PREFACE

As the author I would like to praise God Almighty, for all the blessings to let me finish this research. I also would like to show my gratitude to my parents who always support me to finish this research. I also would like to express my appreciation to all the lecturer from Telkom University for the guidance and the knowledge that given to me especially from Information System Study Program. In arranging this paper, I truly get lots of challenges and obstructions but with help of many individuals, those obstruction could passed. I would like to extend this thanks to:

- 1. Mr. Soni Fajar Surya Gumilang, S.T, M.T as my first advisor for this research.
- 2. Mr. Muhammad Azani Hasibuan, S.Kom, M.TI as my second advisor for this research.
- 3. All the members of EAD Laboratorium that always supports one another, so im able to finish this research.
- 4. Mr. Ari Fajar Santoso, M.T. that often hand me a help and motivation so im able to finish my study.

I address my special thank to my research partners Faruqi ikhsan, Ilham Farobi and Maylantino Surya Siswanto that always supported me while conducting this research. Futhermore, I would like to say thank you to all my friends who always support one another in any condition we have been through together during the college days whom I cannot mention them one by one.

I realize that this research is not infallible, therefore it is expected to get criticisms and suggestion that will improve the next related research. Hopefully, this research can be useful for readers.

Bandung, 12 Juli 2017

Josua Clement Sembiring