included checking out

Records validation trying out

Gadget checking out

##### **Unit trying out**

Each module is examined as a separate unit. The input and output generated with the aid of every module is studied one after the other. Each opportunity of the enter that may be furnished is considered. The important modules are facts access module, card generation module.

#### Login Module

**Investigate case:** It gives with checking regardless of whether or now not the given username and secret words are genuine or not any more.

**Info:** Username and secret word are entered.

**Yield:** If the username and secret key are legitimate, at that point proficiently signed in, if not blunders message is shown and redirection to the landing page.

**Genuine test results:** If username and secret key are real, at that point sign in adequately. Else show and oversights message and divert to landing page.

#### **Be a part of corporations and remark**

Test case: It offers with a success sending and receiving messages

Enter: Addict's cellular and addiction data

Output: The addiction info are received in that respective addicts cell phone

Actual take a look at outcomes: The addict's statistics is obtained in that respective cellular mobile phone.

#### **Messaging**

Take a look at case: It gives with a hit sending and receiving message through cellular cellphone into the database.

Input: Addicts cell variety and every day log sports activities data

Output: a hit communication among addicts and caregivers.

Real test effects: The conversations are capable of be float using take a look at messaging.

#### **Integration locating out**

This situating out strategy consolidates the majority of the modules stressed inside the machine. After the unprejudiced modules are tried, set up modules that utilization the impartial module is analyzed. This arrangement of testing layers of based totally completely modules keeps till the whole gadget is developed. The modules of the device are presented review by review just so expansion of a module does not affect the general execution of the option.

#### **Very last machine attempting out**

That is the very last step trying out. on this, the entire device changed into tested as an entire with all paperwork, code, modules and class modules. The specific modules are integrated.

## **TESTING OF THE MOBILE APP**

The application was tested to find out if all the functionality was achieved. First, the forms were tested to check if the fields were editable. Second, a success alert function was triggered to find out if the details were successfully saved into the database.

If it failed, it would mean that the different modules of the system were not working.

All these tests were done in order to know if the entire website and mobile app's module working to their expectations.

### **Test 1: Logging in to the website**

Wrong input was inserted into the system to check whether wrong input would be accepted or not.

A notice message may be shown to the client cautioning the buyer that he/she has entered mistaken accreditations.

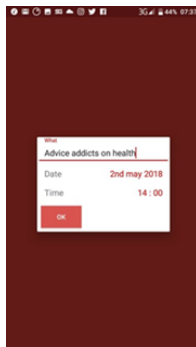
**Investigate 2:** growing a fresh out of the plastic new discussion or sending another submit or comment

While somebody makes another discussion for discourse or communicates something specific there's a popup that is shown that advises the person that the action turned into a win. Underneath is a screen capture of the popup message.

**Investigate 3:** absent or wrong info

At the point when mistaken data or lacking data is embedded into the contraption, the framework naturally recognizes the blunder and informs the man or lady. The screen capture under proposes test lacking enter.

### **Check 4: checking out the output of the web utility**



**Table 5: This table discusses the results after conducting system testing.**

Test Case ID	Description	Expected Outcome	PASS /FAIL
ST1	Installation of system on real android device	The system should install successfully and display login screen	PASS
ST2	Addicts/caregivers/admin login after putting correct username and password	Addict should access addict's dashboard Caregiver should access caregiver's dashboard Admin should access admin's dashboard	PASS
ST3	Admin register new caregiver	A caregiver should be successfully registered and a message shown	PASS
ST4	Admin view all system users	A list of users is displayed on the users tab	PASS
ST5	Caregiver register new addicts	A new addict should be successfully registered and a message shown	PASS
ST6	Caregiver view his/her addicts wall	A list of addicts should be shown on addicts tab	PASS
ST7	Caregiver views each addict's history.	A list of addicts history is displayed in the story tab	PASS
ST8	Caregiver send feedback to addicts in form of SMS after reviewing his/her story	Addicts receives feedback message from caregiver on his/her mobile phone	PASS
ST9	Addicts sends text messages	Caregiver receives an SMS after addicts sends his/her query	PASS

**Table 6: Evaluation Results and their Interpretation – Six forms returned**

1.	What is your first impression of the mobile app	6/6
2.	Do you find it easy to use	5/6
3.	Does it meet your expectations	5/6 – More can be done,

		more color
4.	If there is something you would like changed/included what would it be	6/6 – Yes, not sure, include gambling addicts
5.	Is it something that you would like to be a part of	6/6 – Yes, maybe
6.	Would you recommend this app to other recovering addicts	6/6 – Yes addicts in the family / neighborhood

## 4.12 RESULTS AND ANALYSIS

This section presents the findings of the study and their interpretation on establishing the benefits of using mobile messaging to support aftercare for recovering alcoholic addicts.

