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“Nurturing Business and Banking Sustainability”
Surabaya, 14 - 15th August 2020

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The originality of the paper is the author's responsibility
FOREWORD

Alhamdulillah, praise be to Allah Subhanahu Wa Ta'ala for granting us the opportunity to organize and publish the proceedings of the 2nd International Conference on Business and Banking Innovations (ICOBBI) with the topic “Nurturing Business and Banking Sustainability”. This proceeding contains several researches articles from many fields in Marketing, Management Technology, Finance, Banking, Human Resources Management, Information System Management, and Islamic Economics.

The 2nd International Conference on Business and Banking Innovations was held on 14th – 15th August 2020 by virtual (online) meeting and organized by the Master Management Study Program of STIE PERBANAS Surabaya in Collaboration with six Higher Education Institutions in Indonesia and five Universities from Asia countries. Keynote speakers in this conference were: Prof. Angelica M..Baylon, Ph.D (Director of the Maritime Academy of Asia and the Pacific, Philippines), Chonlatis Darawong, Ph.D. (Head of the Master of Business Program Sripatum Chonburi University - SPU Graduate School Bangkok, Thailand), Prof. Madya Dr. Reevany Bustami (Director of Centre for Policy Research and International Studies Universiti Sains Malaysia), Associate Prof. Dr. Ellisha Nasruddin (Graduate School of Business Universiti Sains Malaysia), Associate Prof. Pallavi Pathak Ph.D. (School of Management Sciences, Varanasi, India) and Prof. Dr. Tatik Suryani (Head of the Master of Management Study Program of STIE Perbanas Surabaya, Indonesia).

I would like to give high appreciation to the Rector of STIE Perbanas Surabaya for his support at this event. Acknowledgments and thank you to all the steering and organizing committees of the ICOBBI for the extra ordinary effort during the conference until this proceeding published. Thank you very much to all presenter and delegates from various Universities. Beside it, I would like to express our gratitude to the six universities, namely Universitas 17 Agustus Surabaya, Universitas Surabaya, Universitas Dr. Soetemo Universitas Dian Nuswantoro Semarang, STIE 66 Kendari, Institut Institut Bisnis dan Keuangan Nitro Makassar which has been the co-host of this event.

Hopefully, the proceeding will become a reference for academics and practitioners, especially the business and banking industry to get benefit from the various results of the research field of Business and Banking associated with Information Technology. Proceedings also can be accessed online on the website https://pascasarjana.perbanas.ac.id.

Chair of the Master Management Study Program
STIE Perbanas Surabaya

Prof. Dr. Tatik Suryani, M.M.
Tabel of Content

Cover................................................................................................................. i
Committee........................................................................................................ ii
Reviewers.......................................................................................................... iii
Foreword........................................................................................................... iv
Table of Content............................................................................................... v

Marketing

Analyzing Competitive Strategies in Food SMEs Post Pandemic Covid-19 (Case Study in Madiun Municipality) ...........................................................................................................................1 - 9
Tatik Mulyati; Saraswati Budi Utami; Hendro Susi

Effect of Support Services And Relationship Quality on Customer Loyalty and Repurchase Intention on Johnson & Johnson Customers in Surabaya.................................................10 - 21
Feddy Ardiyansyah

The Effect of Service Quality and Trust on Repurchase Intention Through Customer Satisfaction in Rollaas Cafe Mall City of Tomorrow Surabaya .........................................................22 - 31
Brahma Satrya

Analysis of Logistics Services Quality Using SERVQUAL Method in Surabaya City: Literature Review and Research Suggestion .................................................................32 - 36
Andini Anastasia Novitasari

Exploration of Factors Affecting Customer Satisfaction and Loyalty in Community Pharmacies in Thailand: A Qualitative Study...............................................................37 - 43
Ramida Maruay; Chonlatis Darawong; Boonkiat Wisittigars

The Effect of Social Media Marketing Activities, Brand Image, Customer Satisfaction on Shopee Customer Loyalty in Surabaya City .................................................44 - 49
Farhan Hisyam; Tatik Suryani

Performance Analysis Through Intrinsic and Extrinsic Motivation with Work Satisfaction as Intervening Variables in Retail Company Employees in Surabaya (Case Study on Employees of PT. Lotte Mart Marvel Surabaya) ..................................................................................50 - 55
Firdaus

Influence of Work Fatigue, Unclear Tasks and Management Career on Employee Turnover at PT. Sulselbar Bank ......................................................................................56 - 64
Rosnaini Daga; Armi Pasampang; Aminuddin Hamdad

Performance of Service In General Hospital City of Surabaya Era Covid-19......... 65 - 71
Feliks Anggia B.K. Panjaitan; Hwihanus; Adiati Trihastuti; Hotman Panjaitan

v
Workability and Self Awareness on Employee Engagement in Indonesian Manufacturing Industries .......................................................... 72 - 78
Siti Mujanah

Increasing Performance through Motivation and Competence at 17 August 1945 University Surabaya ........................................................................................................ 79 - 89
Sri Budi Kasiyati; Endang Setyowati; Ida Bagus Cempena

Developing Brand Loyalty ............................................................................. 90 - 97
Estik Hari Prastiwi

E-Marketing Adoption As an Alternative Solution For Fight Back The Covid-19 .......... 98 - 105
Febrianur Ibnu Fitroh Sukono Putra

Mufti Agung Wibowo

Quality of Work Life and Work Stress on Employee Performance ...................... 113 - 117
Sumiati

