

NIT6130 INTRODUCTION TO RESEARCH

ASSIGNMENT 3 – METHODOLOGY

by

XXXXX YYYYY

Student ID: ZZZZZZZZZ

Table of contents

Content.....	2
List of Figures	3
List of Tables.....	4
Chapter 1 Methodology.....	5
1.1 Research Problem and collected Literature.....	5
1.1.1 Research Problem Statement.....	5
1.1.2 Organization of Collected Literature.....	6
1.2 Types of Methodology.....	6
1.2.1 Compare and Contrast of Methodologies.....	7
1.2.2 Type of Chosen Methodology.....	8
1.3 Review, Analyse, and Summarize of existing methodologies.....	8
1.3.1 Selection of subproblem.....	8
1.3.2 Analysis of Selected Methodology.....	8
1.3.3 Relevance of the Research Problem.....	14
1.3.4 Summary of the Reviewed Methodologies.....	14
1.4 Proposed Methodology.....	14
1.4.1 Justification of Selected Methodology.....	14
1.4.2 Benefits and Limitations of Methodology.....	14
1.4.3 Framework of Methodology.....	15
List of References.....	16

List of Figures

Figure1. Demographics of focus group participants (N=30).(Miyamoto, Henderson et al. 2016).....	10
Figure2. Technology experience and self-rated health of focus group participants (N=30).(Miyamoto, Henderson et al. 2016).....	11
Figure3: Storyboard illustrating reward and self-monitoring strategy (Orji and R. 2014).....	13
Figure 4: male female comparison on Technologies.(Orji and R. 2014).....	13

List of Tables

Table1. Collection of Literature.....	6
Table2. Compare and contrast.....	7
Table3. Relevance of methodologies.....	14

Chapter 1

Methodology

The aim of this assignment is to identify the methodology for my research thesis. My research is based on Persuasive health Technology. In the first assignment I did a literature review and in the second one, I am going to analyze the Methods and problems and try to find the appropriate solutions as well. This assignment is divided into four tasks which have some sub-tasks.

This document is structured as follows. The first task is to research problems, structured in subproblems and review the collected literature. The Second one is the description of different methodologies and appropriate methodology for the selected problems. The third one is to review, analysis and summarize the literature and problems. The last task is to give the purpose of my own methodology, reasons, benefits or limitations. The purpose of this assignment is to identify an appropriate methodology for our research thesis.

1.1 Research Problem and collected Literature

1.1.1 Research Problem Statement

As my research topic is persuasive health technology. There are many aspects in this field. So many researches, designs, and works are available in this area. Mobile technologies growing faster and faster. It becomes easy to keep track the physical activities. But there are some issues as well. Machines don't have the life they can't respond according to the situation. They have inbuilt functions to which they responded. But because human is involved in these technologies as they are meant for human intervention or human health and every person has a different opinion or different choices. Persuasiveness is very important but every technique suits every person is not possible.

My research encounters some problems which are based on different aspects. As apps are a smart idea to keep yourself fit and healthy and because today's era is technological era. So, many apps are available on different platforms. People can use them according to their needs. But are all the apps appropriate? This is a question. Every person has a different capacity and different problems. Everyone's body responded differently. So how can we so sure that these apps are relevant to all body types. There are some loose knots which should be considered. Are they really trustable to analyze and track our health ?

In today's time, people have so much work pressure and less time to relax. They have so many things to do. In these circumstances, it becomes difficult to manage their health and work together. They want to become fit but don't have time to carry forward it. That time these health monitoring apps will be very beneficial. People can track their progress and meals to take the right amount of calories. But the problem is to keep them motivate and interested to follow these apps. Human nature is like that, they start new things very enthusiastically but they lose their interest very soon. It is the important and crucial thing to make them stick with the app. It is a problem to maintain the interest of people in a

thing for a long time. These apps have some limitations. They have design issues because every person has different taste and choices. All apps do not provide everything. Mostly have some lacking points.