### 4.12.1 Participants

Participants included 30 addicts and 9 caregivers in the later stages of substance abuse treatment and recovering from alcohol addiction (5 women and 34 men). They gave written informed consent prior to contributing; the consent form included information about optional partaking in the groups. The focus-group interviews were approved by the rehab center management. Exclusion criteria for the study were:-

- Currently admitted patients who are still unstable and yet to learn to control physical dependence on alcohol.
- Addicts who remained in treatment for at least 10 weeks
- Caregivers with over 1years experience a total of 30 addicts and 9 caregivers over the time when focus groups were held were invited to attend. Only 12 attended the focus-group session. Their ages ranged from 18 to 40.

### 4.12.2 Measures

Data was collected through questionnaires and focus group discussion in May 2018 in the center. Questionnaires were reviewed and analyzed. Attention institution session changed into audiotaped, and the tape changed into later transcribed for analysis. Krueger's (2002), a guiding principle for recognition group become followed, with some modifications so that the group resembled the organizations that the have a look at participants were used to attending. Awareness group included all of the 12 participants. The duration of organization consultation was 45min, and the format



changed into fairly based. The focus institution questions have been designed to elicit strategies that individuals had been aware of and will consider themselves using. But, one query, which asked participants to compare how they spent their days after they have been drinking alcohol with how they spend their days now, tried to elicit “strategies” that humans were less aware about counting on alcohol. attention institution session started with preferred questions on staying sober after which became greater narrowly targeted on social guide, esteem, efficacy and records consciousness, which include How do important humans in your existence—buddies, family, full-size others—help you to live sober.

#### **4.12.3 Procedures**

Eligible participants from the 2 groups (addicts and caregivers) were invited to take part in the group’s discussions. The individuals were eligible to participate if they were in the last stage of treatment (week 10 to 12). This is a stage were the addicts are committed in efforts to reduce alcohol use after attending a treatment program of 12 weeks. Participants attended one organized focus group session. The groups had 16 participants and were led by an experienced caregiver and myself. Questions were pilot-tested on the addicts and caregivers who were represented in the focus group.

#### **4.12.4 Data Analysis**

Frequency analysis method was used to investigate the quantitative demographic and diagnostic facts acquired from the questionnaires. The focus institution questions emerged from theoretical studies hypothesis that the use of cell messaging can help addicts from relapsing. Accordingly, the intention of the point of interest organization changed into to pick out the conditions, capabilities, strategies, and their expectancies whilst the use of the cellular app in assisting their recovery from alcoholism. This is then summarized in a table below.

## Results from the Questionnaires

Demographic characteristics and questionnaire scores from Addicts and Caregivers

Table 7: Respondent Demographics

Frequency Table					
		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	31	79.5	79.5	79.5
	Female	5	12.8	12.8	92.3
	male	3	7.7	7.7	100.0
	Total	39	100.0	100.0	
Sober	1 Month	6	15.4	20.0	20.0
	2 Months	5	12.8	16.7	36.7
	3 Months	10	25.6	33.3	70.0
	4 Months	6	15.4	20.0	90.0
	5 Months	2	5.1	6.7	96.7
	6 Months	1	2.6	3.3	100.0
	Total	30	76.9	100.0	
Missing	System	9	23.1		
Total		39	100.0		
Experience	1-5 years	4	10.3	44.4	44.4
	6-10 years	4	10.3	44.4	88.9
	16-20years	1	2.6	11.1	100.0
	Total	9	23.1	100.0	
Missing	System	30	76.9		
Total		39	100.0		
Education	Primary Level	6	15.4	15.4	15.4
	Secondary Level	14	35.9	35.9	51.3
	Under Graduate	13	33.3	33.3	84.6
	Graduate	6	15.4	15.4	100.0
	Total	39	100.0	100.0	

