

## CHAPTER 5

### CONCLUSION

#### 5.1 Summary

Based on the result, it shows that this project has fulfilled the scope of the project entirely. The major problem is the ADC due to not functioning and took most of the time on troubleshooting its hardware configuration and its software programming. One possibility may caused this matter is that the IC ADC0816 is defected since it is a sample from National Semiconductor which the delivery process might be rough and high pressure. Apart from that, the errors on the design made the troubleshooting period spent much longer than other procedures and it creates a long delay on the entire project implementation. But eventually, the problem is solved by changing a new ADC0816 chip and reprograms the ADC activation.

As a result, the knowledge on troubleshooting circuit is obtained which it can be implemented in the future and avoid the similar errors arise again. The next lackness of this project that made contribute delay is poor design of the project. On top of all, the main issue is that this project is a tough one to implement as I have zero knowledge on embedded system and this made me spent much time on reading, research and seek information from others on this subject during the whole period of the project's implementation. As a result, unexpected human errors occurred and slowly create delay on the project's implementation. So, with the enthusiasm and determination, I learned to troubleshoot in much deeper. Fortunately, the errors are being solved one by one and being able to fulfill the project's scope even the time is already at the eleventh hour.

Therefore, my recommendation for any project to be implemented should first have a solid project structure from design until implementation along with sufficient knowledge. The design method should be capable of a simple, error free and reliable design and this will be helpful for the designers and the future's end user. Ultimately, I concluded that this project is a success and I gained a valuable knowledge especially on embedded system and RF technology.

## 5.2 Recommendation for future project

Recently, velocity is one of the crucial criteria for people around the world performing their daily task. One example, Microsoft<sup>®</sup> Corporation had announced and produced a brand new processor which doubles its previous processor's speed called Dual Core<sup>®</sup> Processor. Therefore, to keep abreast in the current work style, I recommend that the microcontroller AT89S52 should be replaced to a new microcontroller which is from the Programmable Intelligent Computer (PIC) family. manufactured by the MicroChip Company. This is because PIC requires a maximum 2 machine cycles to perform a task whereby microcontroller AT89S52 needs more than that.

Other than that, PIC offer lower total system cost compared with the usage of microcontroller AT89S52. This is due to PIC features that have build – in or integrated function inside the microcontroller such as on – chip internal oscillator, it has a build – in ADC version and real – time clock and calendar. Thus, this features will absolutely helpful in this project where it can replace the ADC and the external crystal all in one chip. As a result, less space and fewer components are used and the total system will be more efficient and reliable.

As for the wireless transceiver, I would like to recommend the RF module from Linx which is TXLC – 434 – LR for transmitter and RXLC – 434 – LR for receiver. This is due to its better features that is capable of having longer range and stable data transmission. With it small in size and integrate with the PIC chip to form a new system in the future will result a more reliable, stable and cost effective system compared the one has been done.

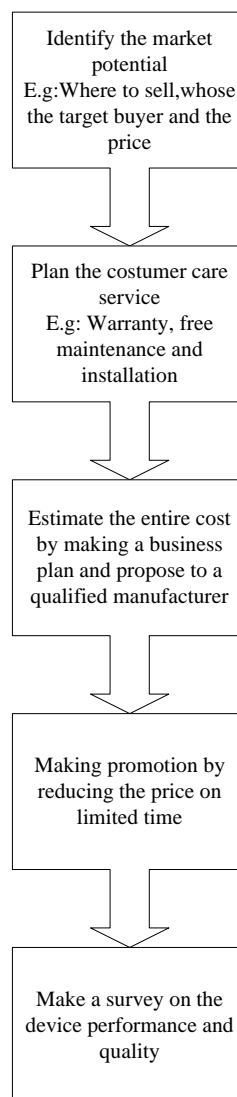
### 5.3 Commercialization Potential

This project entitled Wireless Data Acquisition is one of the developing projects in most universities and industries. It is the fact that data acquisition takes an important role in today's technology whereby it assist scientists, engineers and people to obtain specific data in production and manufacturing, prevent unwanted accidents and disaster and helps to form a secure and safe environment.

Therefore, this project is highly capable of being commercialize either in public or in industry sector. With small in size, this system can fits in all situations such as office buildings, supermarkets, factories, and even vehicles. Apart from that, the long wireless data transmission range around 500 feet is an advantage for this project to be commercialize as it can assist user that consider the range of the system. And, with the wireless communication, complicated conventional wiring will be no more needed. This helps to ease the user during installation.

Other than that, the multiple analog channels selection is also an advantage of this project where it can detect various analog signals at one time. Thus, the user can take this advantage to detect any signal at any place. As for monitoring system, the data is displayed on a PC where most people have currently and the GUI is designed to be user friendly interface. So, this is also one of the advantages for this project in term of commercialization.

Ultimately, this project is highly potential to be commercialize in public or industry sector where the advantages is more than the required criteria in the market. The place of purchase can be anywhere such a website or electronic vendor. The price can be reduce in early birth especially during promotion period in order to attract buyers. Apart from that, a free maintenance service could be provided for first 3 months. A warranty of product could also be considered to provide after the date of purchase. The duration is best for 6 months. Spare parts could also be considered to provide in case of component defect or malfunction. With all the suggestion above being performed along with strategic marketing planning, this project will be out of stock in short period.



**Figure 5.1:** Business Strategy Flow