

**COMPLIANCE ON BYOD SECURITY POLICIES: AN  
ANALYSIS ON EMPLOYEES' PERSPECTIVE IN SRI LANKAN  
IT INDUSTRY**

Athurugiri Arachchilage Chanaka Sandaruwan Athurugiriya

(219107T)

Degree of Master of Business Administration in Information Technology

Department of Computer Science and Engineering

University of Moratuwa

Sri Lanka

November 2022

**COMPLIANCE ON BYOD SECURITY POLICIES: AN  
ANALYSIS ON EMPLOYEES' PERSPECTIVE IN SRI LANKAN  
IT INDUSTRY**

Athurugiri Arachchilage Chanaka Sandaruwan Athurugiriya

(219107T)

The research proposal was submitted to the Department of Computer Science and Engineering of the University of Moratuwa in partial fulfillment of the requirement for the Degree of Master of Business Administration in Information Technology.

Department of Computer Science and Engineering

University of Moratuwa

Sri Lanka

June 2023

## DECLARATION

I declare that this is my own work, and this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any other University or institute of higher learning, and to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where the acknowledgment is made in the text.

Also, I hereby grant to the University of Moratuwa the non-exclusive right to reproduce and distribute my thesis/dissertation, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles or books).

.....

A.A.C.S. Athurugiriya

30/07/2023  
.....

Date

The above candidate has carried out research for the Masters thesis under my supervision.

***UOM Verified Signature***

.....

Dr. P.D.J.B. Karunaratne

31/07/2023  
.....

Date

## ABSTRACT

BYOD is an emerging practice that organizations follow in the present world. BYOD brings a lot of advantages to organizations and people who practice it. Even though it has advantages this creates new security threats around it. To mitigate these security risks, organizations implement BYOD security policies and frameworks. For a successful implementation of these BYOD security policies, employee or end-user compliance is a significant factor. This study mainly focuses on understanding end-user perspectives towards these security policies in Sri Lankan IT industry employees. This study carried out a mixed approach to gather data for the study. Initially, data was gathered from the interviews and discussions carried out with representatives from IT organizations where BYOD is in practice in Sri Lanka. Then a survey questionnaire was distributed to capture end-user behavior and their opinions on this security policy compliance. This survey questionnaire was distributed among the employees working in the Sri Lankan IT industry. This study identified that Social influence, Perceived vulnerability, Awareness programs, Self-efficacy, Response efficacy, Employer support, and Perceived severity have a positive influence on an employee's intention to comply with organizational BYOD security policies whereas Response cost has a negative influence.

**Keywords:** BYOD, BYOD user perspective, BYOD security policies, Employee behavior in BYOD context, Sri Lanka IT industry

## **ACKNOWLEDGEMENT**

This research “Compliance on BYOD security policies: an analysis on employees’ perspective in Sri Lankan IT industry” was conducted as the final research study for my MBA degree. I wish to convey my gratitude to all those who helped me in any way to successfully complete this study. My first thank goes to my supervisor, Dr. Buddhika Karunaratne for the continuous guidance and support given in completing this. Also, my many thank goes to all the lecturers and staff at the Department of Computer Science and Engineering, University of Moratuwa. I wish to extend my gratitude to all the survey respondents and Sri Lankan IT professionals who spent their valuable time with me in interviews conducted related to this study. A sincere thanks go to my wife, family, and friends for supporting me throughout the study. Finally, a huge thank you to everyone for the immense support given in the completion of this research study.

## TABLE OF CONTENTS

DECLARATION	i
ABSTRACT	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
LIST OF FIGURES	viii
LIST OF TABLES	x
LIST OF ABBREVIATIONS	xiii
1. INTRODUCTION	1
1.1. Background & motivation	1
1.1.1. Bring your own device (BYOD)	1
1.1.2. BYOD benefits and drawbacks	2
1.1.3. BYOD security	3
1.1.4. BYOD usage in Sri Lanka & motivation for the study	4
1.2. Research scope	5
1.3. Problem statement	5
1.4. Research objectives	5
1.5. Research design	6
1.6. Research significance	7
1.7. Document outline	7
2. LITERATURE REVIEW	8
2.1. BYOD usage	8
2.2. BYOD advantages and disadvantages	9
2.3. BYOD security	11
2.4. BYOD security policy compliance	12