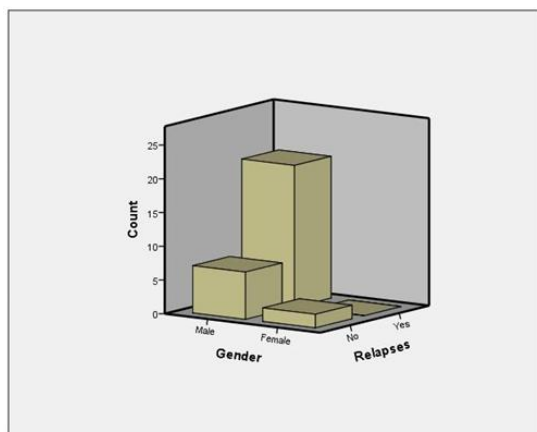
Age	18-24	8	20.5	20.5	20.5
	25-34	14	35.9	35.9	56.4
	35-44	12	30.8	30.8	87.2
	45-54	3	7.7	7.7	94.9
	55-60	2	5.1	5.1	100.0
	Total	39	100.0	100.0	
Religion	Catholic	19	48.7	48.7	48.7
	Protestant	15	38.5	38.5	87.2
	Muslim	3	7.7	7.7	94.9
		Frequency	Percent	Valid Percent	Cumulative Percent
	Adventist	1	2.6	2.6	97.4
	Other	1	2.6	2.6	100.0
Total	39	100.0	100.0		
Relationship	Single	21	53.8	53.8	53.8
	Dating	3	7.7	7.7	61.5
	Engaged	2	5.1	5.1	66.7
	Married	10	25.6	25.6	92.3
	Divorce	3	7.7	7.7	100.0
	Total	39	100.0	100.0	
County	Nairobi	17	43.6	43.6	43.6
	Kiambu	15	38.5	38.5	82.1
	Nyeri	2	5.1	5.1	87.2
	Nakuru	2	5.1	5.1	92.3
	Muranga	2	5.1	5.1	97.4
	Vihiga	1	2.6	2.6	100.0
	Total	39	100.0	100.0	
Residence	Live alone	11	28.2	28.2	28.2
	Live with parents	17	43.6	43.6	71.8
	Live with spouse	11	28.2	28.2	100.0

	Total	39	100.0	100.0	
Relapses	Yes	24	61.5	61.5	61.5
	No	15	38.5	38.5	100.0
	Total	39	100.0	100.0	
History	1 Time	5	12.8	20.8	20.8
	2 Times	5	12.8	20.8	41.7
	3 Times	2	5.1	8.3	50.0
	4 Times	1	2.6	4.2	54.2
	5 Times	2	5.1	8.3	62.5
	6 Times	9	23.1	37.5	100.0
	Total	24	61.5	100.0	
Missing	System	15	38.5		
Total		39	100.0		

## Results –Demographic Survey

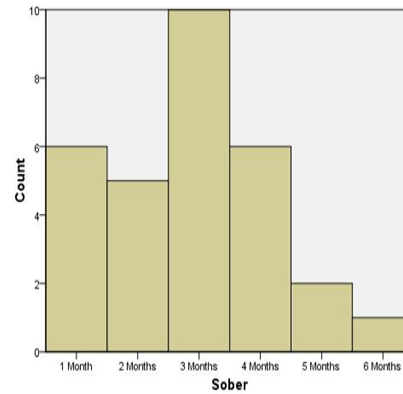
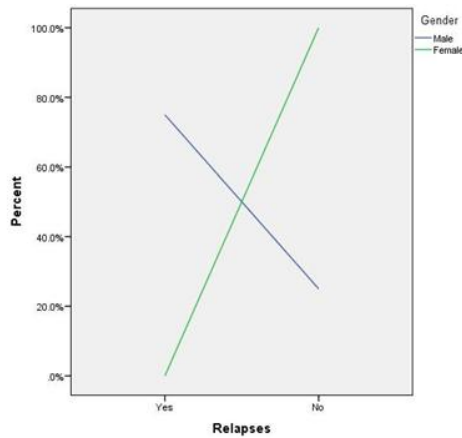
### Addicts and Caregivers

Among the studied cohort there was a big contrast between the male and female addicts in all related alcohol-related variables. Male respondents accounted for 93.3% while female accounted for 6.7% of the sample. The former were available to participate in this exercise because the rehab centers are mainly dominated by male patients. These results are consistent with observations from many previous literature review studies on behaviors and patterns of alcohol addiction. Where there is an explanation on why male and female differ in alcohol addiction and also in recovery process. These differences can also be seen in relation to education, age and marital status.