1.1.2 Organization of Collected Literature

Table1. Collection of Literature

Research Problem	Sub Problem	Collected Literature
App designing	<ul style="list-style-type: none"> • Lack of collaboration of exercise and diet info • Different platforms for different apps • Design issues • Correlation of different Data • Motivational and relevant apps 	<ul style="list-style-type: none"> • (Schnall, Bakken et al. 2015) • (Miyamoto, Henderson et al. 2016) • (Handel 2011, Qiang, Yamamichi et al. 2012)
People awareness	<ul style="list-style-type: none"> • Behaviour changes • Awareness of health monitoring apps • Persuasiveness of health-related applications 	<ul style="list-style-type: none"> • (Orji and R. 2014) • (Hebden, Cook et al. 2012) • (Chatterjee and Price 2009)

1.2 Types of Methodology

Quantitative methodology:

DO YOUR OWN

Qualitative methodology:

DO YOUR OWN

1.2.1 Compare and Contrast of Methodologies

DO YOUR OWN

1.2.2 Type of Chosen Methodology

I am going to use Hybrid Methodology. Hybrid is not a part of Quantitative methodology and Qualitative methodology but the hybrid is a methodology which adding the best share of Qualitative and Quantitative. If we need large size of data we use the Qualitative method and convert that in Quantitative format. It creates a huge difference between Time and Cost. My methodology is not limited only to surveys or questionnaire but more deep. It is a very vast area so if we add both of the methods to evaluate them then it will be good and easy to find out the solutions for the good mobile app. It is not only about people's desires or expectations but also usefulness, importance, sustainability and people's reaction which decide what type of app will be more useful.

1.3 Review, Analyse and Summarize of existing methodologies

1.3.1 Selection of subproblem

There are many problems related to mobile health applications. But here I would like to discuss the issue of selecting and using m-health application and encouragement of sustain behavior change. It's not enough to choose an application and use it but it's also important to monitor that does it effect on human behavior and make it sustain for a long time.

1.3.2 Analysis of the selected Methodologies

Literature1. Tracking Health Data Is Not Enough:A Qualitative Exploration of the Role to Promote Physical Activity and to Sustain Behavior Change

My first paper is based on the use of mobile applications and behavior changes. They researched on the field of mobile applications their uses and impacts on users. They didn't only concerned about mobile apps but also tried to find the awareness among people, sustainability, suitable among people etc. They used Quantitative approach to research about the topic.

In this paper, they were working on two concerns, inspire people towards fitness and mobile applications. Develop a strong interface and products so that people would stick with them and encourage to use that application. And the second one is to keep sustain with that applications and changes of life. They used some methods to gather the information about

reaction and needs of people to keep motivate and also remain with the applications. Factors which attract them to using healthcare apps and factor which can encourage them to continue with the apps. They used some methods to examine the users and their behaviors.

Initially, they created three focus groups. They chose employees as participants to check how much they interested in m-health technologies, their uses, benefits and what they want to improve. For that, they conduct a survey where they showed them the use and benefits of different m-health apps and asked them to gave views on them. The researchers collected all the information and discussed with each other. They divided those discussions in codes and reviewed it repeatedly and create new codes. In this paper, they were working on two concerns, inspire people towards fitness and mobile applications. Develop a strong interface and products so that people would stick with them and encourage to use that application. And the second one is to keep sustain with that applications and changes of life. They used some methods to gather the information about reaction and needs of people to keep motivate and also remain with the applications. Factors which attract them to using healthcare apps and factor which can encourage them to continue with the apps. They used some methods to examine the users and their behaviors.

Characteristics	Responses n (%)
Age	
25-34	3 (10)
35-44	6 (20)
45-54	14 (47)
55-64	3 (10)
Missing	4 (13)
Gender	
Male	6 (20)
Female	24 (80)
Race/ethnicity	
White	19 (63)
Black or African-American	6 (20)
Asian	3 (10)
American Indian or Alaska Native	2 (7)
Latino/Hispanic/Spanish	4 (13)
Missing	1 (3)
Education	
Some college, but no degree	8 (27)
Associate degree	3 (10)
Bachelor degree	13 (43)
Graduate or professional degree	6 (20)
Income (US \$)	
25,000-49,999	12 (40)
50,000-74,999	3 (10)
75,000-99,999	10 (33)
100,000-124,999	4 (13)