Word of Mouse: How e-WOM Influence Consumer Behavior (A Study of UNTAG Surabaya Student) ................................................................. 118 - 128
Nanis Susanti

The Effect of Service Quality, Customer Trust, Brand Image and Electronic Word of Mounth on Online Purchasing Decisions on Shopee Customers in Surabaya ....................... 129 - 144
Anis Fitriyasari

The Effect of Marketing Mix 7Ps, Customer Experience, and Customer Relationship Marketing on Customer Loyalty Mediated by Indomaret Customer Satisfaction in Surabaya ..................... 145 - 152
Citra Putri Ramadani

The Impact Of Celebrity Endorser And Self-Connection Of The Brand On The Equity Of The Brand .................................................................................. 153 - 166
Mahmud; Mia Dika Anggraini

The Brand Loyalty Determining Factors: The Role of Self Brand Connection, Brand Love, Brand Trust And Brand Image (at PT. Eloda Mitra) ............................................ 167 - 174
Budi Anandya; Ni Made Laksmi Oktavia

The Effect of Website and Social Media on Customer Behavior Responses ............. 175 - 182
Tatik Suryani; Abu Amar Fauzi; Mochamad Nurhadi

What Makes Tencent Becomes a Successful Business? a Case Study Analysis of Tencent. 183 - 190
Binsar Energia Pratama Napitupulu
The Effects of Social Media Marketing Activities on Brand Love and Brand Trust That Have an impact on Brand Loyalty of Visval Bags Consumers ................................................................. 191 - 196
Novian Navas Mahardhika

Analysis the Effect of Marketing Mix on Consumer Decisions in Buying Paint Products... 197 - 205
Febrianto Ramadhan

Analysis of The Impact of The Development of Inolobunggadue Central Park (ICP) on Micro, Small And Medium Enterprises in Konawe Regency .......................................................... 206 - 212
Abdul Razak

The Effect of Transformational Leadership and Work Commitment on Incentives and Disaster Preparedness for Southeast Sulawesi Province Disaster Preparedness .................................. 213 - 222
Bakhtiar Abbas

The Effect of Service Quality on Civil Population Document Towards Society’s Satisfaction and Trust for Population and Civil Registry Office of Kendari City ......................................................... 223 - 232
Nofal Supriaddin

CRM Impact on Customer Satisfaction and Customer Loyalty at Garuda Indonesia: The Airline of Indonesia .................................................................................................................. 233 - 240
Muhamad Reynaldi Adhyaksa

The Implementation of Simple Form Gamification In Companies ........................................ 241 - 246
Nathania Agatha Benita

Social Entrepreneurship dan Peningkatan Ekonomi pada Siswa SMA Selamat Pagi Indonesia ........................................................................................................................................... 247 - 254
Azwar Cholili

Leaping Innovation Barriers For Business Longevity Purpose Based on Different Measurements of Innovation .............................................................................................................. 255 - 261
Mia Novinda Mudjiono

Business Model Analysis: A Study Case in Wood Pellet Industry ........................................ 262 - 267
Kadek Budiadnyana Putra

Drivers And Barriers Of Purchasing Groceries Online In Surabaya :Age, Gender, Educational Level And Experience As Moderating Variables ......................................................... 268 - 273
Diky Murdoyo Rahadiarto

Optimization Services and Strategies Toward Satisfaction Value of Training Participants Held by Integrated Service Unit Surabaya .................................................................................. 274 - 282
Sukesi
The Influence of Investment Knowledge, Investment Motivation, Investment Capital and Investment Risk Perception on Investment Interest in Capital Markets (Study On Feb Dr. Soetomo University Students) ........................................................................................................ 283 - 288
Sri Handini

The Effects Of Human Capital And Strategic Partners On Strategic Planning And Organizational Performance (Study at PT. Segar Murni Utama) ........................................................................................................ 289 - 296
JFX. Susanto Soekiman

The influence of Utilitarian Value, Hedonic Value, and Perceived Risk on Customer Satisfaction and Customer Loyalty to Shopee Customers in Surabaya ........................................................................ 297 - 303
Nensi Laurence Nggai; Dudy Anandya

Unisfat The Pattern of Spatial Interaction of Workers in Central Java Province using the Explanatory Spatial Data Analysis (ESDA) Approach ........................................................................ 304 - 315
Caroline; Achmad Nuruddin S.; Etty Puji Lestari; Ceasilia Srimindarti; Teguh Imam Rahayu

Analysis Web-Based Customer Relationship Management Strategy at PT. ABC ............ 316 - 320
Alfred Turisnol

The Influence of Planned Behavior On The Level of Customer Trust And Satisfaction In Determining Loyalty In Green Hotels In Indonesia ........................................................................ 321 - 328
Hayuning Purnama Dewi

Financial

Independence Financial Expertise in Audit Committee and Tax Avoidance: is business strategy moderate this relationship? ........................................................................................................ 329 - 337
Ms. Lisa Gabrielle; Devie; Juniarti

Effect of Asset Quality, Liquidity, Solvability, Efficiency and Good Corporate Governance (GCG) Towards Go Public Bank Profitability In Indonesia ........................................................................ 338 - 350
Ramlan

Credit Quality Stress Tests Based on Macroeconomics at Bank Persero in Indonesia in 2008 - 2016 ........................................................................................................ 351 - 359
Elna Arlina Nandasari