Findings from the respondents' background characteristics indicated that most of the users were between the ages of 25 to 35 years, followed by 36 to 40 years and then 18 to 24. A large proportion (89%) of the respondents own android phones and are active in messaging rather than calling. Respondents with college education formed the largest proportion (82%), followed by those who had a high school diploma who accounted for 18% of the sample size. The study population had a fairly high level of education, which could impact positively on understanding and adopting of technology. The majority of the participants (53.3%) were single, (10%) were married and (20%) being divorced respectively. (46.67%) of the addicts live with parents, this coincides with an increase in alcohol relapse probably because the closeness to their parents appears to play a role in protecting the addicts from real issues and responsibilities. As for (30%) addicts who live alone, the loneliness contribute to their relapse because they have no one to share their problems with. The addicts who participated in the study (43.3%) said they were Catholics by religion, followed by Protestants (40%), Adventists (3.3%) and Muslims (10%), with very few (3.3%) belonging to other denominations, as shown on table above.

The study shows that relationship was associated with at least two alcohol-relapse variables. Addicts who are engaged in a relationship or are married relapsed less as compared to addicts who are single and divorced. Despite the fact that the discoveries for other drinking designs were not huge, a similar pattern was watched for recurrence of inebriation. As a potential clarification of this marvel, Milios (2017) a relationship can provide a built-in support system: A committed partner can be a cheerleader, a gentle task-master and a source of motivation to help the recovering person stay on track. A partner can help with the acquisition and practice of new, positive coping skills. They can also established communication and emotional coping strategies that can help the recovering partner learn and practice such skills by providing invaluable feedback and modelling. Another explanation may be that one would not tolerate his/her partner's relapse after treatment hence very likely for being single or divorced. Majority of the addicts came from Nairobi county with (50%) followed by Kiambu with (26.7%). This is because the rehab center is very near so they are able to access it better than the (20%) who live in Nyeri, Muranga & Nakuru respectively. Most of the addicts in the centre have relapsed before with (66.7%) high and with (33.3%) relapsing more than twice. These triggers were mostly brought about by stress and unexplained courses.



### 4.13 Part B Hypothesis Testing

#### Rosenberg Scale

The Rosenberg Scale is a widely used self-report instrument for evaluating individual self-esteem, efficacy and learning. It explores utilizing thing reaction hypothesis by utilizing a 10-thing scale that estimates worldwide self-esteem by estimating both positive and negative sentiments around one self. The scale is accepted to be uni-dimensional. All things are addressed utilizing a 5-point Likert scale design going from unequivocally consent to emphatically oppose this idea. Some studies support the buffer hypothesis, which mitigates the effects of stress, but other studies come to the opposite conclusion, indicating that the negative effects of low self-worth are mainly felt in good times. Still others find that esteem, efficacy & learning leads to happier outcomes regardless of stress or other circumstances.

#### Scoring

	Strongly Agree	Agree	Disagree	Strongly Disagree
All Questions	1	2	3	4

### Results Part B of Survey

The results are presented using tables for ease of understanding. The analysis is categorized into two sections in line with the objectives. Respondents were asked to agree or disagree with given statements based on a four-point Likert-scale) where 1 = Strongly Agree, 2 = Agree, 3 = Disagree and 4 = Strongly Disagree). Elements of the four-point Likert-scale were then merged to allow for easier interpretation; thereby results were interpreted based on 2 elements; Agree and Disagree. The results are



increase the likelihood of alcohol use?'								
Economic disadvantage,	11	28	26	66.7	2	5.1		
Family conflicts,(e.g. Parents, husband, wife)	11	28	26	66.7	1	2.6	1	2.6
Attitudes towards alcohol use, as well as conduct and emotional	16	41	19	48.7	3	7.7	2	5.1
Problems experienced at an early age	11	28	22	56.4	4	10	2	5.1

Researchers have suggested a variety of possibilities for the cause of alcoholism: Social factors: such as the influence of family, peers, and society, and the availability of alcohol. Psychological factors: such as elevated levels of stress, inadequate coping mechanisms, and reinforcement of alcohol use from other drinkers can contribute to alcoholism and relapsing. From the results above (80%) of the addicts confirm and agree that their increased alcohol use has been caused by social factors that include, financial, family conflicts and problems which have experienced at an early age

