

eISSN 2413-9009



TRAEKTORIÂ NAUKI

International Electronic Scientific Journal

Vol. 8, No 10, 2022

AGRIS

CAB Abstract

CEEOL

CEJSH

Dialnet

DOAJ

EBSCO

FSTA®

Index Copernicus

RePEc

CNKI Scholar

Ulrich's Periodical Directory

pathofscience.org

TRAEKTORIĀ NAUKI = PATH OF SCIENCE**Vol. 8****No 10****2022**

Founded in August 2015. Publishing monthly.

Publisher

Altezero, s.r.o. & Dialog
 4B, Južná trieda, Košice mestská časť Juh, 04001, Slovak Republic
 Ph.: (421) 905-38-36-97.

Founders:

Altezero, s.r.o., 4B, Južná trieda, Košice mestská časť Juh, 04001, Slovak Republic
 Publishing Center "Dialog", 2 Club Street, Solonitseвка, 62370, Ukraine

The journal is abstracted in the following international databases: AGORA, AGRIS, AiritiLibrary, Baidu Scholar, Bielefeld Academic Search Engine (BASE), CAB Abstract, Central and Eastern European Online Library (CEEOL), Food Science and Technology Abstracts, Index Copernicus (ICV 2021 = 100,0), Google Scholar, J-Gate, OpenAIRE, Polska Bibliografia Naukowa, ResearchBib, ScienceOpen, The Central European Journal of Social Sciences and Humanities (CEJSH), Türk Eğitim İndeksi, Ulrichsweb Global Serials Directory, WorldCat.

Editor in Chief:

Kataev A., PhD, Ass. Prof.

Editorial Board:

Aksenova E., PhD, Ass. Prof.
 Bobro N., PhD, Ass. Prof.
 Bolotnaya O., PhD, Ass. Prof.
 Holoborodko K., Doctor of Science, Prof.
 Holubov A., PhD, Ass. Prof.
 Horoshev A., PhD, Ass. Prof.
 Kolos N., Doctor of Science, Prof.
 Krupin V., PhD, Ass. Prof.
 Malenko E., Doctor of Science, Prof.
 Mygal S., Doctor of Science, Prof.
 Olipas C. N. P., PhD
 Palchyk O., PhD, Ass. Prof.
 Shatrovskiy A., PhD, Ass. Prof.
 Skrynkovskyy R., PhD, Prof.
 Zelenskaya L., Doctor of Science, Prof.

Editorial office 1:

4B, Južná trieda, Košice mestská časť Juh, 04001, Slovak Republic

Editorial office 2:

2 Club Street, Solonitseвка, 62370, Ukraine

E-mail: editor@pathofscience.org. Site: <http://pathofscience.org>

The journal is an international open-access, peer-reviewed electronic journal created to fully and promptly meet the information needs of society in the knowledge gained in the course of research and development, research and design, design and technology and production activities of scientists and experts.

The journal publishes original research papers, review articles and short communications papers in Social, Technical, Natural sciences and Humanities. The scope of the problems of articles is not limited.

Responsibility for facts, quotations, private names, enterprises and organizations titles, and geographical locations is to be barred by the authors. The editorial office and board do not always share the views and thoughts expressed in published articles.

TABLE OF CONTENTS

SECTION "ENGINEERING, MANUFACTURING AND CONSTRUCTION"

Roman Mysiuk, Iryna Mysiuk, Volodymyr Yuzevych, Grzegorz Pawlowski

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Determining the Place of Depressurization of Underground Pipelines (Gas Pipelines): New Solutions in Industry based on Thermal Image Analysis Using Computer Vision (Language – English) | 1001 1010 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|

SECTION "LANGUAGES"

Aida Akif Mirzayeva

| | |
|--------------------------------------------------------------------------------------------------------------|--------------|
| From History to Modern Tendencies in the Sphere of Ethnolinguistics and Topical Issues in This Area | 2001 2007 |
| (Language – English) | |

Ruslan Serdeha

| | |
|--------------------------------------------------------------------------------------------------------------------------------|--------------|
| The Specificity of the Display of Grammatical Information in the "Dictionary of the Language of Oral Folk Literature" | 2008 2018 |
| [Специфіка відображення граматичної інформації у «Словнику мови усної народної словесності»] | |
| (Language – Ukrainian) | |

SECTION "ECONOMICS"

Alex Oisazoje Iriabije, Ubong Edem Effiong

| | |
|------------------------------------------------------------------------------------------------------|--------------|
| An Estimation of Money Demand Function Using Nigerian Data: Implication for Monetary Policy | 3001 3016 |
| (Language – English) | |

Handry Sudiarta Athar, Prayitno Basuki, Lalu Edy Herman Mulyono

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| The Effect of Online Marketing Mix, Online Product Representation, and Digital Content Marketing on the Marketing Performance of MSMEs in NTB Mall Mataram during the COVID-19 Pandemic | 3017 3025 |
| (Language – English) | |