Decision On The Utilization Of Digital Payment In Millennial Generation Based On Perceived Experience ........................................................................................................ 360 - 365
Karta Negara Salam; Muh. Imam Taufiq

Determining Factors of Thin Capitalization Practices in Indonesia ........................................ 366 - 381
Jepri Duwi Safrudin; Diah Hari Suryaningrum
Factors That Become A Customer Considerations Become A Brachless Bangking Agent .382 - 388
Novita Rosanti

Going Concern and Liquidity Perspective in Indonesia Manufacture Industry .....................389 - 394
Tri Ratnawati; Widi; Rahmiyati; Nekky

Influence Of Debt Policy And Cash Ratio On Dividend Policy On IDX30 Index In Indonesia Stock
Exchange .........................................................................................................................395 - 400
Muhammad Ashary Anshar; Ichbal Warimin

Performance Analysis Of Share And After Online Application On The Sector Registered
Transportation In Indonesia Exchange ..............................................................................401 - 406
Rachman Suwandaru; Hartina

Measuring The Performance of the Surabaya City Regional Budget Value For Money
Analysis ...............................................................................................................................407 - 414
Risanda Alirastra Budiantoro; Tito Aditya Perdana

A Systematic Literature Review of Liquidity, Asset Quality, Size, Solvability and Efficiency of
Probability on National Private Commercial Banks Go Public ........................................415 - 421
Devinta Ayu Ramadhani

The Effect of Multiple Role Conflict on Employees Performance Moderated By Self
Efficac .................................................................................................................................422 - 428
Awanis Linati Haziroh, S.M, M.M.; Amanda Dyla Pramadanti; Raden Ayu Aminah R.P.S;
Febrianur Ibnu Fitroh Sukono Putra

The Factors of Banking Capital Structure Determination in Indonesia ..............................429 - 434
Foza Hadyu Hasanatina; Amalia Nur Chasanah; Vicky Oktavia

Identification and Analysis of Regional Economic Growth Patterns in the New Autonomous
Region of Southeast Sulawesi Province ..............................................................................435 - 448
H. Mahmudin A. Sabilalo

Corporate Partnership of PT. SKLT with Crackers MSME in Sidoarjo As a Form Corporate Social
Responsibility (CSR) ........................................................................................................449 - 463
Jimmy Herlambang

Influencing Factors Safety Quality Cost Delivery People (SQCDP) on Lean Manufacturing
Implementation at Directorate Production Indonesian Aerospace (IAe) ................................464 - 471
Niza Nurmalasari; Ida Aju Brahma; Ida Aju Brahma Ratih

Increasing the Role Of Bank Financial Institutions and Non-Bank Financial Institutional in Providing
Optimal Distribution For Communities During The COVID-Pandemic ............................472 - 479
Matdio Siahaan
Utilization of Payment Gateway in Fundraising from a Management Perspective of Zakat, Infaq, and Alms: A Case Study of Baitul Maal Hidyatullah Surabaya ......................................................480 - 486
Sarah Lutfiyah Nugraha and Ika Yunia Fauzia

The Impact of Capital Structure Towards Firm Performance Moderated by Corporate Governance in LQ-45 Company in BEI at 2013-2018.................................................................487 - 495
Gabby Markus Angkasajaya; Putu Anom Mahadwartha
ABSTRACT
The mobility of labor from one area to another forms a pattern of labor spatial interaction. In 2019, there are 17.4 million people in Central Java Province who have the potential to mobilize workers. This is due to the difference in wages between the area of origin and the destination area, the unemployment of the area of origin, development in other areas. This study aims to analyze the pattern of spatial interaction of the workforce in 2019. The sample used by the workforce from 2014 to 2019. This research method uses the Euclidean distance spatial weight matrix approach to calculate Local Moran's I with Explanatory Spatial Data Analysis (ESDA). The results of this study concluded that the pattern of spatial interaction of labor internally in Central Java Province occurred. This is evidenced by the strong spatial interaction pattern of the workforce in Central Java Province in 2019. Cilacap District workers, Demak District workers, Banyumas District workers, Semarang City workers, Tegal District workers, Semarang District workers, and Pemalang District workers with high labor characteristics have spatial interactions with district / city workers with high labor characteristics. The weak pattern of spatial interaction of labor in Central Java Province in 2019 was shown from Banjarnegara District, Batang District, Blora District, Pekalongan City, Temanggung District, Purworejo District, Rembang District, Rembang District, Sragen District workers, Sukoharjo District workers, Wonosobo District workers, Karanganyar District workers, and Pekalongan District workers with low labor characteristics interact spatially with district / cities with low labor characteristics. The pattern of spatial interaction of workers in Central Java Province which is manifested in the form of labor migration is thought to be due to the open unemployment rate, most of which are high school graduates. The difference in wages for work from the region of origin and the wages for the work of the destination region is a consideration for workers who migrate internally in Central Java Province.

1. INTRODUCTION
In 2019, there were 17.4 million workers in Central Java Province. The number of workers in Central Java Province in 2019 based on male gender was 10,23 million, and the workforce based on female gender was 7.2 million. The mobility of the workforce in Central Java is thought to be high because most job seekers are mostly high school graduates, there are 135,044 people, followed by workers with university graduates of 93,030 people, and job seekers with Diploma I, Diploma II, and Diploma III graduates are 39,013 people. Central Java Province's open unemployment is quite high. Table 1 shows that the unemployment rate is quite high in Central Java Province from 2017 to 2019, most of the open unemployment is Cilacap District, Banyumas District, Purbalingga District, Banjarnegara District, Kebumen District, Sragen District, Jepara District, Demak District, Kendal District, Batang District, Pemalang District, Tegal District, Brebes District, Magelang City, Semarang City, Pekalongan City, and Tegal City.