Figure 1. Demographics of focus group participants (N=30). (Miyamoto, Henderson et al. 2016)

Characteristics	Responses n (%)
Mobile phone owners	
No	8 (27)
Yes	22 (73)
Self-reported overall health	
Poor	0 (0)
Fair	8 (27)
Good	9 (30)
Very good	11 (37)
Excellent	2 (7)
Chronic disease	
Yes	19 (63)
No	11 (37)
Types of mobile apps used to reach health/wellness goals	
Exercise apps	12 (40)
Improved nutrition apps	9 (30)
Meditation/stress reduction apps	2 (7)
Sleep apps	3 (10)
Haven't used a health-related mobile app	10 (33)
Other (mood tracker, exercise plan/reminder)	4 (13)
None	5 (17)

Figure2. Technology experience and self-rated health of focus group participants (N=30).(Miyamoto, Henderson et al. 2016)

Literature2.

Development of Smartphone Applications for Nutrition and Physical Activity Behavior Change

Mobile apps are used to maintain the health care of people as most of the population use mobile phones or you can say smartphones where they can find lots of application in any field. It is beneficial for them to get the apps about fitness or health as it is a current issue in the present. This paper is based on an application which provides nutrition guidance and physical activities and their effects are based on human behaviours and how they effect on people to change their prospects.

Methods

This paper throwing light on the fact that how these apps useful to encourage people to change their lifestyle their eating habits etc. they used some methods , there they mentioned some processes by which they examined the procedure of different apps which guide adults towards health and diet. Those four criteria are ; deciding the conditions, platform selection, design process and testing.

The very first thing to develop an app is to collect all the necessary information, all pros, and cons, guidelines , requirements etc. the basic agenda was to change the lifestyle, routine towards Healthy eating and physical exercises. It is crucial to maintaining the motivation and keep track the diet chart because people can easily mould to unhealthy food and living. There should also keep the public health guidelines in mind. As its hard to keep people's interest in the apps it becomes important to provide a platform with their they can note down their daily intakes, exercises and giving feedback at the end of the week. These things encourage them to keep stick with the healthy lifestyle and easy to change their behaviours.

Apps are divided into two types, native and web based. Native has a particular operating system whereas web-based apps can run on any operating system. They developed apps on the web- based so that they can go on maximum reach. They can also run in offline mode as well.

In designing process, each app was connected with data of related app and behaviour. They included four types of data items in the records which were ePASS, eTIYP, eVIP and eSIYP. They all fetched from Australian Government food and nutrient database. These all connected with a database where that database was arranged in tables, which was showing different relation. They used HTML and CSS to developing the apps.

The last stage was testing which was very important to check whether those apps worked properly or not and giving correct results or not. They also performed surveys to got the people's views on the apps about the functionality.

So they discussed four processes to develop an app which is interconnected with other apps and that is based on the web so that anybody with internet access can use. Also, they focused on the fact of behaviour changes in adults by using these apps. And how to maintain their interest in these apps.

Literature3.

Persuasive Strategies by Gender Groups

Persuasive health technologies are beneficial for a human being. They enhance the effectiveness in the health sector. In these technologies, Gender is also playing an important role . This paper showed 10 technologies which were preferred on the basis of gender.

Framework:

To evaluate the strategies they made a frame through that they could get the idea of presence in men and women. They illustrate an example which is based on Personalization. By which they examined eating habits of individuals. This method they took from Truong et al. they measured the results on the ranking between 1 to 7method of Drozd et al. They selected people by AMT (Amazon's Mechanical Turk). They used Cronbach's alpha (α) for stability. This practice showed the difference between men and women's perspective about that study.