### Learning

	Strongly Agree	%	Agree	%	Disagree	%	Strongly Disagree	%
How easy is it using the Mobile App								
My interaction with the Mobile App will be easy and understandable	11	28	25	64.1	3	7.69		
It is easy for me to share experiences using Mobile App	13	33	24	61.5	1	2.56	1	2.6
Overall, I find the Mobile App easy to use	12	31	24	61.5	2	5.13	1	2.6
Learning to operate Mobile App is easy for me	11	28	25	64.1	2	5.13	1	2.6



A study by Bandura (1977) believes that humans are active information processors and think about the relationship between their behavior and its consequences. Observational learning could not occur unless cognitive processes were at work. These mental factors mediate (i.e., intervene) in the learning process to determine whether a new response is acquired.

Positive (or negative) reinforcement will have little impact if the reinforcement offered externally does not match with an individual's needs. Reinforcement can be positive or negative, but the important factor is that it will usually lead to a change in a person's behavior. In this case the reinforcement we are looking at is the mobile app. (90%) of the addicts agree that using the mobile app to interact, share their experience and even learning to operate will help them in support of their alcohol recovery and relapse.

**Esteem (Addicts & Caregivers)**

	Strongly Agree	%	Agree	%	Disagree	%	Strongly Disagree	%
How do you feel about using the Mobile App								
Overall, I find the Mobile App a useful tool for my daily tasks	17	44	22	56.4				
Using Mobile App will enable me to conveniently interact with other addict better	19	47	20	51.3				
Using Mobile App will improve my self esteem	16	41	22	56.4	1	2.56		
Using Mobile App will allow me to make more friends who share common objectives	19	49	20	51.3				

In regards to esteem there is a feeling that the mobile app will help boost or improve their self-esteem through interactions, daily tasking and making new friends. This can be seen from the table above with a total of (97%) strongly agreeing and agreeing.

Social Support (Addicts & Caregivers)

	Strongly Agree	%	Agree	%	Disagree	%	Strongly Disagree	%
How do I feel about others using the Mobile App								
I am interested in using the Mobile App	17	44	22	56.4				
I would like my family and friends to use the Mobile App	9	23	28	71.8	2	5.13		
I would prefer to interact with my counselors through the Mobile App	13	33	26	66.7				
My Peers have encouraged me to use the App.	9	23	25	64.1	4	10	1	2.6

The response on the above table shows that (90%) both addicts and care givers are interested in using the mobile app and have been encouraged by their peers to use. They also prefer to interact with their care givers through the app because it is convenient and usable

### Self-Care

	Strongly Agree	%	Agree	%	Disagree	%	Strongly Disagree	%
Using the App								
I intend to use Mobile App	18	46	20	51.3	1	2.56		
I will always use Mobile App	14	36	22	56.4	3	7.69		

The general overall feeling is that (97%) represented in both groups are interested in using the mobile app and will continue to use it as long as it is available.

### Focus Group Discussion

The intention of the groups was to become aware of the technology used and the content anticipated from the mobile application. The focal point-group subject matter of era and content material fabric grow to be properly acquired; thought sand reviews had been discussed freely, and members constantly showed admire for each other’s perspectives. Questions and discussion points addressed induced quite non-public and emotional responses, coupled with guidelines for implementation of a era based totally alcohol improving organization.

Fundamental classes emerged inductively from the point of interest group facts, together with “motivating mind” and “self-care troubles.” those classes have been provisional and have been settled on with the aid of each the addicts and their caregivers.

### Focus Group Discussion Results

Questions		N 12	Perc %
What type of mobile phone do you own or have access to?	Android	10	83.33
	Iphone	2	16.67
What activities do you do and why?	Whatsup	12	100.00
	Facebook	11	91.67
	Instant Messaging	6	50.00

How often and how much time do you spend using your phone in a day?	1-3 hours	3	25.00
	4-6 hours	1	8.33
	6-9 hours	4	33.33
	10-12 hours	1	8.33
	12-15 hours	3	25.00
Do you have access to internet?	yes	12	100.00
	no	0	0.00
How common do you think the practice of sending/sharing alcohol related messages via mobile phones among other addicts?	Common	9	75.00
	Not Common	2	16.67
	Not Sure	1	8.33
			0.00
What do you think about the activity?	Good	9	75.00
	Not Sure	3	25.00
			0.00
Do you think the alcoholic activities accessed on line affect the addict's behaviors in real life?	Yes	8	66.67
	No	4	33.33
Do you think the good things about mobile technology and social media outweigh the bad things Why or Why not?	Yes	8	66.67
	No	4	33.33
What do you want to achieve in your recovery if registered in the App?	Sobriety	12	100.00
	Good Health	12	100.00
	Friends	12	100.00
	Improve Self-Esteem	12	100.00
How can you help yourself avoid relapse right now when using the mobile App?	Reminders to keep meeting appointment	12	100.00