Corresponding author: carolinesoekarno2018@gmail.com
Table 1
Open Unemployment Rate in Central Java Province

<table>
<thead>
<tr>
<th>District</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tegal City</td>
<td>6.49</td>
<td>8.07</td>
</tr>
<tr>
<td>Semarang City</td>
<td>6.06</td>
<td>5.72</td>
</tr>
<tr>
<td>Brebes District</td>
<td>5.96</td>
<td>5.44</td>
</tr>
<tr>
<td>Pemalang District</td>
<td>5.60</td>
<td>6.50</td>
</tr>
<tr>
<td>Kendal District</td>
<td>5.62</td>
<td>6.31</td>
</tr>
<tr>
<td>Jepara District</td>
<td>4.76</td>
<td>3.77</td>
</tr>
<tr>
<td>Kebumen District</td>
<td>4.28</td>
<td>4.70</td>
</tr>
<tr>
<td>Purbalingga District</td>
<td>3.83</td>
<td>4.78</td>
</tr>
<tr>
<td>Cilacap District</td>
<td>3.30</td>
<td>7.31</td>
</tr>
</tbody>
</table>

Source: BPS-Statistics Indonesia, August National Labor Force Survey 2019

The open unemployment rate between District / cities in Central Java Province is a driving factor for workers to migrate to other District / cities whose income is higher than their home regions. This study adopts the results of research from Moretti (2004). The results of Moretti's (2004) study concluded that workers with higher education and workers with certain skills had the desire to move places to find work with high wages. The higher education workforce and workers who have certain skills have the aim to improve their lives and well-being. This study developed a growth model from Solow (1956) that was developed by Mankiw et. al., (1992) who consider the importance of education in economic growth. Education is part of human capital. Education will increase economic growth by increasing labor productivity. The main objective of this study is to analyze the spatial interaction pattern with the euclidean distance weight matrix. This research is important because there is no research on the interaction patterns of workers in Central Java Province with Explanatory Spatial Data Analysis (ESDA).

2. THEORETICAL FRAMEWORK

The framework of this study is the development of the economic growth model of Solow (1956), namely the Mankiw et. al., (1992) growth model, the Knowles and Owen economic growth model (1995), taking into account the role of educated labor, and the role of uneducated labor in its economic growth model Moretti (2004). Solow (1956) which has been developed by Knowles and Owen (1995) which prioritizes the role of health in economic growth. Education and Health are human capital. Mankiw et. al., (1992), and Knowles and Owen's (1995) model of economic growth consider the role of education and health in economic growth. Education and health will increase economic growth by increasing labor productivity. Education and health are inherent in the workforce. Increasing labor productivity will increase economic growth. This study also adopts a model of economic growth from Moretti (2004) which divides the workforce into educated and uneducated workers. The focus of this research is only on labor.

Source: Developed for this study

Figure 1. Theoretical Framework
3. RESEARCH METHOD
This research was conducted in the period 2014-2019. The time period was selected with limited data used in the study. The sample of this study includes 29 districts and 6 cities in Central Java Province. This research is focused on the discussion of labor in Central Java Province.

Table 1
Reseach Data Description

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Indikator</th>
<th>Satuan</th>
<th>Sumber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>Population aged 15 years and over who worked during the past week according to the highest education completed (not / not yet in university school) in the country</td>
<td>Orang</td>
<td>Central Java Statistics Bureau</td>
</tr>
</tbody>
</table>

Sources: Central Java Statistics Bureau (2020)

This study uses Explanatory Spatial Data Analysis (ESDA) with the Local Indicators of Spatial Association (LISA) method to answer the Spatial Interaction Patterns of Workers in Central Java Province using the spatial weight matrix of Euclidean Distance. This study focuses on the mobility of the workforce in 29 District and 6 cities in Central Java Province. This study uses labor data from 29 District and 6 cities in Central Java Province from 2014 to 2019. This study uses the 2014 workforce cut-off and 2019 workforce to be more focused.

Spatial Weight Matrix with Euclidean Distance Approach The use of the spatial weight matrix of Euclidean Distance is used to solve problems caused by the calculation of distance, time and labor mobility using the x coordinate point and the y coordinate point of each district / city in Tengah. This research was designed with a spatial autocorrelation method approach through locally using Local Moran’s I. Euclidean Distance is a unit of mills where 1 Euclidean Distance = 15.91 mills. Calculation of Euclidean Distance using Geoda version 14.1. which was released in August 2019. The spatial weight matrix of Central Java Province can be seen in Table 1.

