CHAPTER V

CONCLUSION AND FUTURE WORK

5.1: Introduction

The increased usage and dependence on the smartphone has made it a new target for cybercriminals. An unsecured smartphone is vulnerable to security threats. Also, studies show personal devices are not properly secured (Albrechtsen and Hovden, 2009). The university students are on of the largest groups of smartphone users (PEW Research, 2012). The smartphone is a ubiquitous device among university students and had a profound impact on their lives. Access to social media sites, such as Facebook and Twitter, and features as texting have captured the attention of the students, and many students spend a considerable amount of time utilizing these features (Brandt and Heller, 2007). On the other hand, there are also a few disadvantages to these smartphones, one of these disadvantages is the attack by malicious softwares. Even with the antivirus products, firewalls and security software, it's still difficult to find 100% secure network. Sadly, the biggest damage in these cases is smartphone users.

This study focused especially on university students as a frequenter of smartphone users. And to assess their awareness on smartphone security threats and security features as a cycle of fragility and its mitigation. This thesis is arranged as follows: The first chapter represents a general introduction about the topic and the statement of the problem. Chapter II discusses the related studies to the concerned area. Then Chapter III presents the methodology which used to fulfil the study objectives, followed by Chapter IV that presents the results and findings. Finally, Chapter V concludes the thesis and suggests relevant future works.

5.2: Study Achievement

From the PEW Research in 2011 which reported that college-aged students are among the largest group of smartphone users. Then, it can be suggested that university students are the best option for any researcher if they need to focus on smartphone security threats and measures their awareness level and then provides better awareness training programs. This is because the university students are the basis composition of the community and organizations. And they have to be aware of the threats and security features to reduce the damage of these threats and to reduce the loss of confidential and private information to the public.

Based on the questionnaire results, it was found the university students have a moderate level of awareness on smartphone security threats. It seems that, smartphone users are still not fully aware about the damage that security threats can cause on their personal information. The result showed that 44.3% of the respondents still store their personal data on their Smartphone. This situation puts the educational organizations at

risk. As poor security awareness not only exposes an organization to threats, but the entire internet can be compromised, Similar findings were also reported in (Chen et al, 2006).

Also, 60% of the respondents know the existence of smartphone malicious software. And 23.7% of them were attacked by malicious programs. on the other hand, 66.6% of the respondents know the existence of Smartphone security software, but still just 51.4% of the students use these softwares. Mylonas et al (2013) found that the respondents do not tend to use smartphone security software on their devices, even though they tend to consider them essential.

Result showed the students have a moderate level of awareness on smartphone security features. It seems that, the smartphone users do not have sufficient knowledge about the security features on their smartphone, which leads to lower the security awareness level on the smartphone. 62% of the respondents know feature of smartphone password, But 41% don't willing to use of this feature. In addition, 59.3% of the respondents know the SIM PIN code on their smartphones, But 48.6% do not willing to use this feature. Also, 76.3% of the respondents know the screen lock of their smartphone, But 33.4% do not willing to use this feature. These findings support by related studies that conducted on smartphone security awareness (Androulidakis and Kandus, 2010).

In this study, some factors like (gender, age, educational level, academic specialization and smartphone experience) were tested with Person correlation to come up with the effect of these factors on students' security awareness level. Based on our analysis the gender factor don't effect on students' awareness level. This may be due to

the increase of the Internet and smartphone usage among females. Also increase the participation of females in business activities in Libyan society. These reasons lead to an increase in the level of awareness among females. This aligns with Riola (2014) that affirmed there was no correlation between the gender and security level. If gender influences the security awareness, then training programs could be adjusted accordingly. Some studies identified females to be more conservative in their security (Jones, et al., 2012) while other studies identified males as more conservative security practitioners (Mensch, et al., 2011). In addition, some studies showed a difference in awareness level between males and females (Androulidakis and Kandus, 2010).

The research is inconclusive regarding a correlation between age and security (Mensch et al,. 2011 and Riola, 2014). But on our study, the age factor don't effect on students' awareness level. Also, we found no correlation between the (educational level, academic specialization) and security awareness level. In addition, the studies were inconclusive regarding a correlation between the specialization and smartphone security. Some studies found a correlation between the major and smartphone security (Androulidakis, et al,. 2010) (Mensch, et al,. 2011). On the other hand, other studies found no correlation between major and smartphone security (Grajek, 2013). Finally, the smartphone experience factor has an effect on the students' awareness level.

5.3: Research Limitations and Difficulties

This research presents interesting findings. But there are specific limitations that must be considered to develop upcoming researches in this area. This research did not include all potential factors which can affect the awareness level on smartphone security such as, IT experience and working on the computer. And more limitation of the study is that the findings may be affected by the sample's gender. It may be biased towards the female population, since the majority of the respondents were females (58%). However, the researcher found no differences between the mean of the participants' responses, depending on the gender of the sample. Also the majority of the respondents were aged (18-22) years with 84.3% of the sample, which introduces a kind of bias in research analysis. Finally, there are limitations of the time and place. The questionnaire was administered in Libya. It was very hard to administer and transfer data back to Malaysia. This makes the time for data collection of larger difficult for this study.

5.4: Future Work

This study focuses on the level of user awareness on smartphone security threats also on security features. Future studies need to cover a wide range of security vulnerabilities and risks as well as smartphone malware. Also, they need to add more factors which can affect the awareness level of smartphone security awareness. And they need to expand this research to contain a larger size of the sample, which can contribute to more results. In addition, future studies should deploy more statistical data analysis, such as regression and one-sample T-test which ensure many relevant findings.

5.5: Summary

This chapter concludes the study. It also presents the main findings of this thesis and provides better understanding of the relationship between study factors. Finally, the limitations and future work were also presented.