Astrid Octavia Bahari, Lalu Edy Herman Mulyono, Handry Sudiarta Athar

| | |
|-----------------------------------------------------------------------------------------------------------------------------|--------------|
| Tourist Risk Perception, Destination Image and Tourist Experience towards Revisit Intention Post COVID-19 Pandemic | 3026 3037 |
| (Language – English) | |

SECTION "SOCIOLOGY"

Indra Muda, Effiati Juliana Hasibuan, Mulia Siregar, Waridah Pulungan

Harmonization Village based on Dalihan Na Tolu in Sibadoar Village, Sipirok District, Selatan Tapanuli Regency, Indonesia

(Language – English)

4001

4007

SECTION "EDUCATION"

Hamidi, Muhammad Sarjan, Iswari Fauzi, Rindu Rahmatiah, Muhammad Yamin, Sudirman, Asrorul Azizi, Agus Muliadi, Yusran Khery, Muh. Zaini Hasanul Muttaqin, Mulia Rasyidi, Bakhtiar Ardiansyah

Multidimensional Science Education: Overview Of Philosophy Foundations (Ontology, Epistemology, Axiology)

(Language – English)

5001

5006

Nyoman Sridana, Harry Soeprianto, Amrullah, Muhammad Turmuzi

Domination Analysis of Influence between Educational and Professional Competency on the Performance of Prospective Mathematics Teachers in the School Field

Introduction Program

(Language – English)

5007

5012

Masban, Sudirman, Fahrudin

Planning of Academic Supervision by Primary School Supervisors in West Lombok District, Indonesia

(Language – English)

5013

5019

Kiki Fajarani, Khairuddin, Yusrizal

Managerial Performance of Principals in an Integrated Education System on Character Building of Students

(Language – English)

5020

5027

Suardi, Sudirman, Fahrudin

Management of School Operational Assistance Funds at SMKN 2 Kuripan, Lombok Regency, Indonesia: Reviewing From Planning Aspects

(Language – English)

5028

5032

SECTION "AGRICULTURE"

Ni Ketut Sukasni, Taufik Fauzi, Farid Hemon

Physiological Response and Tolerance of Genotypes of Shallots (*Allium ascalonicum* L.) under Shade Stress

(Language – English)

6001

6009

SECTION "SOCIAL COMMUNICATION"

Kidi

The Strategy of the Regional Human Resources Development Agency of West Nusa Tenggara Province to Support Corporate University at West Nusa Tenggara,

Indonesia 7001
(Language – English) 7009

Determining the Place of Depressurization of Underground Pipelines (Gas Pipelines): New Solutions in Industry based on Thermal Image Analysis Using Computer Vision

Roman Mysiuk¹, Iryna Mysiuk¹, Volodymyr Yuzevych², Grzegorz Pawlowski³

¹*Ivan Franko National University of Lviv*

1 Universytetska Street, Lviv, Ukraine, 79000

²*Karpenko Physico-mechanical Institute of the NAS of Ukraine*

5 Naukova Street, Lviv, Ukraine, 79060

³*Zakład Handlowo-Uslugowy BHP*

17 Kostrzyńska Street, Gorzyca, Poland, 69-113

DOI: [10.22178/pos.86-9](https://doi.org/10.22178/pos.86-9)

JEL Classification: L95

Received 20.09.2022

Accepted 20.10.2022

Published online 31.10.2022

Corresponding Author:

Roman Mysiuk

misyukr1@ukr.net

© 2022 The Authors. This article is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/)



Abstract. An analysis of the analytical ratios of the mathematical model, which characterizes the development processes of a corrosion cavern on the surface of an underground metal pipeline, which is placed in the environment of moist soil with an electrolyte solution, is performed. A neural network method for estimating the main informative parameters for determining the place of gas depressurization on the surface of an underground pipe and an expression for calculating the change in gas pressure around a crack after its formation have been developed. The principles of determining the limit values of the parameters of the “pipe-cathodic protection” system are formulated, considering the metal's quality and strength criteria at the top of the cavern.

Depressurization causes fluid to flow from the pipeline to the surface. Thermal imaging devices make it possible to detect the place of damage to the pipeline based on the temperature properties of the surrounding objects. Thermal imaging can be used to analyze the location of a fluid leak or warn of it using computer vision. Thus, preventing an accident or even a catastrophe in the pipeline. In the work, the colour gamuts of the thermal image in the places of depressurization are considered, and the regularities of detecting damaged sections of the pipeline are established.

Keywords: depressurization of gas pipelines; gas; corrosion; computer vision; image mining.

INTRODUCTION

Ensuring the high operational reliability of Ukraine's main gas pipelines (MG) is quite important [1]. Airtightness can be attributed to the essential criteria for the efficiency of Ukraine's gas transportation system (GTS), which characterizes its operational reliability. Here it is necessary to emphasize the problem of tightness of the MG's linear part (LP) [2, 3].

