# A Structured Blockchain for Green Supply Chain and Logistics: Sky Handling Partner as a Case Study in Sierra Leone



### **Thesis**

By

# Alhaji Sheku Sankoh

NIM: 24030120419030

As a Partial Fulfillment for the Award of a Masters in Business Administration (MBA)

Faculty of Social and Political Sciences,
Department of Business Administration,
Universitas Diponegoro
2022

### APPROVAL PAGE

### **Thesis**

Written by

: Alhaji Sheku Sankoh

NIM

: 24030120419030

Study Program

: Master in Business Administration (MBA)

Has been examined in front of examiners On Wednesday, 22 June 2022 and decided that it has fulfilled the requirements for the award of the Master Degree in Business Administration in the Masters Program (S2) of the Department of Business Administration, Faculty of Social and Political Science, Universitas Diponegoro, Semarang, Indonesia.

### The Examiners

1. Bulan Prabawani, S.Sos, MM, PhD

2. Dr. Hari Susanta Nugraha, S.Sos, MSi

3. Dr. Sari Listyorini, S, Sos, M.AB

4. Dr. Andi Wijayanto, S, Sos, MSi

die ...

### **ACKNOWLEDGEMENTS**

The time has come to end one of the most important journey of my academic life. On the eve of this moment I cannot let the occasion of the presentation of this thesis without expressing my thanks, my deep respect and gratitude to all those who were willing to provide me with necessary assistance towards the success of my academic career.

I would like to begin by expressing my gratitude to Dr. Bulan Prabawani and Dr. Hari Susanta Nugraha for kind supervision, revision and corrections towards this thesis. Furthermore, my sincere thanks goes Dr. Andi Wijayanto and Mr. Rusmanto for their necessary administrative assistance and contributions towards the completion of this thesis.

I would never have been able to finish this course without the help and support of the International Office of UNDIP, my friends and family members who showered me the necessary support, courage and endurance. I thank all those people who made this course possible and an unforgettable experience for my academic career.

My final thanks goes to Memunatu Sankoh Idriss Alhaji Sheku Sankoh and Mohamed Tejan Sankoh, who have been the light of my life for the last two years and who have given me the extra strength and motivation to get this work done. This thesis is dedicated to them.

## TABLE OF CONTENTS

COVE	ER PAGE	••••
STAT	EMENT OF ORIGINALITY	i
APPR	OVAL PAGE	.ii
TABL	E OF CONTENTS	. iv
LIST	OF FIGURES	vii
LIST	OF TABLES	. ix
LIST	OF ABBREVIATIONS	X
ACKN	NOWLEDGEMENTS	. X
Chap	ter 1_Introduction	1
1.1.	Research Background	1
1.2.	Research Question	4
1.3.	Problem Statement	4
1.4.	The Urgency and Significance of this Research	5
1.5.	Aims and Objectives	6
1.5.1.	Strength and Weakness of this Research	7
1.6.	Literature Review	7
1.6.1.	Blockchain in Logistics and Supply Chain	13
1.6.2.	Blockchain Architecture for Industries	14
1.6.3.	Industrial Improvement of Blockchain Technology	14
1.6.4.	Static Registry for Blockchain	15
1.6.5.	Identity Administration for Blockchain	15
1.6.6.	Smart Contracts Management for Blockchain	15
1.6.7.	Dynamic Registry Management for Blockchain	16
1.6.8.	Sky Handling Partner in Sierra Leone Profile	16
1.7.	$Research\ Methodology-Using\ the\ UAMBNPP\ Blockchain\ Framework.$	18
1.7.1.	The Current Blockchain System used by SHP-SL	19
1.7.2.	Innovation of Blockchain in Supply Chain and Logistics	22
1.8.	Green Supply Chain and Logistics Systems	25
Chap	ter 2 Overview of the Research Setting	28
2.1.	Overview of UAMBNPP Blockchain Framework for SHP-SL	28
2.1.1.	User Stage	28

