

1 SEAXCHANGE: BLOCKCHAIN DRIVEN APP FOR
2 TUNA SUPPLY CHAIN MANAGEMENT

3 A Special Problem Proposal
4 Presented to
5 the Faculty of the Division of Physical Sciences and Mathematics
6 College of Arts and Sciences
7 University of the Philippines Visayas
8 Miag-ao, Iloilo

9 In Partial Fulfillment
10 of the Requirements for the Degree of
11 Bachelor of Science in Computer Science by

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Abstract

19 The tuna supply chain faces critical challenges regarding traceability, transparency
20 and sustainability due to certain issues such as illegal, unreported and unregu-
21 lated fishing. Within the tuna supply chain, traceability can play a critical role in
22 enhancing consumer transparency and ensuring adherence to environmental and
23 legal standards. By leveraging blockchain technology, this research combines qual-
24 itative insights of supply chain stakeholders and uses the information to evaluate
25 the potential of blockchain in improving product traceability and accountability
26 within the supply chain.

27 Suggested keywords based on ACM Computing Classification system can be
28 found at https://dl.acm.org/ccs/ccs_flat.cfm!!!!!!!!!!!!!!

29 **Keywords:** Blockchain, Traceability, Tuna, Supply Chain, etc.

30

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50 List of Figures

51	1.1	This is the figure's caption – Disney stock chart. Captions should	
52		fully describe the figure in a concise manner such that there is not	
53		need to refer to the text when figuring out the graphic.	2

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<small>55</small>	3.1 Timetable of Activities	9
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Chapter 1

Introduction

1.1 Overview

This section gives the reader an overview of the real world problem that needs to be solved. It describes the exigency of the proposed solution. The consequences to the affected stakeholders that the problem may bring if it not addressed. Discussion must not be too technical or too detailed.

This section ends with a discussion on the problem/s faced by or that still exist in the specific technology or field (e.g., limitations of existing software or algorithms). The problem statement would lead to the research objectives.

It is easy to include a figure in JPG or PNG format as shown in the following example. Make sure that you explain what the figure is all about, and that you refer to your figure. For example, Figure 1.1 shows a graph of the performance of Disney stock from the 1980s to 2012.

Some notes on citing references. When using APA format, the author-date method of citation is followed. This means that the author's last name and the year of publication for the source should appear in the text, and a complete reference should appear in the reference list.

Here are some examples on how to do the referencing (note author's name and years are different from commented examples). For APA citation details, refer to <http://www.ctan.org/tex-archive/biblio/bibtex/contrib/apacite/>.

- Kartch (2000) compared reaction times...

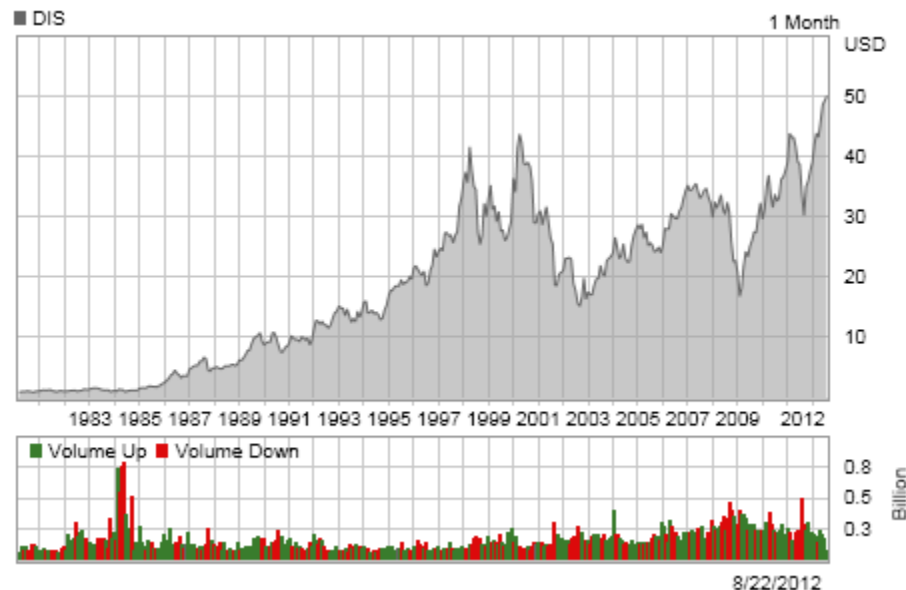


Figure 1.1: This is the figure’s caption – Disney stock chart. Captions should fully describe the figure in a concise manner such that there is not need to refer to the text when figuring out the graphic.