Depressurization (loss of tightness of the housing or any system) of pipelines (MG) is accompanied by leakage and ignition of gas [1, 2, 3, 4]. In most cases of accidental destruction of the MG, gas ig-

niton occurs at the site of damage [5]. This can lead to negative phenomena, which are accompanied by fires and explosions and often threaten people's lives [2].

The scale of the impact on the environment and the nature of gas combustion depend on the following main factors (parameters) [4]:

- 1) pipeline diameter (MG) and gas working pressure;
- 2) soil density and properties of the original soil massif;
- 3) mutual (position) arrangement of the axes of the pipe ends.

The leading cause (more than 50%) of incidents (depressurization, accidents and failures) at MG is corrosion of pipe metal [1, 2, 6].

Based on the above, in particular [2], and taking into account the information in works [7, 8, 9, 10, 11], it can be considered: one of the urgent issues is the identification of the place of gas leakage from pipelines that are located in various environments (in particular, in the open air, in water and wet soil), and its quick and high-quality sealing.

Depressurization is associated with the formation of pitting corrosion. Over time, the cavern expands, and its depth increases. At a certain value of the depth of the corrosion crack, a limit state occurs at the top of the cavern, and a crack is formed. In that place, depressurization occurs, accompanied by a change in gas concentration inside the pipe in the vicinity of a crack-type defect.

High temperatures in such places of depressurization may be associated with certain damages to this area. When analyzing a thermal image, it is possible to identify potential locations of leakage or depressurization.

The article aims to identify and determine the place of depressurization of underground and surface pipelines based on the analysis of thermal images using computer vision methods.

Among the main tasks in this work, the following can be distinguished:

- to form the main dependencies of informative parameters for determining the place of gas depressurization on the surface of an underground metal pipe;
- to analyze the places of depressurization of pipelines based on thermal imaging using computer vision methods.

MATERIALS AND METHODS

Depressurization of the pipeline in a particular area leads to liquid leakage to the earth's surface. The temperature at the place of damage can be pretty high. With the help of thermal imaging devices, it is possible to detect areas of breakthrough and leakage of substances or liquids.

Thermal imaging images usually contain a specific range of colours that signal the temperature level of surrounding objects. Blue and black highlight things in the photo at low temperatures, yellow and green colours for medium temperatures,

and red and purple colours and their shades for places with the highest temperature. Thus, a pixel recognition approach can be applied to detect the damaged location of the pipeline. Pixels are the minor parts of an image that make up the size of the image and contain the colours.

Various representations are used to represent colours in computer graphics. One of the most popular is red-green-blue (RGB). The combination of these three colours can be used to determine the shade of a colour. Moreover, the most significant values of each of the components can be 255. In addition, colours can be recorded in cyan-magenta-yellow-black (CMYK), hue-saturation-lightness (HSV), and other representations.

The software application for pipeline damage detection includes three main parts: visualizing the damage of a part of the pipeline, highlighting the damaged area, and calculating the percentage of damage relative to the image size. The Java programming language is used to develop a program for detecting depressurizations and their further analysis.

Results are visualized using the library for developing desktop graphical interfaces in the javax.swing application. In addition, java.awt library is used to work with image pixels.

The first step in the program's algorithm is to obtain the width and length of the image in pixels. This data is needed to read the pixel colours of the image in an iterative process along each XY axes. The next step is to check the availability of colours:

1. The first condition to check the red colour of the image pixels: red ≥ 200 and green ≤ 50 , and blue ≤ 50 . If this condition is met, the current pixels of the image is redrawn in red, and the number of such pixels is calculated for further percentage calculation and storage of XY coordinate data further to highlight the damaged area with a red rectangle.

2. The second condition is to determine the purple colour of the pixels: red ≥ 170 and green ≤ 50 , and blue ≥ 170 . Moreover, all these actions described in the first condition are performed. This condition is separated due to the peculiarity of some thermal imaging images associated with highlighting in purple colour, not only objects with high temperature.

3. The third condition for contour selection: $10 < \text{red} \leq 225$ and $10 < \text{green} \leq 225$ and $10 < \text{blue}$

≤ 225 . Since existing colours can be used for visual perception, these colours remain in the image.

4. The fourth condition for using white colour to draw accompanying objects. This condition is performed if the RGB colour combination is not performed in the conditions above.

In addition to highlighting each pixel in red, the lateral parts of the damage can be selected to save the XY coordinates and mark them on the image in the form of a rectangle with the area of the damage.