Table 1
Spatial Weight Matrix for 29 Regencies and 6 Cities in Central Java Province with the Euclidean Distance Approach

<table>
<thead>
<tr>
<th>Number</th>
<th>District</th>
<th>The x coordinate point</th>
<th>The y coordinate point</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cilacap District</td>
<td>108,89</td>
<td>-7,488</td>
</tr>
<tr>
<td>2</td>
<td>Demak District</td>
<td>110,631</td>
<td>-6,91</td>
</tr>
<tr>
<td>3</td>
<td>Grobogan District</td>
<td>110,927</td>
<td>-7,117</td>
</tr>
<tr>
<td>4</td>
<td>Banjarnegara District</td>
<td>109,657</td>
<td>-7,351</td>
</tr>
<tr>
<td>5</td>
<td>Banyumas District</td>
<td>109,175</td>
<td>-7,455</td>
</tr>
<tr>
<td>6</td>
<td>Batang District</td>
<td>109,861</td>
<td>-7,02</td>
</tr>
<tr>
<td>7</td>
<td>Blora District</td>
<td>111,388</td>
<td>-7,074</td>
</tr>
<tr>
<td>8</td>
<td>Boyolali District</td>
<td>110,652</td>
<td>-7,416</td>
</tr>
<tr>
<td>9</td>
<td>Brebes District</td>
<td>108,929</td>
<td>-7,06</td>
</tr>
<tr>
<td>10</td>
<td>Magelang City</td>
<td>110,219</td>
<td>-7,477</td>
</tr>
<tr>
<td>11</td>
<td>Jepara District</td>
<td>110,767</td>
<td>-6,55</td>
</tr>
<tr>
<td>12</td>
<td>Karanganyar District</td>
<td>111,019</td>
<td>-7,657</td>
</tr>
<tr>
<td>13</td>
<td>Kebumen District</td>
<td>109,617</td>
<td>-7,654</td>
</tr>
<tr>
<td>14</td>
<td>Kendal District</td>
<td>110,157</td>
<td>-7,039</td>
</tr>
<tr>
<td>15</td>
<td>Klaten District</td>
<td>110,619</td>
<td>-7,686</td>
</tr>
<tr>
<td>16</td>
<td>Magelang District</td>
<td>110,246</td>
<td>-7,501</td>
</tr>
<tr>
<td>17</td>
<td>Pati District</td>
<td>111,042</td>
<td>-6,743</td>
</tr>
<tr>
<td>18</td>
<td>Salatiga City</td>
<td>110,497</td>
<td>-7,737</td>
</tr>
<tr>
<td>19</td>
<td>Pekalongan City</td>
<td>109,677</td>
<td>-6,893</td>
</tr>
<tr>
<td>20</td>
<td>Semarang City</td>
<td>110,389</td>
<td>-7,02</td>
</tr>
<tr>
<td>21</td>
<td>Surakarta City</td>
<td>110,822</td>
<td>-7,557</td>
</tr>
</tbody>
</table>
Local Indicators of Spatial Association (LISA)

Local Indicators of Spatial Association (LISA) or Local Moran I statistics which are techniques to provide visual graphs about spatial grouping such as Moran’s Scatterplot (Fotheringham, Brunsdon et al., 2000; Haining, 2003). Spatial local autocorrelation indicates District / City contribution to autocorrelation in Central Java Province. Spatial local autocorrelation is a value that is observed as positive (similar) or negative (different) with neighboring observations, j. Moran’s index values are between $-1 \leq |I| \leq 1$. This study adopted the Local Moran I statistics from Anselin (1995). The time of research is one year, namely 2014-2020. Moran's $I$ statistic model of locally written spatial autocorrelation,

$$I_i = \frac{x_i - \bar{x}}{\sigma_x} \sum_{j=1, j \neq i}^n w_{ij} (x_j - \bar{x})$$

(1.)

Where :

$$S_i^2 = \frac{1}{n-1} \sum_{j=1, j \neq i}^n w_{ij} (x_j - \bar{x})^2$$

$$Z_i = \frac{I_i - E[I_i]}{\sqrt{V[I_i]}}$$

$$E[I_i] = - \frac{\sum_{j=1, j \neq i}^n w_{ij} x_j}{n-1}$$

$$V[I_i] = E[I_i^2] - E[I_i]^2$$

A = \frac{n - b_{2i} \sum_{j=1, j \neq i}^n w_{ij}^2 b_{2i}}{n-1}

B = \frac{(b_{2i} - n) \sum_{k=1, k \neq i}^n \sum_{h=1, h \neq i}^n w_{ih} w_{jk}}{n(n-1)}(n-1)

$$b_{2i} = \frac{\sum_{j=1, j \neq i}^n (x_j - \bar{x})^4}{\left(\sum_{j=1, j \neq i}^n (x_j - \bar{x})^2\right)^2}$$

Information :

$I_i$ is Local Moran’s I-statistic

$N = 29$ District dan 6 City in Central Java Province;

$x$ is average $x$;

$x_i$ is the observed variable;

$w_{ij}$ is elements of the spatial weight matrix that connect the observed District / City i (District / City) observations with its neighboring District / City;
by using the euclidean distance approach based on the x coordinate point and y coordinate point of District / City.

The Moran Scatter Plot

Local Moran's Index can also be represented in the form of The Moran Scatter Plot. This study adopted the concept of The Moran Scatter Plot from Dube and Legros (2014), Anselin (1995). The Moran Scatter Plot is divided into four quadrants, namely The High-High (HH) quadrant, The High-Low (HL) quadrant, The Low-High (LH) quadrant, The Low-Low (LL) quadrant. Determination of the quadrant position on The Moran Scatter Plot based on variable values in District / City. Determination of the quadrant position on The Moran Scatter Plot based on the value of the variable in the observed District / City $x_i^*$, and variable values in neighboring District / City, $x_j^*$.

Figure 1. shows The Moran Scatter Plot.

