CHAPTER I INTRODUCTION

I.1 Background

Recently, the existing technology is getting more sophisticated. The activities of everyone are facilitated by the technology. Including in terms of preventing crime, has many wearable GPS-based devices sold in the market. GPS tracking device is a tool to help monitor the parents of their child's existence while playing. Although the necessity of this parental surveillance is still a thing as responsible (New York Times, 2016).
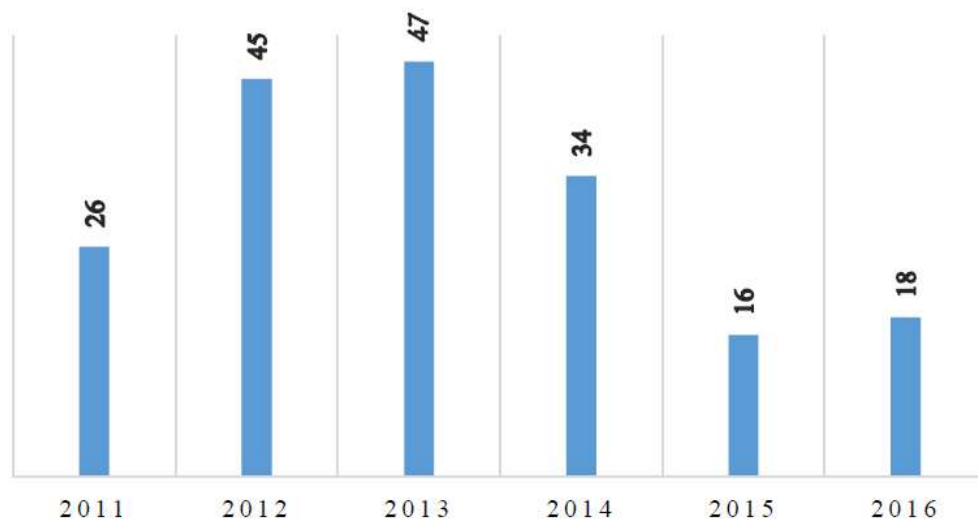

Figure I. 1 2011-2016 Kid Abduction Data

There is one irrefutable reason why parents should keep an eye on their children is for safety. Recorded in Indonesia, an average of 31 children become abducted victims within the period from 2011 to 2016. (Komisi Perlindungan Anak, 2016). In year 2015 itself, there are 10 provinces with the highest kidnapping cases in Indonesia which some of them are big cities in Indonesia.
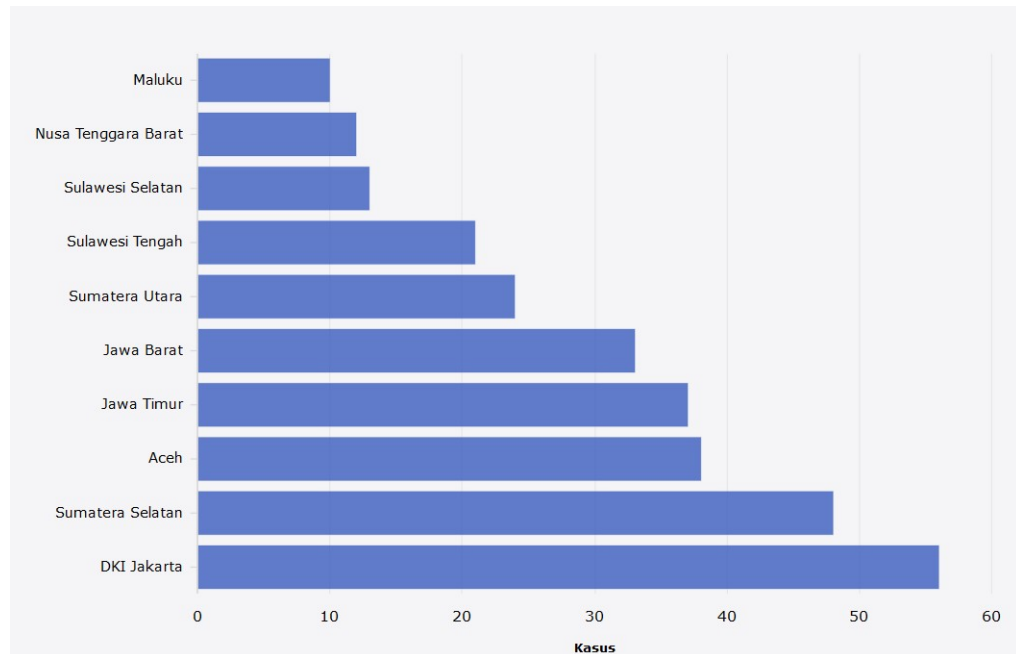
Figure I. 2 Top 10 Provinces Kid Abduction Case

