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2021 5th INTERNATIONAL CONFERENCE

FIRST

FORUM IN RESEARCH, SCIENCE, AND TECHNOLOGY (FIRST)

CONFERENCE PROGRAMS AND ABSTRACT

ADVANCING SUSTAINABLE SCIENCE AND TECHNOLOGY THROUGH EFFECTIVE COLLABORATION

OCTOBER 20-21, 2021

Palembang, Province of South Sumatera
Indonesia

Organized By :

FOREWORD FROM GENERAL CHAIR 5th FIRST 2021 INTERNATIONAL CONFERENCE

Assalamu'alaikum wr wb,

Alhamdulillahirrobbil 'alamin, Thank to the God, almighty, due to His bless and love, we are granted good health and opportunity so that we can meet here in the event of the 5th FIRST and the 3rd SNAPTEKMAS 2021.
The honorable keynote speakers of the 5th FIRST and the 3rd SNAPTEKMAS 2021

Dra. Nana Yuliana, MA., Ph.D., as The Indonesian LBBP Ambassador for the Republic of Cuba, concurrently with the Commonwealth of the Bahamas, Jamaica, the Dominican Republic and Haiti
Prof. Ramaraj Boopathy. from U Alcee Fortier Distinguished Service Professor of Biological Sciences At the Nicholls State University, USA
Dr. Ing. Ahmad Taqwa, the Director of State Polytechnic of Sriwijaya.

The honourable keynote speakers, distinguished guests, all participants, ladies and gentlemen,

For the beginning of my speech, let me welcome all of you with my great warm hug. It is a great honor for me that you choose the 5th FIRST and the 3rd SNAPTEKMAS 2021 as your conference. I am so proud that the authors still become enthusiastic to develop the knowledge although in this pandemic situation. Let us still work hard to support the development of the world through the research, science, and technology in many parts of the knowledge, as what has been purposed by the FIRST conference itself.

In this occasion, I would like proudly to inform you that the 5th FIRST and the 3rd SNAPTEKMAS 2021 as the forum to share knowledge, to search, to find, and to enlarge the link with other industries and universities has attracted so many authors from abroad, such as from: Politeknik Tun Syed Nasir Syed Ismail; MARA University; Politeknik Mukah Sarawak; University Sultan Zainal Abidin, Terengganu, Malaysia; Politeknik Melaka (PMK) Malaysia; Iloilo Science and Technology University (ISAT-U) Philipina; Politeknik Kota Kinabalu; Universiti Teknologi Malaysia; The National University of Malaysia; National Chin-Yi University of Technology (NCUT); Accounting Research Institute UiTM-Malaysia; Management and Science University Malaysia; AlBaha University, KSA, Saudi Arabia; Politeknik Melaka (PMK), Malaysia; Kuantan Community College, Pahang, Malaysia; Universiti Brunei Darussalam; and Ferdowsi University of Mashhad, Iran.

Welcome to all of the researchers that become the collaborators in our research and community service. It is our great honour to have you as our collaborators and participants in the 5th FIRST and the 3rd SNAPTEKMAS 2021.

The honourable keynote speakers, distinguished guests, all participants, ladies and gentlemen,

In this chance, I would like to say thank you very much to the Director of State Polytechnic of Sriwijaya for his full support in the development of the Research and Service Community programs. Due to his hard work and his belief to all of the committee so that this event can be held.

In this occasion, I also would like to convey my big thank to all of the keynote speakers, invited guests, all the participants, all reviewers, and all committee of the5th FIRST and the 3rd SNAPTEKMAS 2021. Without you all, this event will be nothing. May Allah SWT gives His reward for your sincerity. As the time goes by, it is hoped that our cooperation and coordination in the FIRST and SNAPTEKMAS can be maintained and improved. I hope that you can enjoy this conference and can get a big benefit from this event. I also wish that we can meet again in the forthcoming FISRT ad SNAPTEKMAS

Wassalamu'alaikumwaraahmatullahi wabarakatuh

FOREWORD FROM DIRECTOR OF STATE POLYTECHNIC OF SRIWIJAYA

The honorable, FIRST 2021 and SNAPTEKMAS 2021 keynote speakers,

Dra. Nana Yuliana, MA., Ph.D., as The Indonesian LBBP Ambassador for the Republic of Cuba, accredited to the Bahamas, Republic of Dominican, Republic of Haiti and Jamica

Prof. Ramaraj Boopathy., from U Alcee Fortier Distinguished Service Professor of biological sciences at the Nicholls State University, USA

Dr. Ing. Ahmad Taqwa, MT., as Director of Politeknik Negeri Sriwijaya

Assalamualaikum wr wb,

Let us extend our gratitude to Allah SWT, the most gracious, the most merciful. Due to His bless, we can gather here, at the Opening Ceremony of the FIRST 2021 and SNAPTEKMAS 2021

First of all, Please let me deliver my warm welcome to all keynote speakers and all participant of FIRST 2021 and SNAPTEKMAS 2021. It is my great pleasure to meet and see you in this event.