RESULTS AND DISCUSSION

Formation of the main dependencies of information parameters for determining the place of depressurization on the surface of the underground pipeline

The work [2] proposed a method for determining the place of gas leakage from the pipeline (MG). At the same time, it is noted that with the help of A. Avogadro's law and the barometric formula, the dependence of gas pressure on the concentration of its molecules is obtained – formula (1):

$$p = nkT, \tag{1}$$

where n – is the number of gas molecules per unit volume; k – Boltzmann constant; T – absolute temperature. Using the procedure of measuring gas concentration at different points according to formula (1), the pressure distribution field around the leak site is determined [2].

It is found that the gas concentration is most accurately determined using the spectral method of analysis [2]. It has been established that this method can be used for MG and gas distribution pipelines in different environments (open air, water, and underground areas).

For underground gas pipelines (MG), there is practically no transport movement of the medium, while the differential equation of a point source is reduced to the Laplace equation in the form of the formula (2):

$$\alpha \nabla^2 p^2 = -\frac{f}{\rho \beta^*}, \quad \nabla^2 = \frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2} + \frac{\partial^2}{\partial z^2}, \tag{2}$$

where α – coefficient of piezoconductivity of the soil $\left(\alpha = \frac{k}{\mu \beta^*}\right)$, m/s^2 ; k – permeability of the porous medium, m^2 ; μ – absolute viscosity of the medium, $Pa \cdot s$; $\beta^* = m \beta_p + \beta_c m$ – composite coefficient of volume elasticity; β_p, β_c – volume elasticity coefficient of liquid and solid material; m – porosity of the medium; ∇^2 – the Laplace operator; f – internal source function, $km^3 \cdot s$ – formula (3) [2]:

$$f(x, y, z) = \lim_{\substack{\Delta V \rightarrow 0 \\ \Delta t \rightarrow 0}} \frac{\Delta G}{\Delta V \Delta t}. \tag{3}$$

The initial pressure at all points of an infinite flat porous medium is the same and equal p_0 , and at a point with coordinates (x_0, y_0, z_0) , there is a constant source of intensity q ($kg/m \cdot s$) [2]. Then the function f looks like a formula (4):

$$f = q \delta(x - x_0) \delta(y - y_0) \delta(z - z_0), \tag{4}$$

where $\delta(x-x_0), \delta(y-y_0), \delta(z-z_0)$ – Dirac delta functions [2].

Taking (4) into account, equation (2) has the form – formula (5):

$$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = \delta(x - x_0) \delta(y - y_0) \delta(z - z_0), \tag{5}$$

where $u = p^2(x, y, z)$.

Boundary condition $u_{(-\infty, +\infty)} = u_0 = p_0^2$ [2].

The general solution of the Laplace equation is given by Green's formula [12, 13], which is obtained in the form of the formula (6):

$$u(x, y, z) = p^2(x, y, z) = \frac{1}{2\pi} \int \int_{-\infty}^{\infty} \frac{z}{\left[(x - \xi)^2 + (y - \eta)^2 + z^2\right]^{3/2}} f(\xi, \eta) d\xi d\eta, \tag{6}$$

where ξ, η – coordinates of the point where the gas concentration is measured.

By specifying the values of the coordinates in formula (6), the values of the function u are de-

terminated, according to which the isobars in the soil are constructed and, accordingly, obtain the coordinates of the point on the outer surface of the pipeline, where the probable source of gas pollution or the place of depressurization of the gas pipeline is located.

For a section of an underground metal pipeline, considering the system probing procedure using an electromagnetic field, it is advisable to apply neural networks similar to the articles where acoustic technologies are used [14, 15].

Since the network implements a continuous function of the goal, with its help, a method of predicting the value of the potentials in special areas on the surface of the pipeline, in which the condition regarding the polarization potential (PP) is violated, is proposed U_p [16]. The main criterion for protecting the pipeline against corrosion is the limit value of the potential difference between the metal and the ground electrolyte, called the polarization potential [16].

The problem of predicting the resource of an underground metal pipeline is reduced to an optimization problem using neural networks and computer modelling methods [17], as well as the quality criterion for the “MG – installation of cathodic protection” system [18, 19].

Similarly, as in works [18, 20, 21, 22], the strength criterion is used, as well as the multiplicative qualitative quality criterion for the MG section, which will be presented in the form of a formula (7):

$$Z_1 = \prod_{i=1}^m k_i = k_1 \cdot k_2 \cdot k_3 \cdot k_4 \cdot k_5 \cdot k_6 \cdot k_7 \cdot k_8 \cdot k_9 \Rightarrow \max, \quad (7)$$

where k_1 – commercial gain ratio; k_2 – coefficient of the level of competitiveness (competitiveness) of underground metal pipelines; k_3 – coefficient of reliability of MG; $k_4(D_f)$, $k_5(p_s)$, $k_6(\sigma_{ve})$, $k_7(K_S)$, $k_8(T_S)$, $k_9(U_p)$ – coefficients that characterize defectiveness D_f , strength p_s , limit of corrosion fatigue $\sigma_{ve}(N_p)$, the effect of coating on corrosion resistance K_S , period of trouble-free operation T_S (durability) structures (pipes); compliance with the optimal range of polarization potential U_p on determining the place of depressurization of underground pipelines.