2.1.2.	The Application Stage	29
2.1.3.	The Management Stage	29
2.1.4.	Blockchain Stage	29
2.1.5.	Network Stage	30
2.1.6.	The Perception Stage	30
2.1.7.	Physical Stage	31
2.2.	Units of Analysis of the Designed Blockchain System	32
2.3.	Advantages of the UAMBNPP Blockchain Framework	33
2.3.1.	Unique Traceability in this Framework	33
2.3.2.	Vehicle Direction-finding	34
2.3.3.	Reservation of Energy Management	35
2.4.	Supportive Green Supply Chain and Logistics for Blockchain Systems .	36
2.5.	Founding Reliance for Blockchain Systems.	37
2.6.	Ornamental Teamwork and Collaboration in Blockchain	37
2.7.	Benefits of the UAMBNPP Blockchain Framework	38
2.7.1.	Greater Limpidity in Blockchain systems	38
2.7.2.	Enhanced Safety in this Blockchain framework	39
2.7.3.	Improved Record Tracking in Blockchain	39
2.7.4.	Increased Efficiency and Speed in Blockchain	40
2.7.5.	Reduced Costs for Blockchain	40
2.7.6.	Unique Improvement using this framework	41
2.8.	Safety Precautions for Investing on this framework	42
2.9.	Industries where this framework is more appropriate	42
2.10.	Influence of this Method to Economic Development	43
2.10.1	. Failing Institutions to be Replaced by Blockchain	43
2.10.2	. Blockchain becoming an Alternative Capital Source	45
2.10.3	. To Avoid Fluctuating Currencies, Use Blockchain	46
2.10.4	. Cross-Border Payments on Blockchain	47
2.10.5	. Foreign Aid and Blockchain Systems	47
2.11.	Challenges	48
Chapt	ter 3 Research Results	51
3. O	verview of the Results	51

3.1.	Results of the UAMBNPP Framework	51
3.2.	Work environment	51
3.2.1.	Demographic Details of Respondents	51
3.2.1.	Respondents Gender	52
3.2.2.	Age of Respondents	52
3.2.3.	Educational Qualification of Respondents	53
3.2.4.	Year of Service	53
3.2.5.	Organizational Hierarchy	54
3.3.	Material Handling Equipment for SHP-SL	54
3.4.	Existing Equipment for SHP-SL	54
3.5.	Needed Green Equipment for SHP-SL	55
3.5.1.	Transport Management	55
3.5.2.	Physical Distribution Management	56
3.5.3.	Inventory Management	57
3.5.4.	Warehousing Management	58
3.5.5.	Better Communication	59
3.5.6.	Quick access to Information	60
3.5.7.	Improve Billing	60
3.5.8.	Cost of Service	61
3.5.9.	Quality of Service	62
3.5.10	. Timely Delivery	63
3.5.11	. Flexibility	63
3.5.12	. Outsourcing	64
Chapt	ter 4 Discussions	66
4.1.	Analysis	66
4.1.1	Analysis of UAMBNPP Blockchain Framework for SHP-SL	66
4.1.2	Physical Stage	66
4.1.2.1	Details of components of the Physical Stage	67
4.1.3	The Perception Stage	68
4.1.3.1	Components of the Perception Stage	69
4.1.4	Network Stage	
4.1.4.1	Components of the Network Stage	

4.1.5	Blockchain Stage	72
4.1.5.1	Components of the Blockchain Stage	72
4.1.6	The Management Stage	73
4.1.6.1	Components of the Management Stage	74
4.1.7	The Application Stage	75
4.1.7.1	Components of the Application Stage	75
4.1.8	User Stage	76
4.1.8.1	Components of the User Stage	77
4.2	Discussion of Results	78
Chapt	er 5 Conclusions and Recommendations	81
5.1.	Conclusions	81
5.2.	Recommendations	84
Appen	dices	93

### **Abstract**

A Structured Blockchain for Green Supply Chain and Logistics: Sky Handling Partner as a Case Study in Sierra Leone. By: Alhaji Sheku Sankoh. NIM: 4030120419030. Master of Business Administration, Universitas Diponegoro

The evolution of blockchain started a few decades ago as part of the effort to promote competitive and reliable digital transformation in the area of logistics and supply chain. This has further evolved due to convergence of several technologies ranging from database programming, right through to digital communications including embedded systems. As a result thereof, blockchain environments are highly developed.

In this research, a framework known as "UAMBNPP Blockchain Framework" is design for SHP-SL in order to incorporate green supply chain and logistics through the adoption of green technologies to enhance business growth and competitive advantages.

Owing to the hustling of several logistics businesses embracing green technologies particularly in the supply chain and logistics market, modern values are used for the optimization of competitive business in the aspect of established trade. In order to increase the chances of success, in the circumstance where trade logistics and supply chain challenges exist, the intervention of efficient blockchain frameworks are required for logistic and supply chain. Even though there are other hindering factors, the standards of green supply chain and logistics within Blockchain frameworks needs to be continually improve and adopted.

The integration of such technological framework within SHP-SL business environment introduces a dynamic uturn for competitive business growth and hence attract more logistics and supply chain confidence and successful business advantages and growth. Based on this reasons, ensuring a secured health and communication environment between reliable green equipment is essential to protect the exchange of information within this business.

Focusing on this framework and taking into consideration the business characteristics of blockchain based technological environments, this thesis shows a secure, reliable and distributed framework for green resource management via blockchain environment. This proposed framework enabled by UAMBNPP blockchain is not only dynamic but efficient and can yield better competitive advantage.

Key words: UAMBNPP Blockchain, Framework, Competitive Advantage, Trust, WoT.