	Keep a daily log	12	100.00
	Message caregivers often	12	100.00
	Read my notifications regularly	12	100.00
	Ask questions	12	100.00
	Make friends	12	100.00

## **CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS**

This chapter gives a summary of the study by looking at the key findings of the research and their implications to the various stakeholders in this case both the addicts, care givers and family. The objectives are revisited thereby showing how the research was able to address the objectives. This chapter also contains the contribution, limitations and conclusions of the study, and recommendations for future work.

### **5.1 How Objectives were achieved**

**Objective 1:** To identify factors that cause recovering alcoholics to relapse

To address this objective, the study sought to answer the question through literature review by looking at the behaviors among the alcohol addicts, details are in ref: 2.1 of this document. The literature assessment revealed some of the diverse types of bad occasions notably associated with dependency vulnerability i.e. parental divorce or warfare, abandonment, pressured to live other than mother and father, lack of toddler with the helpful asset of absence of ways of life or expulsion, unfaithfulness of across the board other, absence of home to natural calamity, demise of a near one, psychological mistreatment or disregard, sexual manhandle, assault, physical mishandle with the valuable asset of parent, caregiver, member of the family, spouse, or exquisite different, sufferer of gun taking pictures or other violent acts, and watching violent victimization. The IAA cycle that's just like Prochaska and DiClemente's trans-theoretical model, abstinence is performed.

**Objective 2:** To identify models that can be used to support recovering addicts

This objective was addressed through literature review by looking at the various models available which are used to successfully support alcoholic addicts from relapsing. A table with a summary of the models and its different feature is outlined in Table 2. A study by Meredith (2015) identifies a couple of smartphone apps that assist to scale back alcohol intake or treat AUD that are evaluated for practicability, satisfactoriness, and/or effectuality. They're going to facilitate in narrowing the divide among standard health care and addict desires.

**Objective 3:** Identify ways that technology can be used to support recovering addicts

This study looked at how technology has been used in developing countries to support recovering addicts. From various literature reviews a summary on table 2 shows the features which have been designed to support various user addicts' needs, example is

offering support, alerts and information which has been very useful in their road to recovery.

**Objective 4:** To design a mobile application that can support recovering alcoholics so they do not relapse

This objective has been answered by developing a mobile application and testing it by involving the rehab centre through consultations and data collection. The prototype design has implemented a caregiver's dashboard from where they can be able to access and respond to addicts queries, keep logs of the daily happening that involve the addicts, send alerts to inform and educate the addicts. From the evaluation report which tests usability, we can conclude that caregivers can use their mobile application to receive notifications from each addict. The caregivers can also provide appropriate feedback to the addicts depending on the issues that will push them into relapse.

The addicts on the other hand can look for friends, share their stories to encourage others who are still vulnerably and also text their caregivers for support whenever or wherever they need it.

**Objective 5:** To test and validate the mobile application

The mobile application was tested and validated by 6 random users and feedback was given in form of a questionnaire. Their response was put into consideration and updates were made to the application. The results are recorded in 4.3 of this study.

## **5.2 Contributions of the Study**

This research sought to develop a mobile system for supporting alcoholic addicts from relapsing when they leave the rehabilitation centres. Addicts were able to register, send and receive info in regards to the treatment faster and on time. The caregivers are able to provide regular feedback to the addicts to enable them control their addiction. The mobile app system has proved to be usable and useful to the addicts in managing their daily logs and at the same time keep in touch with other addicts. It is now clear that the concept of the mobile app can become another reality in the center and Kenya in whole. If adopted, it will be also possible to extend the same service to other areas also struggling with alcohol addictions.

The success of this mobile app system may therefore be considered as a baseline towards achieving better management of alcoholic relapses.

With the impressive results from the study, similar mobile apps systems can also be developed for managing other addictions like gambling, drugs like heroin and cocaine addictions.