Although, there are so many obstacles that should be faced in the pandemic situation, however, as young generation, we should be optimistic, stay strong and be active in searching and finding the solution. The FIRST 2021 and SNAPTEKMAS 2021 as the DIES of State Polytechnic of Sriwijaya annual event will become one of the media to support those activities. The researchers could share knowledge, find partners, and enlarge the collaboration through this event.

Based on the change in the model of the teaching learning activity that focuses on the MERDEKA BELAJAR, State Polytechnic of Sriwijaya has a big desire in getting acceleration in the internationalization of the institution. One of them by improving the overseas and industrial collaboration, especially in joint research and joint publication. In the beginning of 2021, the research and community service unit in Politeknik Negeri Sriwijaya has launched new schemes of research and community service, namely the Overseas Collaboration Research and Overseas Collaboration Community Service. Thanks to God, those schemes have attracted researchers not only from Asia but also several other countries outside Asia, such as: research and community service collaboration with Al Baha University from Saudi Arabia, with Ferdowsi University of Mashhad from Iran, and with Princess Sumaya University of Technology from Jordan, as well as several other foreign universities.

In this occasion, I also would like to welcome all the researchers that become the collaborators in our new scheme of research and community service. It is our great honour to have you as our collaborators.

The honourable participants,

At this time, State Polytechnic of Sriwijaya has held 5 times of FIRST. FIRST publications from previous conferences have been successfully indexed not only in SCOPUS, but also in WOS. This 5th FIRST seminar will be conjugated with the 3rd National Seminar on Community Service SNAPTEKMAS. (National seminar of applied technology for public). All of these are the efforts to improve the quality of Polsri lecturers which significantly have a positive effect on the learning process of Polsri students.

Before ending my speech, I would like to congratulate the participants of The FIRST 2021 and SNAPTEKMAS 2021. May the noble efforts, support, and cooperation of researchers in this conference will continue. Special thanks to the organizer and co-organizer committee of The FIRST 2021 and SNAPTEKMAS 2021 for the hard work and the commitment in realizing this conference. Do maintain the spirit of working in a team and continue to unite in order to display a culture of excellence in the eyes of the country and the world.

With Bismillahirrahmanirrahim, I officiate The FIRST 2021 and SNAPTEKMAS 2021.
Wassalamu'alaikum warrahmatullahi Wabarakatu

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KEYNOTE SPEAKER

Dra. Nana Yuliana, MA., Ph.D.

The Indonesian LBBP Ambassador for the Republic of Cuba, concurrently with the Commonwealth of the Bahamas, Jamaica, the Dominican Republic and Haiti

Her Excellency Ambassador Nana Yuliana, Ph.D arrived in Havana, Cuba on December, 23rd, 2020 to serve her duties as the Ambassador Extraordinary and Plenipotentiary of the Republic of Indonesia to Republic of Cuba, Commonwealth of Bahamas, Dominican Republic, Republic of Haiti and Jamaica. She was appointed by the President of the Republic of Indonesia on October 19th, 2020.Prior to her position as Ambassador Extraordinary and Plenipotentiary, she was Consul General of the Republic of Indonesia in Houston, Texas, United Stated of America from 2017 –2020, after she was the Director of Mid-Career Diplomatic School at the Ministry of Foreign Affairs of Indonesia from 2014 – 2017. Her first diplomatic assignment was as First Secretary of Political Affairs at the Embassy of Indonesia in Manila from 2001-2005. From 2008 to 2012, she was the Counsellor of Economic Affairs of the Embassy of Indonesia in Bangkok and Permanent Representative of Indonesia to the United Nations Economic and Social Commission for Asia and Pacific (UNESCAP). She attended several meetings related to Millennium Development Goals (MDGs) or Sustainable Development Goals (SDGs) issues. Her bachelor's degree was English Education from Institute of Teacher's Training in Jakarta, then she pursued her Master Degree in Applied Linguistics for Macquarie University in Sydney, Australia and also International Relations from University of Indonesia in Jakarta, Indonesia. She completed her Doctoral Degree in Development Studies from the University of Santo Tomas, Manila, Philippines in 2006. While serving as a diplomat since 1995, her passion in teaching and learning encourages her as well to share her knowledge and teaches at the University in Jakarta, Indonesia. During her tenure as Consul General, she was very active in promoting Trade, Tourism, Inbound and Outbound Investments and very keen to engage with Universities for cooperation in human capital development.

KEYNOTE SPEAKER

Prof. Ramaraj Boopathy

Alcee Fortier Distinguished Service Professor of biological sciences
at the Nicholls State University, USA