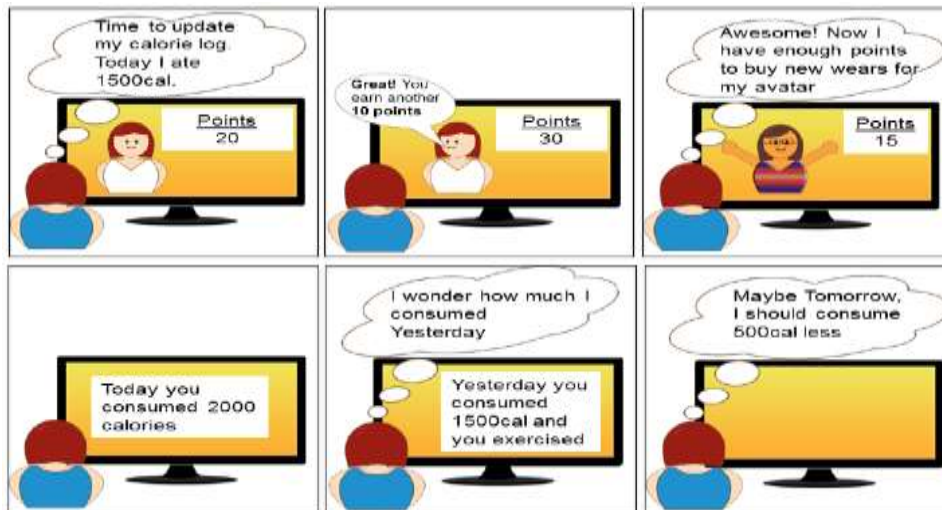


Figure3: Storyboard illustrating reward and self-monitoring strategy (Orji and R. 2014)

Strategies	CMPT/ CMPR	COOP	CUST	PERS	PRAS	SEMT/ SUGG	SIML	REWD
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Males	4.45 (1.68)	4.30 (1.73)	3.24 (1.79)	4.67 (1.68)	4.10 (1.75)	4.27 (1.58)	4.46 (1.73)	3.82 (1.79)
Females	4.35 (1.76)	4.52 (1.79)	3.46 (1.71)	5.02 (1.57)	4.33 (1.74)	4.36 (1.59)	4.78 (1.70)	4.00 (1.84)

CMPT/CMPR = competition and &comparison. COOP = cooperation, CUST = customization, PERS = personalization, PRAS = praise, SEMT/SUGG = self-monitoring and suggestion, SIML = simulation, REWD = reward.

Figure 4: male female comparison on Technologies.(Orji and R. 2014)

In Figure 4 we can see that both males and females behaved differently on different perspectives. In these 8 strategies, on some technologies women were more persuasive and in others men. So gender definitely effects on the persuasiveness of technologies.

1.3.3 Relevance of the Research Problem

Literature 1 is relevant to my study as it was also focusing on app use and behavior change as it is easy to use the mobile apps because of availability of hundreds of apps in the market but which will be more effective and keep people attract and stick with them is the matter.

Literature 2 was based on nutrition and diet. It also encourages people to follow a healthy lifestyle. They mostly talking about the processes of development, design, and testing. It is partially relevant to my problem.

Literature 3 is based on only behavior change and gender differences. Which is part of my research problem not whole, So it is also partially connected with my research .

1.3.4 Summary of the Reviewed Methodologies

Table3. Relevance of methodologies

Literature	Research Problem	Methodology	Your sub-problem	Relevance
Literature1	Mobile apps and behaviour changes	Quantitative	Use of mobile app and sustain behavior	Strongly relevant
Literature2	Create a good mobile app	Quantitative	Use of mobile app and sustain behavior	Partially relevant
Literature3	Persuasive technology and gender difference	Quantitative	Use of mobile app and sustain behavior	Partially relevant

1.4 Proposed Methodology

in this section, I am purposing a methodology which is a mixture of other methodologies. I selected some papers which are based on my topic and also related to the problem which I wanted to discuss. So here I divided section 1.4 into subsections which are as follow: section 1.4.1 explains why I select that methodology. Section 1.4.2 is about the limitations and benefits of that methodology. And finally, section 1.4.3 shows the framework or procedures of my methodology.

1.4.1 Justification of Selected Methodology

As I already mentioned I would like to use the hybrid methodology as it is not only limited in qualitative or quantitative but it adds both's features in one methodology. So, it is better to use both of them instead only one. I want to do a survey which includes a questionnaire , testing and want to get feedbacks from common people or patients who are the real consumers of the apps.