- 78 • In a recent study of reaction times (Kartch, 2000)...
- 79 • In 2000, Kartch compared reaction times...
- 80 • Fedkiw et al. (2001) compared reaction times...
- 81 • In a recent study of reaction times (Fedkiw et al., 2001)...
- 82 • In 2001, Fedkiw et al., compared reaction times...

83 The following are references from journal articles (Park, Linsen, Kreylos,
 84 Owens, & Hamann, 2006; Pellacini et al., 2005; Sako & Fujimura, 2000). Here’s
 85 an MS thesis document (Yee, 2000), and this is from PhD dissertation (Kartch,
 86 2000). For a book, reference is given as (Parke & Waters, 1996). Proceedings
 87 from a conference samples are (Jobson, Rahman, & Woodell, 1995; Fedkiw et al.,
 88 2001; Levoy et al., 2000). The sample bibliography file named **myreferences.bib**
 89 is from the SIGGRAPH L^AT_EX template. You can use a text editor to view the
 90 contents of the bib file. It is your task to create your own bibliography file. For
 91 those who downloaded papers from ACM or IEEE sites, there is a BibTeX link
 92 that you can click; thereafter, you just simply need to copy and paste the BibTeX
 93 entry into your own bibliography file.

94 The following shows how to include a program source code (or algorithm).
95 The verbatim environment, as the name suggests, outputs text (including white
96 spaces) as is...

```
97         #include <stdio.h>
98         main()
99         {
100             printf("Hello world!\n");
101         }
```

102 Alternatively, you can also use the *lstlisting* environment from the **listings**
103 package.

104 1.2 Problem Statement

105 **DO NOT FORGET** to write the statement of the research problem here, i.e.,
106 **before the Research Objectives.**

107 A problem statement is your research problem written explicitly. The problem
108 statement should do four things:

- 109 1. Specify and describe the problem (with appropriate citations)
- 110 2. Provide evidence of the problem's existence
- 111 3. Explain the consequences of NOT solving the problem
- 112 4. Identify what is not known about the problem that should be known.
- 113 5. Subdivide the main problem into several subproblems.

114 1.3 Research Objectives

115 1.3.1 General Objective

116 This subsection states the over-all goal that must be achieved to answer the
117 problem. Address the following: Given your research challenge or opportunity,
118 how do you intend to solve it? What is the output of your research?

119 1.3.2 Specific Objectives

120 This subsection is an elaboration of the general objective. It states the specific
121 steps that must be undertaken to accomplish the general objective. These objec-
122 tives must be **S**pecific, **M**easurable, **A**ttainable, **R**ealistic, **T**ime-bounded. Also,
123 they are manageable and communicable.

124 A specific objective start with “to <verb>” for example: to design/survey/review/analyze.

125 Studying a particular programming language or development tool (e.g., to
126 study Windows/Object-Oriented/Graphics/C++ programming) to accomplish the
127 general objective is inherent in all thesis and, therefore, must not be included here.

- 128 1. To compare and contrast existing algorithms (on what problem?);
- 129 2. To develop a new algorithm (for what purpose?)
- 130 3. To analyze the algorithm (based on what criteria?)

131 1.4 Scope and Limitations of the Research

132 The scope of this study focuses on how blockchain technology can be applied
133 to enhance traceability and transparency within the tuna supply chain. It will
134 involve features such as smart contracts for recording the transactions and user
135 interface for stakeholders. The study will also focus exclusively on whole, caught
136 tuna products in the supply chain, excluding processed forms such as canned or
137 packaged tuna. The research will examine the traceability of whole tuna from
138 capture to market sale, specifically centering on a supplier based in Iloilo.

139 This study will only be limited to the supply chain in Iloilo, so findings may
140 not fully represent global practices. Since this will only focus on blockchain’s
141 function in traceability, other functions are outside the scope of this research.

142 1.5 Significance of the Research

143 This study serves a significant purpose for several stakeholders in the tuna supply
144 chain. This study aims to solve the problems related to the management of tuna
145 supply chain, particularly with regards to product traceability.

- 146 • The Stakeholders
 - 147 – This study enhances transparency and accountability which allows stake-
 - 148 holders such as the fishers, suppliers and retailers to access tamper-
 - 149 proof and accurate information promoting a more ethical and authentic
 - 150 supply chain. Providing a digital record of the product’s history, this
 - 151 study can be beneficial in ensuring the compliance with environmental
 - 152 and legal standards.