Based on these problems, there is already a GPS tracking device to help parents monitoring children has been sold in the market. Various shapes and variations are already in circulation. However, whether the device is pocket-size or can be used unnoticed by the user. The problem with this device is that it can be taken anywhere by children. By carrying this device is expected not to interfere with the activity of the child, which means the device must be pocket-sized and kept hidden from the potential offender or the child itself. So the device can be tucked in children's clothing, such as shirts, pants, bags etc. and is expected not to be released or dropped intentionally or not.

The problem that often occurs in children in Indonesia is the rule of not allowed additional accessories while in school. Indonesia has a compulsory education program for 12 years. (Direktorat Pembinaan SMK, 2016). Besides that

children 1-3 years old are in explorative stage. in this period is usually quite worried parents. in this period the children explore the surrounding world and explore wherever he goes (Saeful Zaman, 2012), so parents often overwhelmed or careless not pay attention to his son playing. Well, at that time was the opportunity for the perpetrators to kidnap.

As for the author targeting parties that can produce this tool is the party who can make electronic goods such as mobile phones and others where in cooperation with the telecommunications as a provider to transmit and also cooperate with the KPAI to research the changes that occur in the field

Wearable devices are the devices that can be worn on the user's body parts as implants or accessories, the main purpose of this device is to create constant, convenient, portable, seamless, and mostly hands-free access to electronics or computers (Wearable Devices, 2014). most wearable devices that are sold in the market generally in the form of bracelets or watches, but cause other problems. wearable devices in the form of bracelets or watches that are very striking and easily visible. design of the bracelet or watches it as well. Another problem is whether the device is worn at any time or not.

The wearable technology market became a hot topic of conversation. According to future digital advertising wearable advertising spend is estimated to reach $68.7 million by 2019. opening up new opportunities for marketers (Baker, 2017). The bigger market of wearable technology is the more money to spent on making wearable device to fulfill costumer needs and market competition, thus emerging new sectors in manufacture of wearable device.

Figure I. 3 Figure 3 Wearable shift to new markets **(i-scoop.eu, 2016)**

I.2 Problem formulation

Based on the background already discussed above, as for the problems to be discussed is:

- What are the deficiency in existing wearable device design.
- How to develop the design of wearable device.

I.3 Research objective

- Describing deficiency in existing wearable device design.
- Developing the wearable device design
- Minimize the possibility of damage or other errors

I.4 Research benefit

The benefits that can be taken from this research are:

- providing wearable device design to refine the product
- make a user more safer than before and comfortable than existing.
- Can be applied from product development study

I.5 Research scope

Research Scope are made to focus on the study and the issues that will be discussed. The limitation of this research are:

- the research will be conducted to children and parents
- the end result of this research is a descriptive solution
- object that are fixed only the case

I.6 Writing Systematic

CHAPTER I INTRODUCTION

This chapter explained about the background of this research that discussed about proper wearable device design. And the problem from the initial research was conducted by searching data such as government regulation and other research.

CHAPTER II LITERATURE REVIEW

In this chapter discussed about the relevant literature with this research about designing wearable device. Beside that, the reference is taken from other studies that have been done.

CHAPTER III RESEARCH METHODOLOGY

In this chapter explaining about research steps in detail, such as : identification problem, then collecting and calculating data, designing and last is making decision and giving an suggestion.

CHAPTER IV DATA COLLECTION AND PROCESSING

In this chapter explaining about how the author collect and calculate data by using the selected method, by displaying data already obtained from the field, and then the processed data will be analysed to get the best design

CHAPTER V ANALYSIS

In this chapter will be explaining about the analysis result about designing wearable GPS tracking device which has been done on chapter IV

CHAPTER VI CONCLUSION

In this chapter will be given a conclusion from the research that has been done, along with suggestions as a study for improvement and research in the future.