

TABLE OF CONTENT

TABLE OF CONTENT	iii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF ABBREVIATIONS	ix
GLOSSARIUM.....	x
DECLARATION OF AUTHENTICITY.....	xi
FOREWORD AND ACKNOWLEDGMENT.....	xii
ABSTRACT.....	xiv
CHAPTER I. INTRODUCTION	15
A. Background	15
B. Relevance	19
C. Problem Statement	21
D. Research Objective.....	22
E. Research Impact.....	22
F. Originality	23
CHAPTER II. LITERATURE REVIEW.....	25
A. Literature Review	25
B. Theoretical Framework	39
C. Conceptual Framework	40
D. Research Questions	40
CHAPTER III. RESEARCH METHOD	41
A. Research Type and Design.....	41
B. Research Settings and Time	41
C. Research Subjects.....	42
D. Identification of Research Variables.....	46
E. Operational Definition of Variables.....	47
F. Data Collection and Research Instrument.....	48
G. Data Analysis Plan	50
H. Research Ethics	50

I. Research Plan	51
J. Research Team	51
CHAPTER IV. RESEARCH RESULTS AND DISCUSSION	52
A. Research Results	52
B. Discussion	88
CHAPTER V. CONCLUSION AND RECOMMENDATIONS	95
A. Conclusion	95
B. Recommendations	96
REFERENCES.....	98
APPENDICES	105
Appendix 1. Informed Consent Form	105
Appendix 2. Mapping of Data Collection Methods, Domains, Questions	
Guide, and Informants	111
Appendix 3. mCFIR Survey Questions.....	125
Appendix 4. Focus Group Discussion Guide	140
Appendix 5. In-depth Interview Guide (Head of SDHO).....	142
Appendix 6. In-depth Interview Guide (Sub-coordinator of P2PTVZ	
SDHO).....	145
Appendix 7. In-depth Interview Guide (Sub-coordinator of ICHF SDHO)	
.....	149
Appendix 8. In-depth Interview Guide (Mercy Corps NGO).....	153
Appendix 9. In-depth Interview Guide (DTO of MoH)	156
Appendix 10. Document Checklist Review	159

LIST OF TABLES

Table 1. Research impact of this study.....	22
Table 2. List of previous studies related to the proposed study.	23
Table 3. The role details of each stakeholder in the development, implementation, and evaluation of “Tunggal Dara” application.....	33
Table 4. Summary of data collection methods, tools, study participants, and data analysis.	43
Table 5. Inclusion and exclusion criteria for survey.	45
Table 6. Operational definition of variables.....	47
Table 7. Research timeline of this study	51
Table 8. Research team’s summary profile	51
Table 9. The distribution and coverage of PHC in each sub-district.....	52
Table 10. Demographic characteristics of participants.	59
Table 11. List of participants for qualitative data collection.....	70
Table 12. Facilitators, barriers, and future implementation goals of Tunggal Dara digital dengue information system.	75
Table 13. Dengue surveillance information system in each administrative level.	81
Table 14. Mapping of data collection methods, domains, questions guide, and informants.	111
Table 15. Document checklist review	159

LIST OF FIGURES

Figure 1. Incidence rate and case fatality rate of dengue in Indonesia, 2008-2021 (Ditjen P2PTVZ Kemenkes RI, 2021).	16
Figure 2. Six strategies to support achieving two main indicators of ending the dengue burden in Indonesia by 2025 (WHO, 2021).	16
Figure 3. The total dengue cases in Semarang in 2005-2021 (Data provided by Semarang Health Office, 2022).	17
Figure 4. The working flow of dengue information system comparison before and after the implementation of "Tunggal Dara" (Data provided by Semarang Health Office, 2022).	18
Figure 5. Digital transformation roadmap targets by year and priority activity (Indonesian MoH, 2021).	20
Figure 6. Incidence rate (per 100,000 person-years) and case fatality rate (%) of dengue hemorrhagic fever in Indonesia from 1968 to 2017 (Harapan et al., 2019).	25
Figure 7. Modified epidemiological triad which influence the transmission of arboviral diseases (Wahl, 2011; Guzman et al., 2017; Esser et al., 2019).	26
Figure 8. Multiple sources of information available for surveillance data (Simonsen et al., 2016).	27
Figure 9. Surveillance loop framework (Lourenço et al., 2019).	29
Figure 10. The interface of "Tunggal Dara" android version. a) The log-in page; b) The interface for field surveillance cadre; c) The interface for epidemiologists (Data provided by Semarang Health Office, 2022).	35
Figure 11. The Development of Dengue Information System in Semarang (Data provided by Semarang Health Office, 2022).	36
Figure 12. Five categories of theories, models, and frameworks of implementation science theoretical approaches (Nilsen, 2015).	37
Figure 13. Domains and constructs of Consolidated Framework for Implementation Research (CFIR) (Khan, 2021).	39

Figure 14. Modified Consolidated Framework for Implementation Research (mCFIR) for mHealth intervention evaluation.....	40
Figure 15. Flowchart of the follow-up explanatory mixed-method design for this study (Creswell and Clark, 2018).....	41
Figure 16. The distribution map of dengue incidence based on the altitude of the area, population density, and larva-free index of Semarang in 2019 (Alfiyanti and Siwiendrayanti, 2021).	42
Figure 17. Dengue surveillance data collection flow.....	54
Figure 18. The flow of dengue surveillance system for the field epidemiologists.	55
Figure 19. Larvae-Free Index assessment during epidemiological investigation with PHC epidemiologist and Jumantik cadre.	56
Figure 20. Map of dengue situation in Semarang city in week 19 of 2023;	57
Figure 21. Data collection flow process.....	58
Figure 22. Box plot visualization of performance and importance scoring among epidemiologists.	62
Figure 23. Error bar indicating 95% confidence interval of the performance and importance scoring variability among epidemiologist.	63
Figure 24. Heatmap of “Tunggal Dara” domain-based rating score from epidemiologists’ perspectives; a) performance score; b) importance score.....	64
Figure 25. Box plot visualization of performance and importance scoring among Jumantik cadres.....	65
Figure 26. Error bar indicating 95% confidence interval of the performance and importance scoring variability among Jumantik cadres.....	66
Figure 27. Heatmap of “Tunggal Dara” domain-based rating score from Jumantik cadres’ perspectives; a) performance score; b) importance score.....	67
Figure 28. Box plot analysis of the performance and importance scores of each construct within the outer setting domain based on the perspectives of: a) Epidemiologists and b) Jumantik cadres.....	69
Figure 29. Percentage of time from report to epidemiological investigation conducted since 2018-2023 (Half Q1).	73

Figure 30. The weekly percentage of entomological surveillance reports submitted by the Jumantik cadres at each administrative level in 2022.	74
Figure 31. Perceived benefits of utilizing Tunggal Dara Android application.	78
Figure 32. The comparison of LFI assessment results between cadres and epidemiologists in Semarang city.	84
Figure 33. The weekly comparison of LFI assessment results and dengue confirmed cases in Semarang city in 2022.....	84
Figure 34. Error bar indicating 95% confidence interval of the performance scores of goal attainment and impact assessment sub-domains.....	86
Figure 35. Total Dengue Fever (DF) and Dengue Hemorrhagic Fever (DHF) cases in Semarang City in 2016-2023. (Source: Tunggal Dara System Log).....	87