# 6. Conclusions and Future Work

## 6.1. Introduction

This chapter goes into the conclusion section of NDMA. This would incorporate the major learning points from each of the different sections of NDMA. The different sections of NDMA was the literature review, the experiment design, the experiment development and the experiment evaluation. This chapter would also delve into the potential future works of NDMA and new direction to be taken. This would also discuss how to incorporate them into the project themselves works for the future work.

## 6.2. Conclusions

There was a few learning curves and areas which where learned from researching, designing, developing and evaluation NDMA.

The first point learned from literature review was the differences of the complexity of the different sources. Some sources were found to be too complicated for the purpose of NDMA, while others were too simple to be used. This created some confusion as the difficulty of validity of the sources. The complex of some areas could not be disproved and be susceptible of bias. The simplicity of others would mean they could not be used properly on their own. They would need something else which is not a requirement of NDMA.

The second point learned was to learn the different features and / or requirements from different sources. This was normally due to the ideas of NDMA not combined before, so it was an overall new approach. An example was the initial learning of predicative analysis. As far as known, no other mobile application has completed this. This resulting into learning how to import different systems into mobile applications then learning about predicative analysis.

The First point learned from the experiment design is the chosen methodology. It was found none of the researched methodologies Feature Driven Development, Agile and Prototyping suited NDMA. This was because elements of each were where needed for NDMA. As such, a new methodology was needed to be created for NDMA.

The second point learned was the chosen technology. While there was the aim to create the application using three tier application, looking back would indicate a N tier would have suited the application better. This would enable the different sections, such as the logging system and advisor system, to be developed independent of any parts of the application. This would make it to be plugged into any application logic that would need it.

The third point learned was the UI design. There was many different approaches and methods to design layouts of applications. The gradient approach and styling buttons from an external file, was new territory that was delved into.

The first point learned from the experiment development was the overall development. Between the overall application design, tech requirements and implementation, it seemed to take a team of developers a year or two to develop NDMA to the best possible version. Due to the project development scope, this was not feasible. So, a lot of features needed to be cut from the development process.

The second point learned was some of the technical issues found in NDMA. This was from trying to create some of the designed features, such as the navigational bar etc. The issue was trying to follow an example to develop the features. However, due to the configuration difference of the application developed and the example version, the new features would break the application. If there was time available, a proper in-depth learning of how to implement the feature would have been conducted.

The third point learned was financial issues. There were numerous areas which weren’t clear when obtaining Azure services. A more in-depth of Azure services would have been compared and analysed against AWS. Better communication against the cloud teams would also be improved in the future.

The fourth point learned was the different variations of technology. Xamarin offered both Android and Forms versions of their framework. Since this flexibility was offered, Android would have been developed. Forms would have been selected in nine cases of ten as it offers cross platform development. Due to time constraints, it was not selected. However, by using Xamarin Android, a understanding of how to use the framework would ensure the transit to Forms is easier to complete.

The first point learned from Experiment Evaluation section is the different analysis metrics available for mobile applications. This would assist in future mobile application development. This would be by finding where the application needs improving in performance and speed and patch them up.

The second point learned is the dependencies of the testing application against the application tested. This meant only certain tools can be used. An example is testing UI applications. From the ones found, they only work for Xamarin Forms, not Xamarin Android.

In short, NDMA was both a frustration and a brilliant learning experience. This was both the software tools learned and necessary project management skills, which was developed during NDMA lifecycle.

## 6.3. Future Work

There are six types of technology which can be integrated into NDMA. For future references.

The first, after a while of getting food logs and their advice result, would be a Predicative analysis system. This would produce a faster, more accurate advice provided to the user. This would improve the user experience overall.

The second piece of future work would be using Xamarin Forms technology. This would allow the development of both iOS and WUD applications, instead of Android alone. This would allow more users to access NDMA services whom have access to mobile application.

The third piece of future work is the using of a scanning system for the logging system. This would be using the camera to scan the barcodes of food products. This would speed up the logging process, improving the user experience.

The fourth piece of work would be the ability to track micronutrients inside NDMA. This is not something many food applications track. This would provide a more accurate advice to the user by analysing the food products in more depth.

The fifth future work is the development of a Web Application. This would offer other services to be developed using Web Application technologies rather than mobile application technologies. It can also offer more visually powerful graphs to the user, which makes the advice more effective for the user.

The sixth future work would be a notification and/or alert system. This would provide the alerts to the user to log their diets in different times of the day. This is in case the user forgets to log their diet in key times of the day, such as lunch, and needs a reminder to log their diet.