2.5.	Research gap	15
3.	RESEARCH METHODOLOGY	16
3.1.	Conceptual research framework	16
3.1.1.	Protection motivation theory (PMT)	16
3.1.2.	Technology acceptance model (TAM) & unified theory of acceptance and use of technology (UTAUT)	16
3.2.	Factors and hypothesis development	18
3.2.1.	Employee's intention to comply with BYOD security policies (IC)	18
3.2.2.	Factors & hypothesis development	19
3.2.2.1.	Social influence (SI)	19
3.2.2.2.	Employer support (ES)	20
3.2.2.3.	Awareness program (AP)	20
3.2.2.4.	Self-efficacy (SE)	21
3.2.2.5.	Perceived severity (PS)	21
3.2.2.6.	Perceived vulnerability (PV)	22
3.2.2.7.	Response efficacy (RE)	23
3.2.2.8.	Perceived response cost (RC)	23
3.3.	Data collection	24
3.3.1.	Population and sample size	24
3.3.2.	Survey questionnaire	25
3.3.3.	Response collection	27
4.	DATA ANALYSIS AND INTERPRETATION	28
4.1.	Data preparation	28
4.2.	Reliability test	29
4.2.1.	Preliminary survey	29
4.2.2.	Reliability test on the dependent variable	30

4.2.3.	Reliability test on independent variables	31
4.2.3.1.	Social influence	31
4.2.3.2.	Employer support	32
4.2.3.3.	Awareness program	33
4.2.3.4.	Self-efficacy	34
4.2.3.5.	Perceived severity	35
4.2.3.6.	Perceived vulnerability	36
4.2.3.7.	Response efficacy	37
4.2.3.8.	Perceived response cost	38
4.3.	Validity test	39
4.4.	Descriptive statistics	43
4.5.	Exploratory data analysis	52
4.6.	Hypothesis testing	57
4.6.1.	Social influence and intention to comply with BYOD security policies	58
4.6.2.	Employer support and intention to comply with BYOD security policies	59
4.6.3.	Awareness program and intention to comply with BYOD security policies	60
4.6.4.	Self-efficacy and intention to comply with BYOD security policies	61
4.6.5.	Perceived severity and intention to comply with BYOD security policies	62
4.6.6.	Perceived vulnerability and intention to comply with BYOD security policies	63
4.6.7.	Response efficacy and intention to comply with BYOD security policies	64

4.6.8. Perceived response cost and intention to comply with BYOD security policies	65
4.7. Regression analysis	66
4.8. Discussion on results	69
5. CONCLUSIONS AND RECOMMENDATIONS	72
5.1. Research implications	72
5.2. Research findings and recommendations	74
5.3. Research limitations	75
5.4. Future work	75
REFERENCES	77
APPENDIX A - Survey questionnaire	82
APPENDIX B - Interview results from 7 candidates in the IT sector in Sri Lanka	96
APPENDIX C - Reliability statistics	102
APPENDIX D - Outlier detection	105
APPENDIX E - Normality test	110
APPENDIX F - Regression analysis	130

## LIST OF FIGURES

Figure 1: Conceptual research model	18
Figure 2: Research survey responses - Gender distribution	43
Figure 3: Research survey responses - Age distribution	44
Figure 4: Research survey responses - Education level distribution	45
Figure 5: Research survey responses - Personal device distribution	45
Figure 6: Scatter plot of IC by SI	53
Figure 7: Scatter plot of IC by ES	54
Figure 8: Scatter plot of IC by AP	54
Figure 9: Scatter plot of IC by SE	55
Figure 10: Scatter plot of IC by PS	55
Figure 11: Scatter plot of IC by PV	56
Figure 12: Scatter plot of IC by RE	57
Figure 13: Scatter plot of IC by RC	57
Figure 14: Regression standard residual	66
Figure 15: Scatterplot - Regression standardized predicted value	67
Figure 16: Boxplot – IC	105
Figure 17: Boxplot - SI	105
Figure 18: Boxplot - SE	106
Figure 19: Boxplot - RC	106
Figure 20: Boxplot - RE	107
Figure 21: Boxplot - PV	107
Figure 22: Boxplot - ES	108
Figure 23: Boxplot - PS	108
Figure 24: Boxplot - AP	109
Figure 25: Histogram - IC	125
Figure 26: Histogram - SI	125
Figure 27: Histogram - SE	126
Figure 28: Histogram - RC	126
Figure 29: Histogram - RE	127
Figure 30: Histogram - PV	127