1.4.2 Benefits and Limitations of Methodology

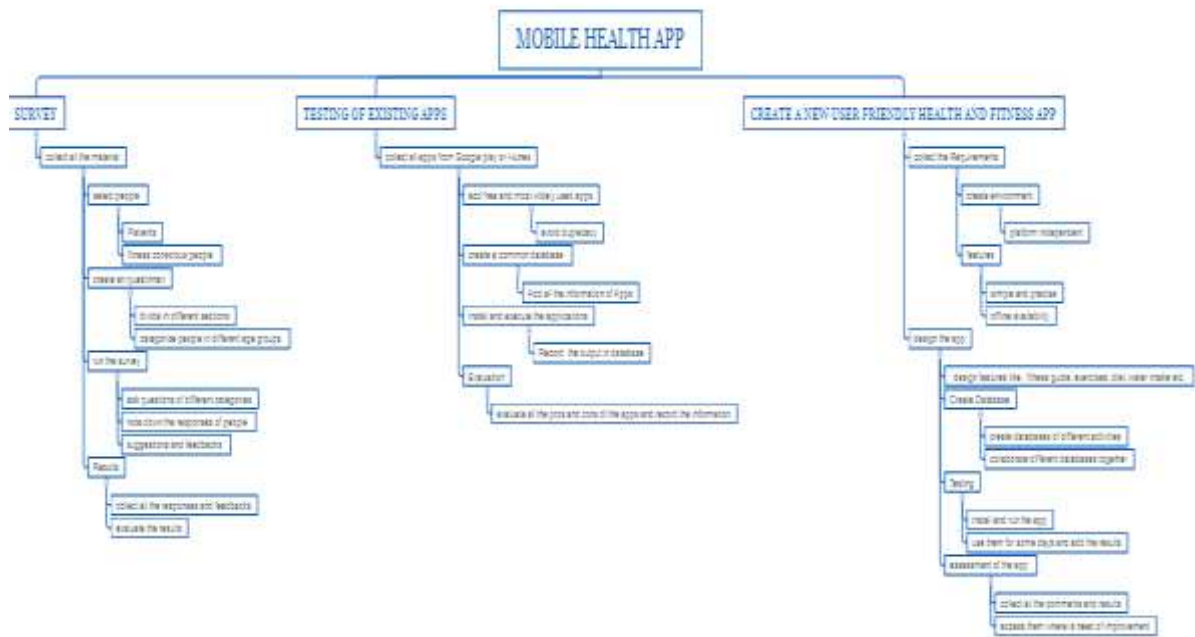
Benefits:

- Direct People interaction
- Surveys and testing will be performing together
- Reliable sources
- User interaction
- Testing and data analysis

Limitations:

- Different people different perceptions
- It can be complex approach
- Results can be vague
- Perfect app designing can be difficult, chances of left some portions of requirements
- Budget and Time

1.4.3 Framework of Methodology



List of Reference

Chatterjee, S. and A. Price (2009). "Healthy living with persuasive technologies: framework, issues, and challenges." Journal of the American Medical Informatics Association **16**(2): 171-178.

Handel, M. J. (2011). "mHealth (mobile health)—using apps for health and wellness." EXPLORE: The Journal of Science and Healing **7**(4): 256-261.

Hebden, L., et al. (2012). "Development of smartphone applications for nutrition and physical activity behavior change." JMIR research protocols **1**(2): e9.

Miyamoto, S. W., et al. (2016). "Tracking Health Data Is Not Enough: A Qualitative Exploration of the Role of Healthcare Partnerships and mHealth Technology to Promote Physical Activity and to Sustain Behavior Change." JMIR mHealth and uHealth **4**(1): e5.

Orji and R. (2014). " Exploring the persuasiveness of behavior change support strategies and possible gender differences." In Proceedings of the Second International Workshop on Behavior Change Support Systems (BCSS2014), Padova, Italy.: 1-17.

Qiang, C. Z., et al. (2012). "Mobile Applications for the Health sector."

Schnall, R., et al. (2015). "mHealth technology as a persuasive tool for treatment, care and management of persons living with HIV." AIDS and Behavior **19**(2): 81-89.