The ratio (1)–(7) is the basis of a new mathematical model for modelling a dangerous area's behaviour on the MG's surface and the stages of its development with the help of a neural network.

The hazardous area initially looks like a spot. Then, in the process of corrosion, the location turns into a cavern. A crack appears at its top at a specific cavern's size, and depressurization occurs. Depressurization will correspond to the limit values of two determining parameters, $u(x, y, z)$, Z_1 , which characterize the critical situation of gas leakage and are determined from ratios (6) and (7).

Determination of depressurization locations and analysis of results based on thermal imaging using computer vision methods

Modern information technologies make it possible to assess, forecast, and obtain detailed analyses based on images or other information. One of the examples is the use of computer vision to detect cracks, which is used in work [23]. There are many thermal imaging images of pipeline damage on the Internet.

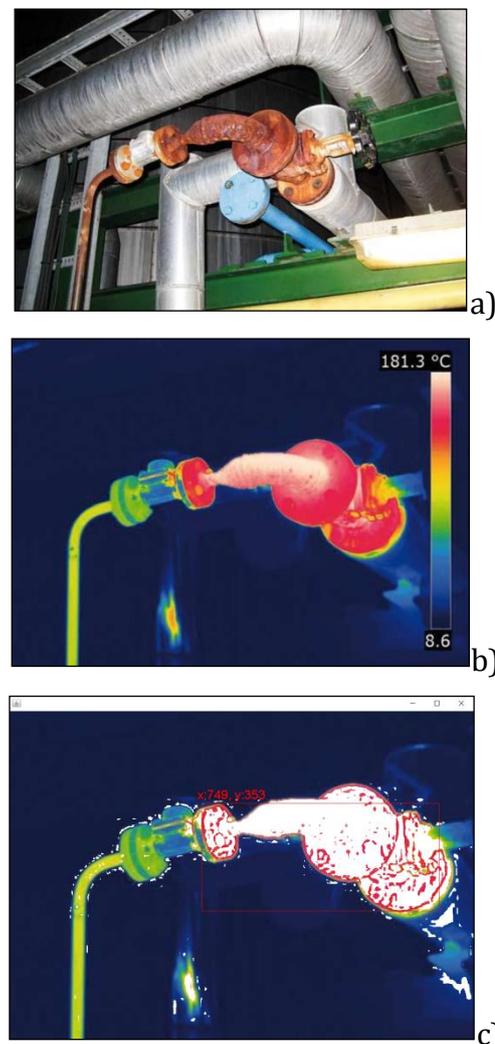


Figure 1 – The process of analyzing a damaged pipeline: a) – the original image of the pipeline [24], b) – the thermal image of the pipeline [25], c) – the processed image of the pipeline

The analysis process uses a thermal imaging device, as in Figure 2b, relative to the original Figure 2a. As seen in Figure 1b, processing the damaged pipeline image can be performed using the selection of specific colours in the thermal imaging image. The textural elements of the image in which the red is the most saturated stand out best. Thus, it can be concluded that the temperature of these elements in such areas is the highest. According to the pixel analysis of the red areas, the percentage of the damaged pipeline is equal to 0.016 of the total image size. The XY coordinates in the image are the centre of the selected rectangle.

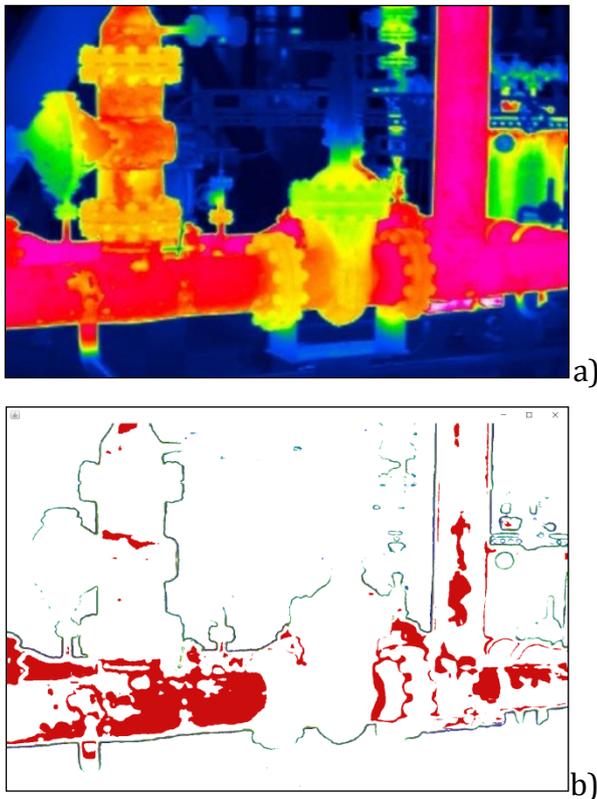


Figure 2 – Detection of pipeline damage in the room:
 a) – the thermal image of the pipeline [26],
 b) – the processed image of the pipeline

From Figure 2a, it can be seen that most of the pipe is under high temperatures. Potential breakout locations may be in areas with purple and red colours. It is problematic to determine such places visually from the picture. Most areas are smoothed out in a combination of red and purple colours. With the help of colour separation, it is possible to see potential places of depressurization in Figure 2b. Under the same conditions, the processed image contains 8.42% of the pipeline's red areas according to the image's

size. Moreover, red spots can be equated to potential damage.