Fulbright Scholar Fulbright Senior Specialist World Class Professor-Government of Indonesia. Honorary Visiting Professor, ITB, Indonesia Alcee Fortier Distinguished Service Professor John Brady Endowed Professor in Biological Sciences Nicholls State University Business Address: Alcee Fortier Distinguished Service Professor John Brady Endowed Professor in Biological Sciences Department of Biological Sciences Nicholls State University Thibodaux **EDUCATION:** B.Sc. Zoology, University of Madras, India; 1979 M.Sc. Environmental Biology, Tamil Nadu Agricultural University, India; 1981 Ph.D. Environmental Biology, University of Madras, India; 1986 **UNIVERSITY RESPONSIBILITIES**: Responsibilities include Teaching Environmental Biotechnology, a Senior and Graduate lever course, Marine and Environmental Biology (Graduate Course), Microbiology and Environmental Biology courses. Research interests include Bioremediation of Hazardous Chemicals and Anaerobic Microbiology. Service includes advising students, participate in Departmental and University committees and serving the local and regional communities. Advisor to Masters Program in Marine and Environmental Biology. **PROFESSIONAL EXPERIENCE:** January 2013 – Present: John Brady Endowed Professor in Biological Sciences, Department of Biological Sciences, Nicholls State University, Thibodaux. Teaching, Research, and Service to the University and Community. August 2012 – Present: Alcee Fortier Distinguished Service Professor, Department of Biological Sciences, Nicholls State University, Thibodaux. Teaching, Research, and Service to the University and Community. August 2004 – Present: Distinguished Service Professor, Department of Biological Sciences, Nicholls State University, Thibodaux. Teaching, Research, and Service to the University and Community. **MAJOR AREAS OF RESEARCH INTERESTS:** Anaerobic digestion, Composting, Biodegradation of hazardous chemicals. Antibiotic resistant bacteria and Antibiotic resistance genes in the aquatic ecosystem. Isolation and identification of novel bacteria. Anaerobic degradation of explosive chemicals with particular reference to sulfate reducing bacteria. Design and development of biological reactor systems. Microbial immobilization of

heavy metals and radionuclides. Alcohol production from agricultural residues. Water quality in the wetlands. Alternative to sugarcane burning, Biological control of termites. Organic ways to control land loss and coastal restoration.

KEYNOTE SPEAKER

Dr. Ing. Ahmad Taqwa, MT.

Director of Politeknik Negeri Sriwijaya Indonesia

Director of State Polytechnic of Sriwijaya, other than that, he is still active at Head of The Research and Publication Commission Forum Director of State Polytechnical In Indonesia, Founder of The Online Journalist Board (IWO) Sumsel, Chairman of The Advisory Board of UKM Nusantara Palembang and Assessor of Higher Accreditation Board. **EDUCATION**: Diplom Ingenieur Electrical Engineering HTL, Ingenieurschule Beider Basel, Switzerland; 1994,Magister (2005) and Doctoral (2010) at Electrical Engineering, Bandung Institute of Technology, Indonesia. **RESEARCH**: Head of Research Assignment "Mini PLTS Periodic Cooling System to Overcome Overheating in Palembang City" (2019), Member of The Research Assignment "Effects of Sea Salt Dust Collection on Output Loss and Solar Panel Output Efficiency" (2020), and Head of Research Assignment "Design and Build of Wireless Sensor Network Prototype Detection Of Landslides Based on IOT and LORA" (2020). **DEDICATION:** "The Design and Evaluation of Virus Scan in The E-Mail System in SMA N 5 Palembang" (2018), Assignment Service "Utilization of WSN Technology in Parking Air Monitoring Foundation SMP Harapan Mulia Palembang" (2019), Development of Teaching Materials with Interactive Multimedia with Education Game for Harapan Mulia Junior High School Students" (2020). **AWARD:** Certificate In Participating In The 200 Hour Advanced Technical Teacher Training awarded by FONTYS and PEDC (1998), Satyalancana Karya Satya X Year 2011 And Satyalancana Karya Satya XX Year 2017 by The President of The Republic of Indonesia. **WORKSHOP**: Seminar and Focus Group Discussion Forum The Rector of Indonesia "Economic Stability In The Vuca Area", Ujung Pandang (2020), Workshop on Using Integrated Resources Information System Applications For Lecturers of State Polytechnical Polytechnic, Palembang (2019) And Workshop of Learning Methodology of Polsri Lecturers and Outside Education Domicile (PDD) as a Source Person, Palembang (2019).

RUNDOWN
The 5th FIRST 2021 INTERNATIONAL CONFERENCE
(FORUM IN RESEARCH SCIENCE AND TECHNOLOGY)
SNAPTEKMAS (Seminar Nasional Aplikasi Teknologi pada Masyarakat) 2021
Palembang, South Sumatera, Indonesia
Thursday, October 21, 20201

Thursday, October 21, 20201					
No.	**Session**	**Person in Charge**	**Time Allotment (WIB)**	**Liaison Officer**	
1.	Registration	Event Section Committee	07.00 – 08.00	Doeslohal Djumrianti, S.E.MIS., Ph.D	
2.	The Opening Ceremony	Event Section Committee	08.00 – 09.00		
3.	Do'a				
4.	Indonesian National Anthem				
5.	Chair Report Speech				
6.	Speech and Opening Remarks by Director of State Polytechnic of Sriwijaya				
7.	Souvenirs Gift, Group Photos				
PLENARY SESSION					
No.	**Keynote Speaker**	**Affiliation**	**Time Allotment (WIB)**	**Moderator**	**Liaison Officer**
1.	Dra. Nana Yuliana, MA., Ph.D.	The Indonesian LBBP Ambassador for the Republic of Cuba, concurrently with the Commonwealth of the Bahamas, Jamaica, the Dominican Republic and Haiti	09.00 – 10.00	Tiur Simanjuntak M.Pd.	Doeslohal Djumrianti, S.E.MIS., Ph.D
2.	Prof. Ramaraj Boopathy	Alcee Fortier Distinguished Service Professor of biological sciences at the Nicholls State University, USA	10.00 – 11.00	Prof. Hasan Basri	Dr. Nyayu Latifah Husni, M.T.
3..	Dr. Ing. Ahmad Taqwa, MT.	Director of Politeknik Negeri Sriwijaya, Indonesia	11.00 – 12.00	Jaksen M. Amin, M.Si.	Dr. Martha Aznury, S.Pd., M.Si.

