

BOOK CHAPTERS

COLLECTION OF PUBLICATION  
INDEXED BY SCOPUS (FIRST AUTHOR)

**A Comprehensive Application of  
Statistical Quality Control in Rice  
Crisis Indicators, Covid-19 New Case  
Prediction, Economic Resilience  
Measurement at the City Level, Rice  
Agriculture Insurance, and Rural  
Bank Credit Provision**

Prof. Yuyun Hidayat, M.SIE., Ph.D.

## **BOOK CHAPTERS**

COLLECTION OF PUBLICATION  
INDEXED BY SCOPUS (FIRST AUTHOR)

# **A Comprehensive Application of Statistical Quality Control in Rice Crisis Indicators, Covid-19 New Case Prediction, Economic Resilience Measurement at the City Level, Rice Agriculture Insurance, and Rural Bank Credit Provision**

Prof. Yuyun Hidayat, M.SIE., Ph.D.



# **A Comprehensive Application of Statistical Quality Control in Rice Crisis Indicators, Covid-19 New Case Prediction, Economic Resilience Measurement at the City Level, Rice Agriculture Insurance, and Rural Bank Credit Provision**

Copyright © 2023, Prof. Yuyun Hidayat, M.SIE., Ph.D.

ISBN: 978-623-99962-0-8

**Penulis:** Prof. Yuyun Hidayat, M.SIE., Ph.D.

**Diterbitkan pertama kali oleh:**

Unibi Press

Anggota IKAPI, Jawa Barat, 2021

Jl. Soekarno Hatta no. 643, Bandung, Jawa Barat 40285

Tlp./SMS/Whatsapp : 0812-222-881-89

unibipress@unibi.ac.id

Hak cipta dilindungi undang-undang. Dilarang memperbanyak atau memindahkan sebagian atau seluruh isi buku ke dalam bentuk apapun, secara elektronik maupun mekanis, termasuk fotocopi, merekam, atau dengan teknik perekaman lainnya tanpa seizin tertulis dari penerbit. Undang-undang Nomor 28 Tahun 2014 tentang Hak Cipta

---

## KATA PENGANTAR

Teriring rasa syukur yang tak terhingga, saya panjatkan syukur kepada Allah yang telah melimpahkan rahmat, memberi kemampuan untuk menyajikan buku berjudul "*A Comprehensive Application of Statistical Quality Control in Rice Crisis Indicators, Covid-19 New Case Prediction, Economic Resilience Measurement at the City Level, Rice Agriculture Insurance, and Rural Bank Credit Provision*". Buku ini menghimpun serangkaian publikasi ilmiah internasional yang ditulis oleh Prof. Yuyun Hidayat, M.SIE., Ph.D sebagai penulis utama di jurnal internasional yang telah terdaftar di Scopus, sebuah basis data terkemuka di dunia untuk jurnal ilmiah.

Rangkaian tulisan dalam buku ini mencakup berbagai topik ilmiah, yang memanfaatkan Statistika secara luas. Setiap babnya membahas hasil penelitian mendalam yang berkontribusi pada pemahaman tentang aplikasi "*Statistical Quality Control*". Kumpulan publikasi ini disajikan untuk memenuhi kebutuhan literatur ilmiah bagi peneliti, akademisi, mahasiswa, dan praktisi di berbagai bidang ilmu. Tujuan kami adalah memfasilitasi pembaca dengan informasi terpercaya dan berkualitas, serta mendorong pemanfaatan yang lebih luas dari bidang Statistika dalam konteks penelitian. Semoga kumpulan publikasi ini memberikan manfaat yang besar bagi perkembangan ilmu pengetahuan dan teknologi di masa depan.

Salam hormat,

Prof. Yuyun Hidayat., MSIE., PhD.

Ketua Kelompok Bidang Keahlian Quality Control

Departemen Statistika FMIPA Unpad



---

## DAFTAR ISI

<b>KATA PENGANTAR</b> .....	III
<b>DAFTAR ISI</b> .....	V

### **BAGIAN I**

#### **AN ESTIMATED ANALYSIS OF WILLINGNESS TO WAIT TIME TO PAY RICE AGRICULTURAL INSURANCE PREMIUMS USING COX'S PROPORTIONAL HAZARDS**

<b>MODEL</b> .....	1
1. Introduction .....	1
2. Methodology .....	3
3. Results and Discussion .....	5
4. Conclusions .....	15
References .....	16

### **BAGIAN II**

#### **INTEGRATION OF FACTOR ANALYSIS AND TSUKAMOTO'S FUZZY LOGIC METHOD FOR QUALITY CONTROL OF CREDIT PROVISIONS IN RURAL BANKS** .....

1. Introduction .....	21
2. A Brief Explanation of Credit Risk .....	23
3. Factor Analysis and Tsukamoto Fuzzy-Logic Method .....	23
4. Simulation .....	27
5. Discussion .....	32
6. Conclusions .....	33
References .....	34

### **BAGIAN III**

#### **PREDICTING THE WEEKLY COVID-19 NEW CASES USING MULTILAYER PERCEPTRON: AN EVIDENCE FROM WEST JAVA, INDONESIA** .....

1. Introduction .....	37
2. Literature Review .....	40
3. Materials and Methods .....	42

4. Results and Discussion .....	49
5. Conclusions.....	54
References.....	55

#### **BAGIAN IV**

<b>OBJECTIVE METHOD FOR DETERMINING THE IMPORTANCE OF UNPRECEDENTED RESTLESSNESS AS A RICE CRISIS INDICATOR AT THE NATIONAL LEVEL .....</b>	<b>60</b>
1. Introduction.....	60
2. Methodology for Determining the Importance of Rice Crisis Indicator .....	68
3. Data, Source, and Technique .....	70
4. Conclusions.....	74
Reference .....	75

#### **BAGIAN V**

<b>IDENTIFYING UNWANTED CONDITIONS THROUGH CHAOTIC AREA DETERMINATION IN THE CONTEXT OF INDONESIA'S ECONOMIC RESILIENCE AT THE CITY LEVEL .....</b>	<b>78</b>
1. Introduction.....	78
2. Literature Review.....	80
3. Methodology .....	84
4. Results and Discussion.....	90
5. Conclusions, Limitations and Recommendation .....	93
References.....	95

#### **BAGIAN VI**

<b>DEVELOPING UNPRECEDENTED RESTLESSNESS AS THE NEW STRONG INDICATOR OF RICE CRISIS AT NATIONAL LEVEL .....</b>	<b>100</b>
1. Rice Crisis Definition.....	100
2. There are not any widely accepted criteria defining the severity of situation as crisis. ....	100

3. The Model: Unprecedented Restlessness as New Strong Indicator for Rice Crisis .....	101
4. Hypothesis.....	103
5. Methodology .....	103
6. Population Criteria and Data Population.....	103
7. Precedence Analysis Using Modified Individual Control Chart [I-CHART] .....	107
8. Calculation of individual control limits.....	107
9. The Underlying Spirit of Modified Individual Control Chart [I-CHART] Definition .....	108
10. The new Creation of Control Chart.....	110
11. I-CHART creation (without outlier removing) for Bangladesh .....	115
12. Conclusion.....	119
13. Recommendation.....	119
Bibliography.....	120

## **BAGIAN VII**

### **FORECASTING FRAMEWORK OF RICE CRISES TIME IN**

<b>BANDUNG-INDONESIA .....</b>	<b>122</b>
1. Introduction .....	122
2. Methodology .....	124
3. Results and Discussion.....	125
4. Conclusions .....	136
References .....	137