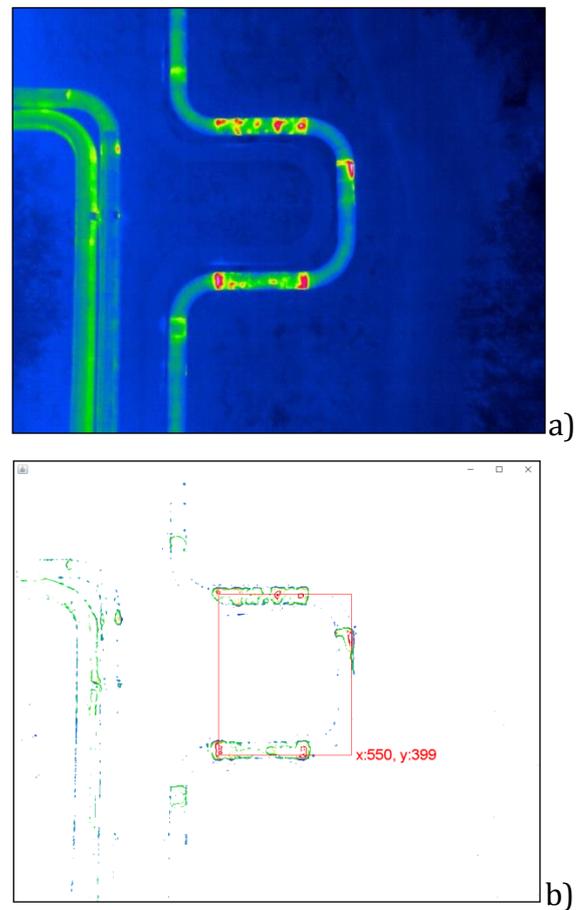


Figure 3 – A damaged pipeline from the aerial survey:
 a) – thermal imaging image of the pipeline [27],
 b) – the processed image of the pipeline

Figure 3a shows an aerial photo taken from a quadcopter of a part of the pipeline [27]. As a result, in Figure 3b, the analysis under unchanged conditions highlights the primary damage to the pipeline. As one assumption, it could be depressurization or other types of defects. The red areas in the image are 0.02% of the total image size.

In addition, a specific section of the junction of several pipelines is considered, and the place with the highest temperature is determined.

The highest temperature is observed at the junction of several pipelines in Figure 4a. The developed program determines the location of depressurization or damage at the central point with coordinates (629, 417). The percentage value of the probable damage from the image can be equal to 0.37, considering the amount of red area in the image to the total picture size.

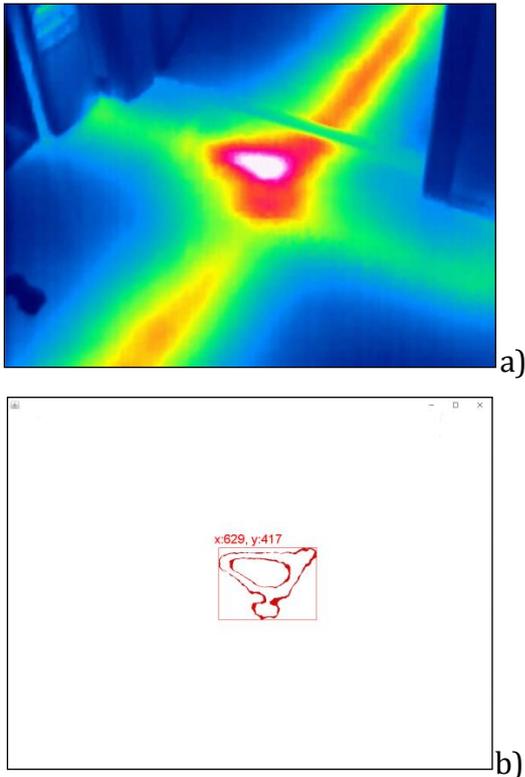


Figure 4 – A damaged pipeline at the junction of several pipes: a) – thermal imaging image of the pipeline [28], b) – the processed image of the pipeline