PARALEL SESSION					
No.	**Theme**	**Room**	**Time**	**Moderator**	**Articles**
1.	TRACK 1 (Engineering and Science)	1	13.00 – 16.00	Dr. Eng Tresna Dewi, M.Eng./ Ika Sulianti, ST, MT	15
2.	TRACK 1 (Engineering and Science)	2	13.00 – 16.00	Dr. Martha Aznury, M.Si./ Indah Purnamasari, M.Eng.	14
3.	TRACK 1 (Engineering and Science)	3	13.00 – 16.00	Fatahul Arifin, M.Eng, Ph.d./ Dr. Indrayani, S.T., M.T.	13
4.	TRACK 2 (Computer Science, Computer Engineering, Information System, Informatics Management)	4	13.00 – 16.00	Rika Sadariawati, M.Si./ M.Miftakhul Amin, S.Kom., M.Eng	13
5.	TRACK 2 (Computer Science, Computer Engineering, Information System, Informatics Management)	5	13.00 – 16.00	Dr. Nyayu Latifah H, MT./ Lindawati, S.T., M.TI	12
6.	TRACK 3 (Social Science)	6	13.00 – 16.00	Doeslohal Djumrianti, S.E.MIS., Ph.D/ Dr. Marieska Lupikawati	13
7.	TRACK 3 (Social Science)	7	13.00 – 16.00	Dr. Sari Lestari ZR/ Dr. Rita Martini	14
8.	SNAPTEKMAS 1	8	13.00 – 16.00	Yurni Oktarina, ST, MT/ Mouland Irwadi, SE. M.Si.	15
9.	SNAPTEKMAS 2	9	13.00 – 16.00	Leni Novianti, M.Kom./ Maivi Kusnandar, M.Kom	15
10	SNAPTEKMAS 3	10	13.00 – 16.00	M Husni Mubarok, M.Si./ Martinus Mujur, ST, MT	15
11	SNAPTEKMAS 4	10	13.00 – 16.00	Dr. Ade Silvia H, MT./ M. Sopian Soim, ST, MT	13

CLOSSING SESSION		
Event	Time	Room
– Closing Ceremony – Announcement of: 1. Best Paper FIRST IC 2021 2. Best Paper SNAPTEKMAS 2021 3. Best Presenter FIRST IC 2021 4. Best Presenter SNAPTEKMAS 2021 – Quiz Online	16.00– 17.00	Main Room

TRACK 3 (Social Science)

ROOM : 6
TIME : Thursday, 21 October, 2021/ 13.00 - 16.30
ARTICLES : 13
MODERATOR : Doeslohal Djumrianti, S.E.MIS., Ph.D/ Dr. Marieska Lupikawati

NO	Time	ID	AUTHORS	TITLE	AFFILIATION
1	13.00-13.10	3847	Ayu Chotibah, Bainil Yulina, Desi Apriyanty, Evada Dewata, Pridson Mandiangan	THE INNOVATION OF SOUTH SUMATERA TRADITIONAL BATIK E-COMMERCE APPLICATIONS	State Polytechnic of Sriwijaya
2	13.10-13.20	3683	M. Thoyib, Riza Wahyudi, Firmansyah, Darul Amri	THE ANALYSIS OF COST QUALITY ON PRODUCTIVITY OF IRON RAILING PRODUCTS IN SMALL AND MEDIUM BUSINESS IN PALEMBANG	State Polytechnic of Srwiwijaya
3	13.20-13.30	3757/3756	Nelly Masnila, Firmansyah, Jovan Febriantoko, Riana Mayasari, Jamaliah Said	Quality of Financial Reporting and Impact of GGG Implementation: Study on Local Government in Indonesia	State Polytechnic of Sriwijaya
4	13.30-13.40	3796	Evi Agustina Sari, Sri Gustiani, Yusri, Tiur Simanjuntak	An Error Analysis of English Sentence Construction in Writing Subject Made by the Students of the English Department at Sriwijaya State Polytechnics	State Polytechnic of Sriwijaya
5	13.40-13.50	3827	Edwin Frymaruwah, Farah Aida Ahmad Nadzri, Periansya, Evada Dewata	DISCLOSURE OF SUSTAINABLE PERFORMANCE IN HIGHER EDUCATION IN INDONESIA	State Polytechnic of Sriwijaya, UiTM
6	13.50-14.00	3976	Hendra Hadiwijaya Febrianty Rezania Agramanisti Azdy	Improvement of LPKA Class 1 Palembang Electronic Dashboard with Field Performance Monitoring	Palcomtech Polytechnic, STMIK PalComTech
7	14.00-14.10	3853/4034	Neneng Miskiyah, Purwati, Yulia Pebrianti, Keti Purnamasari, Nyimas Miftahul Jannah,	OPTIMIZATION OF INCOME PARAMETERS OF SONGKET CRAFTSMEN ON KOPERASI SONGKET PALEMBANG	State Polytechnic of Sriwijaya

