**7.1 Introduction**

In this final chapter we will summarise the project as well as take a retrospective view of what has been achieved and personally reflect on my learning experiences and my personal development. We will outline any concluding thoughts focused on future enhancements and set out some guidelines and recommendations for readers who may take the subject area or artefact further.

**7.2 Project Summary**

This report has outlined the methods, tools and processes which have together produced a fully functional database and web interface artefact focused around the subject area of management information system. It has produced both positive and negative results all of which have been outlined previously in the implementation ((and evaluation)) chapter(s). The project began with the author gathering information on management system products and services, which could be analysed ready for the implementation of a software artefact. It has been felt that this report doesn’t fully show the extent of the research carried out however, every attempt has been made to outline this stage where possible. Following the research the project moved into software development. The project used the phases of the waterfall approach as a development methodology and this approach can be followed down through the reports chapters from analysis to evaluation. After the implementation of the artefact we evaluated the outcomes against the objectives and although stages were incomplete and some further work will be needed, the outcomes go along way to pretty much meeting all the objectives and requirements which were set. The project has also produced some interesting attributes relating to University MIS which had not been thought about before, so I have provided a new perspective which will allow researchers to further there work.

**7.3 Improvement and Future Enhancements**

As mentioned in section 5.4 there were a few components which were not completed in time and the first stage to enhancing the artefact would be the completion of these components. The public page has also been purposely left relatively empty so the researcher can add relevant queries that he perceives to be of interest. Examples of queries can be found in the appendix. Following these enhancements I could suggest a variety of ideas which would further enhance the work carried out here and in the future.

One possible future enhancement would be the implementation of a data warehouse. Data warehouses are mainly used for analysis and used by management to make business decisions based on the analysis of data.

*“Data warehouses provide storage, functionality and responsiveness to queries beyond the capabilities of transaction-oriented databases.” (Elmasri & Navathe, 2003, p.899)*

Although considered to be used for multi-million pound organisations, it has been drawn to my attention that this is not the only application of a warehouse. Recently, during my database warehousing unit it was mentioned that the University has used a warehouse to analyse historical data. In essence this opens the door for an opportunity to apply a warehouse to data used in this project. As the transaction based database has been implemented as part of the artefact a data warehouse could be used to analyse the data further especially as the data volume grows with the expansion of the education industry. An advantage to implementing such an enhancement would be to researchers, which over time could map the changes in the industry and could present some interesting findings.

As mentioned in section 1.3 the overall aim of the researcher is to implement a fully functional University Management information system that will help the University in computerizing and automating its activities. This in itself can be classed as an enhancement to this project. Building on what has been done here, other future work may include, an interactive classroom, an integrated website, or researching tools all with the aim of meeting the researchers overall needs. As well as future enhancements, there should be an incentive set up to keep this data source up to date and ensure that new developments in the industry are recorded. By ensuring this new and more interesting facts and figures will emerge as the data volume increases.

**7.4 Personal Reflections**

As one of the largest projects I have undertaken as part of my degree there is a lot of importance related to its successful completion. As we have seen the project has been successful in a majority of areas although a few issues along the way have meant that parts of the project have not been completed to my expectations. One issue that may have led to this was the size of the project. Because the overall aim for the researcher was of such a large scale, a boundary was created to outline a project which was possible in the time. The only regret from this is the possibility that the research could have been more substantial if there was slightly more time available. However, it has been felt that the best possible attempt has been made and the results show its success.

Time management has been an issue throughout this project, which was down to my own mistakes in the planning stage. It is felt that a lesson has been learnt here and it is hoped that this will be carried forward in any further projects.

Another issue was the programming capabilities or the lack of which also affected the project. I found it initially very difficult to get into a programming frame of mind. The reason for this was the lack of programming I had carried out over the past year. I am not a predominantly strong programming student and I prefer networking work the majority of time. I felt that as the artefact deadline approached I was just starting to get into the ‘flow’ of programming and could have achieved much more if I had the time. The experiences provide good recommendations for future students which will be looked at later in this chapter.

**7.5 Personal Development**

Carrying out this project has left a positive affect on my personal development. I have learnt a great deal especially in terms of software development and University operations.

The project subject area was something which I had an interest in prior to the project, however this project has left me with a deeper understanding of the industry and this will put me in good stead if I peruse a career in the education industry after university.

I chose to use a new piece of software for the implementation of the database stage. This software was not only new to me, but new to the market itself. Teething problems were found which have tested my ability to manage unforeseen circumstances. I have had the opportunity to develop my skills with this specific software of which similar software is used in industry, giving me transferable skills I can carry forward in a career. At the outset of this university year, I set my self a personal goal to develop my web development skills as it was felt it would be a skill that would benefit me in the future. I had not previously developed a web page of any real significance however; the interface element of this project filled in the gap in my knowledge. Although not fully, this project has got me half way to fulfilling that personal goal. This project has supplemented the rest of my degree course well. I have taken many database units through out my course and these have helped with the database stage of the artefact. I was able to apply skills learnt in those units and putting the theory into practice has helped to develop these skills further in a real environment.

**7.6 Final Recommendations**

In this final section I have provided a set of recommendations to anyone who wishes to carry out a similar project whether it is focused on the subject area or the development aspects.

* Project management has featured heavily in the final chapters of this report and it is felt that this is not only a lesson to the researcher, but also to other students who may read this report and may be carrying out their own project. In this project unforeseen circumstances caused time scale issues but on top of that, aspects were also underestimated or forgotten. So, it is recommended that you build a sufficient amount of contingency time into a project plan, as well as allowing time for learning how to program your selected language.
* Depending on your course, the second year is full of theoretical based courses. I feel it would also be advantageous for you to get back into the programming ‘frame of mind’ before the project begins.