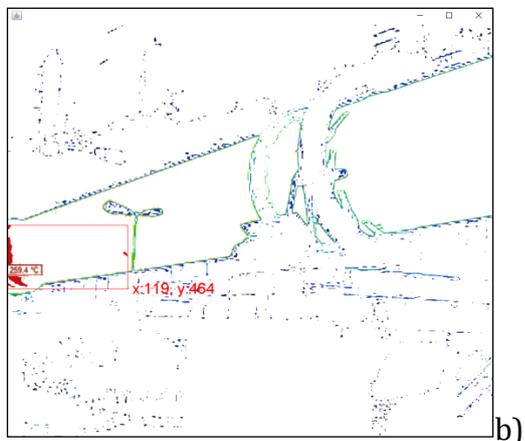
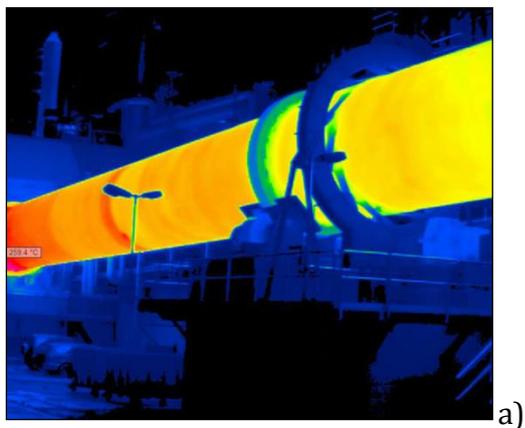


Figure 5 – Pipeline at an industrial facility: a) – thermal imaging image of the pipeline [29], b) – the processed image of the pipeline

In the more industrial section of the pipeline, the highest temperature is observed in the extreme section in Figure 5a. In addition to the potential damage location, several areas are identified that could cause the metal pipe to depressurize. The total damage in Figure 5b is 0.13% of the area with high temperatures to the full image size.

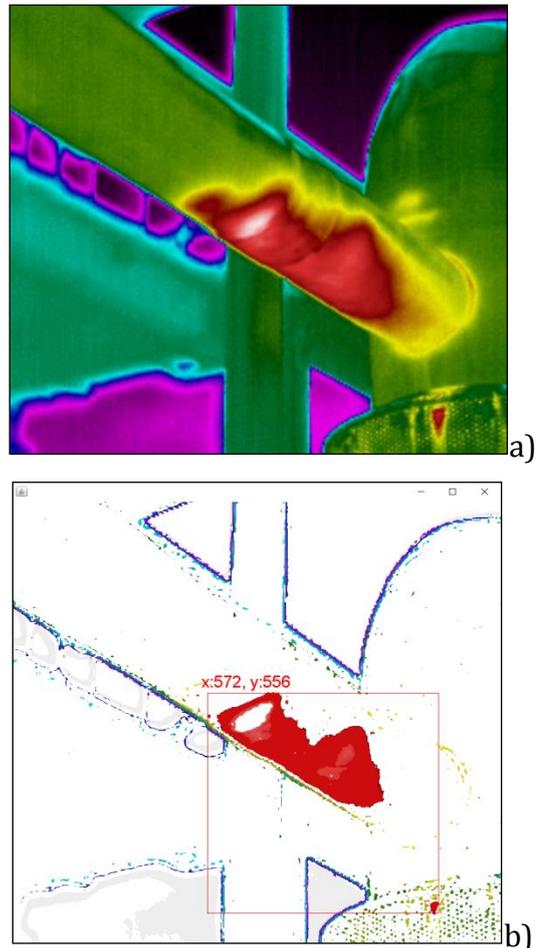


Figure 6 – Analysis of the damaged pipeline: a) – the thermal image of the pipeline [30], b) – the processed image of the pipeline

Figure 6a shows the input image with damage; Figure 6b shows the processed image with identified locations of pipeline damage. In this case, the second condition is excluded to focus attention only on the potentially dangerous area. In this case, the percentage of the damaged red zone to the total image size is 0.81.

Using Figure 6a, it is possible to analyze the change in the shade of colour by the size of the detected damage. At the same time, unnecessary contours can be made grey by removing the third condition from the program algorithm.