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OPTIMIZATION OF INCOME PARAMETERS OF SONGKET CRAFTSMEN ON KOPERASI SONGKET PALEMBANG

ID: 3853

Neneng Miskiyah[1*], Purwati[1], Yulia Pebrianti[1], Keti Purnamasari[1]
[1]Department of Business Administration, Sriwijaya State Polytechnic, Palembang, Indonesia

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ABSTRACT

The purpose of a business is to obtain income that can be used to meet the needs of life and business survival. To obtain optimal income, it is necessary to know the optimum point of business capital, business experience, partnerships, and allocation of working hours. The method used is Response Surface Methodology (RSM). The experimental design used is the Central Composite Design for order 2, where the quantitative form of the relationship between the desired response and the independent variable is in the quadratic order model. The results showed that the optimum condition of income for Songket craftsmen was Rp 3.561.590, - with a business capital of Rp 3.000.000, 6 years of business experience, 9 hours/day allocation of working hours, and 4 years of partnership.

Keywords: Craftsman Income, Optimizing Parameters, Response Surface Methodology

Optimization of Income Parameters of Songket Craftsmen on Koperasi Songket Palembang

Neneng Miskiyah[1*], Purwati Purwati [1], Yulia Pebrianti[1], Keti Purnamasari[1], Nyimas Miftahul Jannah[1], Rina Dwi Aprianti[1], Tiara Tiara[1]

[1] *Department of Business Administration, Sriwijaya State Polytechnic, Palembang*
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ABSTRACT
The purpose of a business is to obtain income that can be used to meet the needs of life and business survival. To obtain optimal income, it is necessary to know the optimum point of business capital, business experience, partnerships, and allocation of working hours. In this study, the number of samples was 30 craftsmen who became members of Kopsop. Data is collected through instruments based on predetermined variables for approximately 2 months by going directly to the craftsmen. The method used is Response Surface Methodology (RSM). The experimental design used is the Central Composite Design for order 2, where the quantitative form of the relationship between the desired response and the independent variable is in the quadratic order model. The results showed that the optimum condition of income for Songket craftsmen was Rp 3.561.590, - with a business capital of Rp 3.000.000, 6 years of business experience, 9 hours/day allocation of working hours, and 4 years of partnership.

***Keywords**: Craftsman Income, Optimizing Parameters, Response Surface Methodology*

1. INTRODUCTION

The COVID-19 pandemic has had an impact on the economic viability of business households and worker households. According to [1] revealed that Covid-19 had a socio-economic impact on household income which affected household consumption and savings which fell significantly. This condition was exacerbated by a decline in public demand, changes in public consumption behaviour, and a general slowdown in economic activity. The same thing was also stated by [2] that the pandemic caused increased unemployment, decreased household income, and decreased consumption of goods and services.

The impact of the Covid-19 pandemic has also affected the Palembang Songket craft business. The decline in the income of craftsmen due to reduced public demand for Songket cloth. In an effort to increase the income of craftsmen, through the business group of Koperasi Songket Palembang (Kopsop) which is a means to help Songket craftsmen market their work. Income with maximum profit is not the only main goal of the Koperasi Songket Palembang, but rather to business continuity and development in the Palembang Songket weaving business, while the income of the craftsmen itself is received from various supporting factors including business capital, business experience, allocation of working hours, and partnerships. Factors that affect the income of craftsmen need to be calculated in order to obtain optimum values so that craftsmen can optimize their income from the results of Songket weaving.

Limited capital makes it difficult for businessmen to develop their products, therefore capital is used as the basis for conducting a business [3][4]. Another factor that affects the income of craftsmen is business experience. Findings [5][6] suggest that the longer a person is in their job, the more experience they have so that they are more skilled. However, in contrast to the findings [7] stated that business experience had no significant effect on the income of seaweed farmers. Songket craftsmen are mostly done by women, because this work can be done from home. The woman's dual role is as a Songket craftsman as well as a housewife who takes care of her children and husband. The existence of a dual role requires women craftsmen to be able to allocate work time between work as a Songket craftsman, and work taking care of the household. Basically the income of craftsmen depends on the time or working hours used. The more time he spends working, it is expected that the more income he will receive. Working hours have a unidirectional relationship with income, meaning that the greater the working hours, the greater the income [6][8]. However, different research results found by [3] that working hours have no effect on

the income of traders in the Landungsari market.