Figure 31: Histogram - ES	128
Figure 32: Histogram - PS	128
Figure 33: Histogram - AP	129
Figure 34: Regression model for IC - PP plot	130

## LIST OF TABLES

Table 1: Survey questionnaire structure	26
Table 2: Overall reliability statistics for IC	30
Table 3: Individual item reliability statistics for IC	30
Table 4: Overall reliability statistics for SI	31
Table 5: Individual item reliability statistics for SI	31
Table 6: Overall reliability statistics for ES	32
Table 7: Individual item reliability statistics for ES	32
Table 8: Overall reliability statistics for AP	33
Table 9: Individual item reliability statistics for AP	33
Table 10: Overall reliability statistics for SE	34
Table 11: Individual item reliability statistics for SE	35
Table 12: Overall reliability statistics for PS	35
Table 13: Individual item reliability statistics for PS	36
Table 14: Overall reliability statistics for PV	36
Table 15: Individual item reliability statistics for PV	37
Table 16: Overall reliability statistics for RE	37
Table 17: Individual item reliability statistics for RE	38
Table 18: Overall reliability statistics for RC	39
Table 19: Individual item reliability statistics for RC	39
Table 20: Inter-item correlation - IC	40
Table 21: Inter-item correlation - SE	40
Table 22: Inter-item correlation - RC	40
Table 23: Inter-item correlation - RE	41
Table 24: Inter-item correlation - ES	41
Table 25: Inter-item correlation - AP	41
Table 26: Inter-item correlation - SI	42
Table 27: Inter-item correlation - PV	42
Table 28: Inter-item correlation - PS	42
Table 29: Likert scale interval measurement	46
Table 30: Descriptive statistics summary - IC	46

Table 31: Descriptive statistics summary - SI	47
Table 32: Descriptive statistics summary - ES	48
Table 33: Descriptive statistics summary - AP	48
Table 34: Descriptive statistics summary - SE	49
Table 35: Descriptive statistics summary - PS	49
Table 36: Descriptive statistics summary - PV	50
Table 37: Descriptive statistics summary - RE	51
Table 38: Descriptive statistics summary - RC	51
Table 39: Spearman correlation IC - SI	58
Table 40: Spearman correlation IC - ES	59
Table 41: Spearman correlation IC - AP	60
Table 42: Spearman correlation IC - SE	61
Table 43: Spearman correlation IC - PS	62
Table 44: Spearman correlation IC - PV	63
Table 45: Spearman correlation IC - RE	64
Table 46: Spearman correlation IC - RC	65
Table 47: Regression model summary – with all independent variables	67
Table 48: Regression model - ANOVA with all independent variables	67
Table 49: Regression model summary - without PV and AP	68
Table 50: Regression model - ANOVA without PV and AP	69
Table 51: Coded survey questions	92
Table 52: Coded 5-point Likert scale data	95
Table 53: Cronbach's Alpha for IC - for the total dataset	102
Table 54: Cronbach's Alpha for SI - for the total dataset	102
Table 55: Cronbach's Alpha for ES - for the total dataset	102
Table 56: Cronbach's Alpha for AP - for the total dataset	103
Table 57: Cronbach's Alpha for SE - for the total dataset	103
Table 58: Cronbach's Alpha for PS - for the total dataset	103
Table 59: Cronbach's Alpha for PV - for the total dataset	103
Table 60: Cronbach's Alpha for RE - for the total dataset	104
Table 61: Cronbach's Alpha for RC - for the total dataset	104
Table 62: Normality test statistics	110

Table 63: Normality test statistics for Log10 transformed data	117
Table 64: Regression model residual statistics - all independent variables	130
Table 65: Regression model coefficients - all independent variables	131
Table 66: Regression model coefficients - without PV and AP	133

## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Description</b>
BYOD	Bring your own device
IT	Information technology
COVID 19	Coronavirus disease of 2019
OS	Operating system
TAM	Technology acceptance model
UTAUT	Unified theory of acceptance and use of technology
PMT	Protection motivation theory
SLASSCOM	Sri Lanka association for software and services companies
ISP	Information security program
MDM	Mobile Device Management
MAM	Mobile Application Management