The High-High (HH) quadrant shows District / Cities with high x values appear to be surrounded with other District / Cities with high x values. The Low-Low (LL) quadrant shows District / City with high labor value appearing surrounded with other District / City with low x value. The Low-High (LH) quadrant shows District / City with low x-values appearing surrounded by other District / City with low labor value.

4. DATA ANALYSIS AND DISCUSSION

LOCAL INDICATORS OF SPATIAL ASSOCIATION (LISA)

Local Indicators of Spatial Association (LISA) is an analysis of Local Moran's I. This study uses LISA for a workforce of 29 District and 6 Cities in Central Java Province. The distance between District / cities in Central Java Province is very close. The use of a spatial weight matrix with Euclidean Distance is very effective because it overcomes the problems of distance traveled, time traveled, labor mobility, and mobility of information with the principle of A Multidirectional Optimum Ecotope-Base Algorithm (AMOEBA). The principle of A Multidirectional Optimum Ecotope-Base Algorithm (AMOEBA) is designed for grouping spatial entities using empirical data (Aldstadt and Getis, 2006). An ecotope is a collection of spatial entities with the same characteristics based on local autocorrelation statistics. This study develops the concept of A Multidirectional Optimum Ecotope-Base Algorithm (AMOEBA) from Aldstadt and Getis (2006)

Table 2

<table>
<thead>
<tr>
<th>Number</th>
<th>District/City</th>
<th>2014</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>District Cilacap</td>
<td>1,32</td>
<td>1,99</td>
</tr>
<tr>
<td>2</td>
<td>District Demak</td>
<td>0,34</td>
<td>0,8</td>
</tr>
<tr>
<td>3</td>
<td>District Grobogan</td>
<td>1,15</td>
<td>0,24</td>
</tr>
<tr>
<td>4</td>
<td>District Banjarnegara</td>
<td>-0,03</td>
<td>-0,08</td>
</tr>
<tr>
<td>5</td>
<td>District Banyumas</td>
<td>1,19</td>
<td>0,55</td>
</tr>
<tr>
<td>6</td>
<td>District Batang</td>
<td>-0,59</td>
<td>-0,49</td>
</tr>
<tr>
<td>7</td>
<td>District Blora</td>
<td>-0,14</td>
<td>-0,88</td>
</tr>
<tr>
<td>8</td>
<td>District Boyolali</td>
<td>0,36</td>
<td>-0,04</td>
</tr>
<tr>
<td>9</td>
<td>District Brebes</td>
<td>1,6</td>
<td>-0,63</td>
</tr>
<tr>
<td></td>
<td>City/Municipality</td>
<td>Moran Scatter Plot</td>
<td>Standardized Moran Scatter Plot</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------</td>
<td>--------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>10</td>
<td>City Magelang</td>
<td>-2.22</td>
<td>-0.32</td>
</tr>
<tr>
<td>11</td>
<td>District Jepara</td>
<td>0.61</td>
<td>0.3</td>
</tr>
<tr>
<td>12</td>
<td>District Karanganyar</td>
<td>-0.11</td>
<td>-0.02</td>
</tr>
<tr>
<td>13</td>
<td>District Kebumen</td>
<td>0.64</td>
<td>-0.29</td>
</tr>
<tr>
<td>14</td>
<td>District Kendal</td>
<td>-0.19</td>
<td>0.41</td>
</tr>
<tr>
<td>15</td>
<td>District Klaten</td>
<td>0.68</td>
<td>-0.38</td>
</tr>
<tr>
<td>16</td>
<td>District Magelang</td>
<td>0.82</td>
<td>-0.49</td>
</tr>
<tr>
<td>17</td>
<td>District Pati</td>
<td>0.79</td>
<td>0.16</td>
</tr>
<tr>
<td>18</td>
<td>City Salatiga</td>
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<td>0.09</td>
</tr>
<tr>
<td>19</td>
<td>City Pekalongan</td>
<td>-1.76</td>
<td>-0.19</td>
</tr>
<tr>
<td>20</td>
<td>City Semarang</td>
<td>1.97</td>
<td>-0.33</td>
</tr>
<tr>
<td>21</td>
<td>City Surakarta</td>
<td>-1.07</td>
<td>-0.17</td>
</tr>
<tr>
<td>22</td>
<td>City Tegal</td>
<td>-1.9</td>
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</tr>
<tr>
<td>23</td>
<td>District Kudus</td>
<td>-0.22</td>
<td>0.72</td>
</tr>
<tr>
<td>24</td>
<td>District Pekalongan</td>
<td>-0.43</td>
<td>-0.43</td>
</tr>
<tr>
<td>25</td>
<td>District Pemalang</td>
<td>0.45</td>
<td>-0.61</td>
</tr>
<tr>
<td>26</td>
<td>District Tegal</td>
<td>0.68</td>
<td>-0.25</td>
</tr>
<tr>
<td>27</td>
<td>District Temanggung</td>
<td>-0.25</td>
<td>-0.26</td>
</tr>
<tr>
<td>28</td>
<td>District Wonogiri</td>
<td>0.19</td>
<td>-0.47</td>
</tr>
<tr>
<td>29</td>
<td>District Wonosobo</td>
<td>-0.33</td>
<td>-0.31</td>
</tr>
<tr>
<td>30</td>
<td>District Purbalingga</td>
<td>0.21</td>
<td>-0.41</td>
</tr>
<tr>
<td>31</td>
<td>District Purworejo</td>
<td>-0.59</td>
<td>0.27</td>
</tr>
<tr>
<td>32</td>
<td>District Rembang</td>
<td>-0.88</td>
<td>0.32</td>
</tr>
<tr>
<td>33</td>
<td>District Semarang</td>
<td>0.5</td>
<td>-0.11</td>
</tr>
<tr>
<td>34</td>
<td>District Sragen</td>
<td>-0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>35</td>
<td>District Sukoharjo</td>
<td>-0.22</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Source: data processed with GeoDa version 14.1, which was released in August 2019