- 153 • The Consumers
 - 154 – Since consumers are now becoming concerned regarding the sustainable
 - 155 sourcing and ethical practices on the products they purchase, this study
 - 156 will be able to help in verifying the history of the tuna product from its
 - 157 origin up until its journey to the consumers, therefore increasing the
 - 158 trust and transparency.

- 159 • For Future Researchers
 - 160 – As blockchain technology continues to grow, this study contributes to
 - 161 the application of blockchain in the supply chain management and the
 - 162 insights regarding its benefits and limitations. This research can be
 - 163 helpful in the growing knowledge on digital solutions for traceability
 - 164 and transparency for future research.

Chapter 2

Review of Related Literature

This chapter discusses the features, capabilities, and limitations of existing research, algorithms, or software that are related/similar to the Special Problem.

The reviewed works and software must be arranged either in chronological order, or by area (from general to specific). Observe a consistent format when presenting each of the reviewed works. This must be selected in consultation with the adviser.

DO NOT FORGET to cite your references.

A literature review must do these things:

- be organized around and related directly to the thesis or research question you are developing
- synthesize results into a summary of what is and is not known
- identify areas of controversy in the literature
- formulate questions that need further research

A literature review is a piece of discursive prose, not a list describing or summarizing one piece of literature after another. It's usually a bad sign to see every paragraph beginning with the name of a researcher. Instead, organize the literature review into sections that present themes or identify trends, including relevant theory. You are not trying to list all the materials published, but to synthesize and evaluate them according to the guiding concept of your thesis or research question. You should also state the limits or gaps of their researches wherein you will try to fill these gaps in accordance to your research problem and objectives.

188 **2.1 Theme 1 Title**

189 This chapter contains a review of research papers that:

- 190 • Describes work on a research area that is similar or relevant to yours
- 191 • Describes work on a domain that is similar or relevant to yours
- 192 • Uses an algorithm that may be useful to your work
- 193 • Uses a software / tool that may be useful to your work

194 It also contains a review of software systems that:

- 195 • Belongs to a research area similar to yours
- 196 • Addresses a need or domain similar to yours
- 197 • Is your predecessor

198 **2.2 Theme 2 Title**

199 **2.3 Chapter Summary**

200 Should include a table of related studies comparing them based on several criteria.

201 Highlight research gaps and the research problem.

Chapter 3

Research Methodology

This chapter lists and discusses the specific steps and activities that will be performed to accomplish the project. The discussion covers the activities from pre-proposal to Final SP Writing.

3.1 Research Activities

Research activities include inquiry, survey, research, brainstorming, canvassing, consultation, review, interview, observe, experiment, design, test, document, etc. Be sure that for each method, process, or algorithm used, there is a justification why that method was chosen. The methodology also includes the following information:

- who is responsible for the task
- the resource person to be contacted
- what will be done
- when and how long will the activity be done
- where will it be done
- why should the activity be done

DO NOT FORGET to cite your references.

220 3.2 Calendar of Activities

221 A Gantt chart showing the schedule of the activities should be included as a table.
 222 For example:

223 Table 3.1 shows a Gantt chart of the activities. Each bullet represents approx-
 224 imately one week worth of activity.

Table 3.1: Timetable of Activities

Activities (2009)	Jan	Feb	Mar	Apr	May	Jun	Jul
Study on Prerequisite Knowledge			●●	●●●●			
Review of Existing Racing Strategies	●●	●●●●	●●●●	●●●●			
Identification of Best Features				●●●●	●●		
Development of Racing Strategies				●●	●●●●	●●	
Simulation of Racing Strategies				●●	●●●●	●●●	
Analysis and Interpretation of the Results					●●●●	●●●●	●
Documentation	●●	●●●●	●●●●	●●●●	●●●●	●●●●	●●

225 Chapter 4

226 Preliminary Results/System 227 Prototype

228 This chapter presents the preliminary results or the system prototype of your SP.
229 Include screenshots, tables, or graphs and provide the discussion of results.

230 References

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 256 University.

257 **Appendix A**

258 **Appendix Title**

259 **Appendix B**

260 **Resource Persons**

261 **Mr. Firstname1 Lastname1**

262 Role1

263 Affiliation1

264 emailaddr1@domain.com

265 **Ms. Firstname2 Lastname2**

266 Role2

267 Affiliation2

268 emailaddr2@domain.net

269