The length of time for Songket craftsmen who are members of the Koperasi Songket Palembang varies, an average of more than 4 years. Basically partnership is a mutually beneficial activity with various forms of cooperation in dealing with and strengthening each other. In this regard, business partnerships contain several main elements which are business cooperation with the principles of mutual benefit, mutual strengthening and mutual need. Findings [9] state that partnerships have a significant effect on income. The partnership has a positive influence on the income of sugarcane farming, so that sugarcane farmers who participate in the partnership earn higher incomes than non-partner sugarcane farmers

This study determines and analyzes the optimization of the income parameters of craftsmen from the variables of business capital, business experience, allocation of working hours, and partnerships using Response Surface Methodology (RSM). This article is organized into 5 parts, namely (1) introduction; (2) literature review; (3) research methods; (4) results and discussion; and the final section (5) conclusion.

2. LITERATURE REVIEW

2.1. Income Theory

The purpose of a business is to obtain income that can be used to meet the needs of life and business survival. Income is all money or other material results achieved from the use of wealth or services received by a person or household during a certain period of time in an economic activity [10][11]. According to [12] income which shows the amount of money received by households within a certain time, can be in the form of wages (labor receipts), rent, interest, dividends, transfer payments (wealth income), social benefits or unemployment insurance (revenues from the government).

2.2 Factors Affecting Income

2.2.1 Business Capital

Capital is a factor of production in a business process. By allocating and utilizing capital properly and efficiently, it facilitates the product process. Business capital can be in the form of money, goods, and services used to produce a product either directly or indirectly. Capital comes from own capital and loan capital. But in reality the capital itself is not sufficient so that the steps taken by business actors are to seek loan capital. Business capital has a positive and significant effect on household income, because capital is one of the inputs (factors of production) in determining the level of income to be obtained [13][14][15].

2.2.2 Business Experience

Business experience is the length of time a person has lived in a particular job. The longer the business is run, the more experience will be gained [16]. One's business experience can be an advantage and can innovate in every job done. Within a certain period of time, businessmen can gain knowledge and skills at work. Findings [17] that work experience has a significant influence on the income of workers in the public or private sector in both urban and rural areas.

2.2.3 Allocation of Working Hours

In general, working hours are the total working time of all jobs during the past week. It is assumed that the more hours of work used, the more productive the work done. Workers whose working hours are low affect the income received, the higher the working hours, the greater the income received [3]. The same thing was also found [6] that working hours affect the income of ornamental fish traders. However, the results of research conducted [14][18] actually did not have an effect on income.

2.2.4 Partnership

In Undang-Undang Nomor 9 Tahun 1995 concerning Small Businesses (Pasal 1) and Peraturan Pemerintah Nomor 44 Tahun 1997 concerning Partnerships (Pasal 1), it is explained that partnership is defined as cooperation between Small and Medium Enterprises and or Large Enterprises by taking into account the principle of mutual need, mutually reinforcing, and mutually beneficial. Business people are in an equal position, even though they are economically equal partners, they work on different business scales [19].

According to [20] explained that a partnership is a business strategy carried out by two or more parties within a certain period of time to obtain mutual benefits with the principle of mutual need and raising. Meanwhile, according to [21], partnership is an attitude of running a business with the characteristics of long-term relationships, high-level cooperation, mutual trust between the two parties to achieve common business goals. There are six benefits obtained by implementing the partnership pattern, namely (1) the achievement of high productivity; (2) achieving efficiency; (3) quality, quantity and continuity assurance; (4) risk

management, (5) social benefits; and (6) economic resilience [19].

3. RESEARCH METHODS

The research was conducted on Palembang Songket craftsmen who are members of the Koperasi Songket Palembang (Kopsop) located in Ki Gede Ing Suro, Ilir Barat II, Palembang. The population in this study were Songket craftsmen who were members of Kopsop as many as 30 people. The sampling technique used is a saturated sample, where all the population is used as a sample of 30 craftsmen. Quantitative analysis to identify the effect of the independent variable on the dependent variable using the Response Surface Methodology (RSM). The independent variables are business capital, business experience, allocation of working hours, and partnerships, while the dependent variable is the income of Songket craftsmen.

In this study using the Central Composite Design (CCD) to minimize the amount of research data. Level and coding using equation [22].

$$x_{i1} = \frac{\xi_{i1} - [\max(\xi_{i1}) + \min(\xi_{i1})]/2}{[\max(\xi_{i1}) - \min(\xi_{i1})]/2} \quad (1)$$

The independent variables in this study were coded using equation 1 by considering the research data.

Table 1 Independent Variables in Experiment

Level	Unit	Coded Level		
		-1	0	1
		min	center	max
Business Capital	Rupiah	3000000	4000000	5000000
Business Experience	Year	6	18	30
Partnership	Year	3	6.5	10
Working Hours Allocation	Hours/ day	5	7	9

Source: data processing results, 2021

Response Surface Methodology is a collection of statistical and mathematical techniques used for modeling and analyzing problems where the desired response is influenced by variables and aims to optimize the response [22].