**MORAN SCATTER PLOT**

Moran scatter plot is a tool used to see the relationship between the District / City standardized observation values and the average value of District / City neighbors that have been standardized. The Moran scatter plot shown in Figure 2, shows the Moran scatter plot for the workforce of 29 District and 6 Cities in Central Java Province in 2014.

Source: Central Java data in Figures which have been processed with Stata Version 14, 2020

**Figure 2.** The Moran Scatter Plot of the 2014 Central Java Province Workforce
Figure 2. The Moran Scatter Plot of the 2019 Central Java Province Workforce


Figure 2 and Figure 3 show the calculation of the Moran manpower index in Central Java Province 2014 and the calculation of the Moran manpower index for Central Java Province 2019. It appears that there is a negative autocorrelation but the correlation is weak because the Moran index value is close to zero, where the Moran index for the workforce of Central Java Province 2014 is 0.027 and the Moran index value for the workforce of Central Java Province 2019 is 0.028.

Figure 4. Map of the 2014 Central Java Province Workforce LISA Cluster Map

Figure 4 shows that the 2014 Workforce Cluster Map appears at the Cilacap District, Demak District, Banyumas District, Semarang City, Tegal District, and Semarang District located in the hot spot area. The 2019 Workforce Cluster Map is located on the Cold Spot area, namely the Banjarnegara District, Batang District, Blora District, Pekalongan City, Temanggung District, Purworejo District, Rembang District, Sragen District, and Kebumen District.
Figure 5. Map of the 2019 Central Java Province Workforce LISA Cluster Map

Figure 5 shows that the 2019 Workforce Cluster Map appears at the Cilacap District, Demak District, Banyumas District, Semarang City, Tegal District, and Semarang District, Pemalang District is located in the hot spot area. The 2019 workforce is located at the cold spot area, which are Banjarenegara District, Batang District, Blora District, Pekalongan City, Temanggung District, Purworejo District, Rembang District, Sragen District, Sukoharjo District, Wonosobo District, Karanganyar District, and Pekalongan District.

Table 3

<table>
<thead>
<tr>
<th></th>
<th>HH</th>
<th>LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>2019</td>
<td>2014</td>
</tr>
<tr>
<td>Cilacap District</td>
<td>Banjarnegara District</td>
<td>Cilacap District</td>
</tr>
<tr>
<td>Demak District</td>
<td>Batang District</td>
<td>Demak District</td>
</tr>
<tr>
<td>Banyumas District</td>
<td>Blora District</td>
<td>Banyumas District</td>
</tr>
<tr>
<td>Semarang City</td>
<td>Pekalongan City</td>
<td>Semarang City</td>
</tr>
<tr>
<td>Tegal District</td>
<td>Temanggung District</td>
<td>Tegal District</td>
</tr>
<tr>
<td>Semarang District</td>
<td>Purworejo District</td>
<td>Semarang District</td>
</tr>
<tr>
<td></td>
<td>Rembang District</td>
<td>Pemalang District</td>
</tr>
<tr>
<td></td>
<td>Sragen District</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kebumen District</td>
<td></td>
</tr>
</tbody>
</table>

Source: Processed data. the year 2020

This research focuses on the workforce's strong spatial interaction pattern and the weak workforce spatial interaction pattern. Table 3 shows that the workforce in Central Java Province in 2014 had a strong spatial interaction pattern. This is shown by Cilacap District, Demak District, Banyumas District, Semarang City, Tegal District, and Semarang District with high labor characteristics that interact spatially with District / cities with high labor characteristics. The pattern of spatial interaction of workers in Central Java Province in 2019 shows a strong interaction. This can be seen from the existence of 6 District and 1 City whose workforce characteristics are high in spatial interaction with District / City whose characteristics are high workforce, namely Cilacap District, Demak District, Banyumas District, Semarang City, Tegal District, Semarang District, and Pemalang District. Table 3 shows the workforce in Central Java Province in 2014 there was a weak pattern of spatial interaction of labor. Weak spatial interaction patterns of labor in 2014 can be seen from the workforce of Banjarenegara District, Batang District workers, Blora District workers, Pekalongan City workers, Temanggung District workers, Purworejo District workers, Rembang District workers, Sragen District workers., and workers in Kebumen District with low labor characteristics that interact spatially with districts / cities with low labor characteristics. Weak spatial interaction patterns of labor in 2019 to 12 districts / cities. This can be seen from the workforce of Banjarenegara District, Batang District workers, Blora District workers, Pekalongan City workers, Temanggung District workers, Purworejo District workers, Rembang District workers, Sragen District workers, Sukoharjo District workers, Wonosobo, Karanganyar and Pekalongan districts with low labor characteristics interact spatially with districts / cities with low labor force characteristics. The pattern of spatial interaction of labor in Central Java Province in 2014, and the pattern of spatial interaction of workers in Central Java Province in 2019 are thought to have occurred due to the high unemployment rate in the area of origin so that workers with a certain level of education, and workers with a skill level desire Migrating to other districts / cities with the aim of working so that workers migrating to regencies / municipalities, workers get a better wage rate.
Figure 6. Central Java Province Open Unemployment Rate in 2019