### **5.3 Limitations of the Study**

The 4 weeks testing period of this study was not enough to substantially quantify the benefit of drop in alcohol use by the addicts. As a result a long-term trial is therefore recommended. The research was limited to only the Rehab Center which is in Limuru county hence addicts from other parts of the country were left out. Open days are conducted once a month to outsiders so it was a challenge getting a slot to collect all the necessary data in one sitting. The mobile app is limited to alcoholics only so there is a need to look at other addictions.

### **5.4 Recommendations**

The results of this study reveal that use of mobile technology to support recovering alcoholic addicts can help in reducing the number of relapsed among the addicts. The addict own at least an android which they use for communication but are open to having a mobile app to help them in keeping contact with fellow addicts and their caregivers. There is a general admission that the support they receive after leaving the rehab centers is not adequate and need to be supported by using technology. They are familiar with social sites like WhatsApp and instant messaging. Based on the results the input shows that a big group of recovering addicts were male patients being the most prolific abusers compared to females.

Most addicts who took part in the study had a history of relapse of more than 2 times before the age of 34. However most of them are single and live with their parents. This goes to show that they are mostly dependent on their families which cause a further strain in their living environment. They are also not able to sustain relationships because of their addiction.

The findings further disclosed that a large number of caregivers are male which most probably should be balanced so as to allow a different perspective and understanding in interactions with female gender. One factor that sometime affects relapses is relationship problems with the opposite sex.



## **5.5 Further Research**

This research focused mainly on alcoholics. However, the study findings reveal that there is need to broaden the research to other addictions like substance and gambling addictions which have been on the rise recently.

There is need to modify the app to include programs that rehabilitate and educate the addicts on how to become useful citizens by empowering them with skills in becoming their own bosses. Most of these addicts lose their employment when they are confined for 90 days in the rehab centers. When they leave the centers they have no source of income and are mostly idle, this poses a problem of them going back to relapsing. This can be combined with a program for saving the little money they make to enable the businesses sustains themselves.

The mobile app in the spirit of inclusivity needs to expand to include the government which is very keen on rehabilitating alcoholics by creating awareness to the affected parties' i.e. the community, family members and the alcohol sellers. If the all this stakeholders are involved then there will be a reduction in alcohol consumption.

The study findings indicated that males were the highest respondents with a percentage of 90% while their female counterparts were 10%. Also, based on one on one interaction with people, it turned out that compared to men, most of the women are afraid of exposing themselves and seeking help because of the responsibilities they have to their children, spouses and community. Further research should look in to how they can be helped using technology in the confines of their own homes.

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Our Ref: UON/CBPS/SCI/MSC/AC/2016

5<sup>th</sup> March 2018

Jamil Bora Trust Nairobi  
Levuka Treatment Center  
P.O. Box 2704-00100  
Nairobi

Dear Sir/Madam

**RE: RESEARCH PERMIT – CHRISTINE MUHORO REG. NO. P51/86134/2016**

The above named is a bona fide student pursuing an M.Sc Course in Applied Computing at the School of Computing and Informatics, University of Nairobi. She is currently carrying out her research on the project entitled "*Using Mobile Messaging to Support Aftercare for Recovering Alcoholic Addicts*". Under the supervision of Prof. Peter W. Wagacha.

The project involves gathering relevant information from various institutions and she has informed the office that she would wish to carry her research in your organization.

We would be grateful if you could assist Ms. Muhoro as she gathers data for her research. If you have any queries about the exercise please do not hesitate to contact us.

Yours sincerely

  
DR. AGNES N. WAUSI  
DIRECTOR  
SCHOOL OF COMPUTING AND INFORMATICS  
School of Computing & Informatics  
University of NAIROBI  
P. O. Box 30197  
NAIROBI

Your Ref: UON/CBPS/SCI/MS/AC/2016

**25<sup>th</sup> April, 2018**

To Director,  
School of Computing and Informatics,  
University of Nairobi

Dear Sir/Madam

**REF: RESEARCH PERMIT: CHRISTINE MUHORO REG. NO. P51/86134/2016**

We are in receipt of the above request for the above mentioned to carry out research in our centre.

We are ready and willing to assist her in whatever pertains her to complete her research.

Please feel free to contact the undersigned for any clarification and/or queries.

Thanking You,

  
Thomas O Biang & UST LIC  
Date: 25/4/18  
Program Director: 0722-497076