Table 2 Research Experiment Design and Experimental Results

	Std	Run	X1	X2	X3	X4	Y
Factorial	1	14	3000000	6	3	5	4250000
	2	16	5000000	6	3	5	4500000
	3	27	3000000	30	3	5	4250000
	4	26	5000000	30	3	5	5800000
	5	18	3000000	6	10	5	4250000
	6	30	5000000	6	10	5	4500000
	7	21	3000000	30	10	5	4250000
	8	29	5000000	30	10	5	5400000
	9	24	3000000	6	3	9	3250000
	10	19	5000000	6	3	9	4900000
	11	15	3000000	30	3	9	4250000
	12	6	5000000	30	3	9	5800000
	13	11	3000000	6	10	9	3750000
	14	17	5000000	6	10	9	4500000
	15	7	3000000	30	10	9	4750000
	16	25	5000000	30	10	9	5400000
Axial	17	1	3000000	18	6.5	7	4250000
	18	22	5000000	18	6.5	7	4900000
	19	20	4000000	6	6.5	7	4750000

	20	23	4000000	30	6.5	7	4650000
	21	28	4000000	18	3	7	5500000
	22	8	4000000	18	10	7	4850000
	23	13	4000000	18	6.5	5	4850000
	24	4	4000000	18	6.5	9	5400000
Center	25	5	4000000	18	6.5	7	6000000
	26	10	4000000	18	6.5	7	5350000
	27	2	4000000	18	6.5	7	5400000
	28	9	4000000	18	6.5	7	5375000
	29	12	4000000	18	6.5	7	5450000
	30	3	4000000	18	6.5	7	5375000

Source: data processing results, 2021

To find out and analyze the relationship between the income parameters of Songket craftsmen, the Response Surface Methodology approach is used, where the quantitative form of the relationship between the desired response and the independent variable is in a quadratic order model.

4. RESULTS AND DISCUSSION

Almost all of Palembang's Songket woven businessmen have difficulty in selling, thereby reducing supply and even having to temporarily stop the supply of weaving children or craftsmen so as not to lose money. This condition is done to avoid stock accumulation. The Koperasi Songket Palembang still receives a very limited number of weaving products from craftsmen, because it is to help craftsmen who only rely on income from these businesses.

Variables of business capital, business experience, allocation of working hours, and partnerships are factors that affect the income of craftsmen. To optimize the income of craftsmen, it is necessary to calculate and analyze in order to obtain the optimum value of each independent variable.

From the results of data processing, it is found that the first-order model equation for the model and Lack of Fit is significant, so that the model is invalid and cannot be used. Furthermore, data processing is carried out by making second-order model equations. The second-order model was obtained by the central composite design method [24] . The second-order model is obtained from the use of the RSM method as follows:

$$Y= -2958293.054 + 4.167893693\,X_1 + 52126.84489\,X_2 + 2364.542308\,X_3 - 488841.8964\,X_4 +$$

$$0.010416667\,X_1X_2 - 0.039285714\,X_1X_3 + 0.04375\,X_1X_4 - 595.2380952\,X_2X_3 + 4166.666667\,X_2X_4 + 5357.142857\,X_3X_4 -$$

$$0.000000492105{X_1}^2 - 2549.342105{X_2}^2 + 8807.73362\,{X_3}^2 + 14473.68421\,{X_4}^2$$

Table 3 ANOVA for Response Surface Quadratic Model

Source	Sum of Squares	df	Mean Squares	F Value	p-value	
Model	1.00927E+13	14	7.20904E+11	4.947277	0.0020	**significant**
A-Business Capital	3.96681E+12	1	3.96681E+12	27.2226	0.0001	
B-Business Experience	1.93389E+12	1	1.93389E+12	13,27151	0.0024	
C-Partnership	40138888889	1	40138888889	0.275457	0.6074	
D-Allocation of Working Hours	1388888888,9	1	1388888888,9	0.000953	0.9758	
AB	2.5E+11	1	2.5E+11	1.71565	0.2100	
AC	3.025E+11	1	3.025E+11	2.075937	0.1702	
AD	1.225E+11	1	1.225E+11	0.840669	0.3737	

BC	10000000000	1	10000000000	0.068626	0.7969	
BD	1.6E+11	1	1.6E+11	1.098016	0.3113	
CD	22500000000	1	22500000000	0.154409	0.6999	
A^2	6.27434E+11	1	6.27434E+11	4.305831	0.0556	
B^2	3,49167E+11	1	3,49167E+11	2.396195	0.1425	
C^2	30161483254	1	30161483254	0.206986	0.6557	
D^2	8684210526	1	8684210526	0.059596	0.8104	
Residual	2.18576E+12	15	1.45717E+11			
Lack of Fit	1.86993E+12	10	1.86993E+11	2.960306	0.1213	**not significant**
Pure Error	3.15833E+11	5	63166666667			
Total Cast	1.22784E+13	29				

Source: data processing results, 2021

From Table 3, the quadratic model shows that the mathematical model is significant while the lack of fit is not significant. This means that the model is valid and can be used to analyze the response surface of the income of Songket craftsmen.