Figure 6 shows the open unemployment rate in Central Java Province in 2019. Unemployment in the area of origin is the driving force for the reason why workers do other Districts / Cities. The open unemployment rate (TPT) in Central Java Province in 2019 was mostly in Tegal Regency at 8.21 percent; District 7.43 percent; Cilacap Regency 7.31 percent; Pemalang Regency 6.5 percent; Kendal Regency 6.31 percent; Tegal City 5.77 percent; Demak Regency 5.46 percent; Purwalingga Regency 4.78 percent; Kebumen Regency 4.76 percent; Pekalongan City 4.54 percent; Banjarnegara Regency 4.47 percent; Pekalongan District, Surakarta City, and Semarang City each had an open unemployment rate of 4.43 percent.

Source: Central Java Data in Figures 2020, processed

Figure 7. Central Java Province Open Unemployment Rate in 2019

Figure 7 shows that the open unemployment in Central Java Province mostly comes from workers who have worked with 217,876 senior high school graduates, and open unemployment from workers with high school graduates who have never worked 176,883 people. Open unemployment in Central Java Province mostly comes from workers who have worked with 128,481 primary school graduates, and open unemployment from workers with junior high school graduates who have never worked for 59,211 people.

Source: Central Java Data in Figures 2020, processed

Figure 8. Primary Sector Wages in 2019

Figure 8 shows that the primary sector wages from the Agriculture, Forestry, Fisheries/ Agriculture, Forestry and Fisheries sectors are mostly found in Tegal City, Rembang Regency, Boyolali Regency, Pati Regency, Salatiga City, Blora Regency, and Karanganyar Regency.
Figure 9. Secondary Sector Wages in 2019
Figure 9 shows the secondary sector labor wages from the Mining and Quarrying sector; Processing industry; Procurement of Electricity and Gas; Water Supply; Waste, Waste, and Recycling Management; Construction, Mining and Quarrying; Manufacturing; Electricity and Gas; Water Supply; Sewerage, Waste Management, and Remediation Activities; Construction is mostly located in Semarang City, Grobogan Regency, Salatiga City, Semarang Regency, Cilacap Regency, Demak Regency, Tegal Regency, Banyumas Regency, Wonogiri Regency, Surakarta City, Kudus Regency, Banjarnegara Regency, Blora Regency, and Boyolali Regency.

Figure 10. Tertiary Sector Wages in 2019
Figure 10 shows the wages of workers in the tertiary sector (wholesale and retail sector; car and motorcycle repair; transportation and warehousing; provision of accommodation and food and drink; information and communication; financial services and insurance; real estate; corporate services; government administration, defense, , and Compulsory Social Security; Education Services; Health Services and Social Activities; Other Services Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles; Transportation and Storage; Accommodation and Food Service Activities; Information and Communication; Financial and Insurance Activities; Real Estate Activities; Business Activities; Public Administration and Defense; Compulsory Social Security; Education; Human Health and Social Work Activities; Other Services Activities) mostly exist in Semarang City, Semarang Regency, Magelang City, Salatiga City, Sukoharjo Regency, Grobogan Regency, Karanganyar Regency, Demak Regency, Cilacap Regency, Tegal Regency, and Sragen Regency.
5. CONCLUSION, IMPLICATION, AND LIMITATIONS

The pattern of spatial interaction of labor in Central Java Province in 2014 and 2019. The cut-offs of this study were taken from the early 2014 research year and the final year of the 2019 study. The pattern of internal spatial interaction of labor in Central Java Province occurs. This is evidenced by the strong spatial interaction pattern of the workforce in Central Java Province in 2019. Cilacap Regency workers, Demak Regency workers, Banyumas Regency workers, Semarang City workers, Tegal Regency workers, Semarang Regency workers, and Pemalang Regency workers with high workforce characteristics interact spatially with Districts / City workers with their workforce characteristics high. The weak spatial interaction pattern of the Central Java Province workforce in 2019 is evident from the Banjarnegara Regency workforce, the Batang Regency workforce, the Blora Regency workforce, the Pekalongan City workforce, the Temanggung Regency workforce, the Purworejo Regency workforce, the Rembang Regency workforce, and the Sukoharjo Regency workers, Pemalang Regency workers, and Pekalongan Regency workers with low labor characteristics interact spatially with Districts / City whose characteristics are low workforce. The pattern of spatial interaction of workers in Central Java Province which is manifested in the form of labor migration is thought to be due to the open unemployment rate, most of which are high school graduates. The difference in wages for work from the region of origin and the wages for the work of the destination region is a consideration for workers who migrate internally in Central Java Province. High economic growth in a district / city will attract workers to enter other districts / cities.

The policy implication is that local governments must open up investment so that their regional revenues can increase. Investments that enter certain districts / cities will open up job opportunities for the surrounding community. Education and skill levels of workers through vocational training centers need to be improved so that the workforce is working in accordance with the existing needs in the labor market. There needs to be a standardization in the form of certification for workers who are ready to work in accordance with the job classification required in the work field.

The limitation of this study is that this study ignores health factors in its research. This study did not use the health variable in the study. In fact education and health are important human capital. Education and health will increase the productivity of workers.

REFERENCES