The significance test through ANOVA testing aims to determine whether there is an effect of the various variables tested on the income of Songket craftsmen. If the data obtained from the results of R Square (R^2) equal to 0,821984 it clear that a strong relationship between variables occurs business capital, business experience, partnerships, and the allocation of working hours. The value of R^2 of 0,822 means that the influence of venture capital, business experience, the allocation of working hours, and the partnership of 82,2%, while 17,8% are influenced by other variables outside the study variables.

From the equation of the second order model, the coefficient of each variable is converted into a matrix form. The formation of the matrix and the determination of the optimum point is obtained by means of multiplication and the inverse of the matrix [22]. In this study, the optimum condition with the limit value of business capital, business experience, partnership, and allocation of working hours is "in the range", while the output (Y) which is the income of craftsmen is set to a minimum. The results of determining the optimum point are shown in Table 4 below.

Table 4 Optimal Conditions of Income Parameters for Songket Craftsmen

No.	Business Capital	Business Experience	Allocation of Working Hours	Partnership	Income (Y)	Desirability	
1	**3000000.24**	**6.00**	**9.00**	**4.01**	**Rp 3.561.590**	**0.887**	**Selected**

Source: data processing results, 2021

From Table 4, it is found that the optimum point of the business capital factor is Rp. 3,000,000.24, the optimum point of the business experience factor is 6 years, the optimum point of the working hours allocation factor is 9 hours/day, and the optimum point of the partnership factor is 4 year with the optimal income of craftsmen of Rp 3.561.590,-.

The business capital issued by the craftsmen ranges from Rp 3.000.000 to Rp. 5.000.000, there are 30% of the craftsmen who have a business capital of Rp 3.000.000. The optimum point of the business capital factor is Rp 3.000.000. In general, business capital is all things (money or other forms) that can be used to run a business. Based on the source of origin, business capital consists of internal capital originating from the business owner himself and external capital originating from loans/debts. From the field survey, all craftsmen only utilize internal capital. The reason for not wanting to get loan capital was because of the craftsman's ignorance of the procedure, and the absence of collateral. Capital is one of the inputs (factors of production) in determining the level of income to be obtained. In research [13][14] explained that business capital has a positive and significant effect on household income. The same thing was also found by [23] that capital has an effect on increasing the income of teak furniture craftsmen and capital.

Experience in managing a business has an effect on income. Business experience is obtained by craftsmen when they are directly involved in Songket weaving activities. The business experience of songket weaving craftsmen who are members of the Koperasi Songket Palembang Songket is between 6 - 30 years. This Songket weaving business experience is obtained based on the parenting pattern of parents who work as craftsmen or from the experience of people who are in the closest environment. By using Response Surface Methodology, the optimum point for business experience is 6 years. The longer the experience in the Songket weaving business, the more the craftsmen have the knowledge and skills in the business they are engaged in. This result is in line with the finding of [17] that work experience has a significant effect on income.

Koperasi Songket Palembang (Kopsop), which was established in 1986, is a member - owned businessentity consisting of typical Palembang fabr ic craftsmen in the form of Songket Fabrics, Tajung Weaving Fabrics, and Jumputan. Kopsop is a forum for Palembang typical woven fabric craftsmen which has 30 members consisting of housewives and young women. During the current Covid-19 pandemic, Kopsop's role is very helpful for craftsmen to keep earning. The relationship between Kopsop and craftsmen is a partnership that shows cooperation in conducting business activities which is a business strategy with the aim of developing a business based on the principles of mutual need, mutual strengthening, and mutual benefit. This principle is what keeps Kopsop standing to this day. The length of time the craftsmen join Kopsop is between 3 – 10 years. From the calculation results, the optimum point of partnership is 4 years, meaning that with a period of 4 years joining Kopsop has reached the optimum point to generate optimal income for craftsmen. Research [25] suggests that partnerships have an effect on the income of dairy farmers. However, it was found that [26] the partnership of PT Indofood Fritolay Makmur did not have a positive impact on the income of potato farming in Sembalun District, East Lombok Regency.

The allocation of working hours for craftsmen in doing their job of weaving songket ranges from 5 hours to 9 hours per day. The dual role of the craftswoman between taking care of the household and doing her job as a weaver can be done well. Allocation of working hours is one source of increasing income, the more working hours used, the more productive the work done. Each additional time to weave, the more opportunities to increase sales results. The optimum point of the allocation of working hours is 9 hours/day, which means that at this point it contributes to optimizing the income of the craftsmen. Research conducted [27] revealed that working hours affect the income of traders in Selatbaru beach tourism. In contrast to the findings of [28] working hours have no effect on the income of traders, the higher the working hours used by a person in trading does not affect the level of income received.

5. CONCLUSION

The significance of test results obtained R Square (R^2) equal to 0,821984, or 82,2% of the second-order model is explained by variable business capital, business experience, the allocation of working hours, and partnerships, the rest is influenced by other variables outside the study variables.

The optimum point of business capital, business experience, partnership, and allocation of working hours that generate optimal income for craftsmen is Rp 3.000.000 for business capital, for business experience is 6 years, partnership is 4 years, and the allocation of working hours is 9 hours/day with generate optimal income of Songket craftsmen of Rp 3.561.590,-.

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