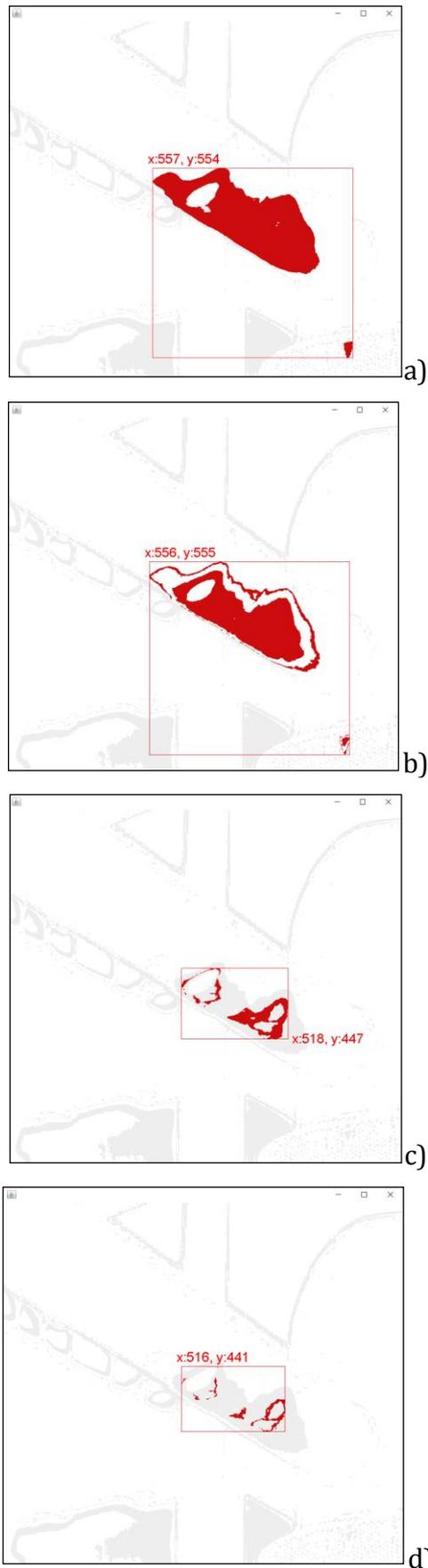


Figure 7 – Analysis of a damaged pipeline with different shades of damage colour: a) – red = 100 and green = 70 and blue = 70, b) – red = 150 and green = 100 and blue = 100, c) – red = 200 and green = 50 and blue = 50, d) – red = 210 and green = 50 and blue = 50

Figure 7a highlights the crack coverage area, which is the largest and is equal to 5.6% of the image size. Moreover, it constantly decreases with the change of colour in condition 1 of the described algorithm.

When changing the colour to RGB (150, 100, 100), the selected damage area is reduced to 4.3% of the image size, and when RGB (200, 50, 50) – 0.8% of the image size. The contours of potential damage stand out visually better in Figure 7d for the RGB (210, 50, 50) combination. In this case, the damaged area is 0.246% of the image size. Therefore, it can be assumed that the coordinates of the centre decrease according to the smaller number of points for a more saturated colour.

In investigating depressurization, an analysis is performed based on six thermal images using computer vision. The XY coordinates of the centre of damage are determined relative to images with selected areas of increased temperature based on data on the location of pixels in the picture.

Thermal imaging can show microcracks and other defects that are often overlooked but can be highlighted on objects using computer vision.

The following regularities are noticed. The place with the most significant saturation of a red colour can be considered the central damage place.

At the same time, the places highlighted in purple should be considered because, according to the temperature scale on some thermal images, these areas have an even higher temperature.

The main place of burning during depressurization can be placed with white colour on the thermal imaging image. In addition, the percentage of pixels highlighted in red relative to the total size of the thermal image can be considered to estimate the damaged area.

Formulated dependences of strength criteria and other information indicators can also be considered when examining the pipeline's damaged area.

CONCLUSIONS

1. An analysis of the analytical ratios characterizing the gas leakage and the quality of the system “main pipeline – installation of cathodic protection” is performed. Also, a set of informative parameters for determining the place of gas de-

pressurization on the surface of an underground metal pipe and an expression for evaluating the change in gas pressure after cracks have formed. In addition, a neural network method has been developed for predicting the stages of the transition of a corrosion cavern into the limit state, the appearance of a crack at the top of the cavern, and the transition of a crack into a critical state.

2. The places of degassing of pipelines are analyzed based on thermal imaging using computer vision methods. The main dependencies are described when the locations and area of damage are determined based on processed images. At the same time, more saturated colour can be used to detect a more precise placement of damage to the pipeline.

REFERENCES

1. Sopilnyk, L., Skrynkovskyy, R., Lozovan, V., Yuzevych, V., & Pawlowski, G. (2019). Determination of economic losses of gas transportation companies from accidents on gas transmission pipelines. *Path of Science*, 5(1), 1008–1017. doi: [10.22178/pos.42-4](https://doi.org/10.22178/pos.42-4)
2. Paliichuk, L. (2004). Rozghermetyzatsiia hazoprovodiv – dzherelo zabrudnennia dovkillia [Depressurization of gas pipelines is a source of environmental pollution]. *Naukovyi visnyk Ivano-Frankivskoho natsionalnogo tekhnichnogo universytetu nafty i hazu*, 3(9), 149–150 (in Ukrainian).
3. Honcharuk, M. (2003). Analiz prychnyn vtrat pryrodnoho hazu [Analysis of causes of natural gas losses]. *Naftova i hazova promyslovist*, 1, 51–53 (in Ukrainian).
4. Mandryk, O. (2013). Ekolohichni ta ekonomichni naslidky avarii na mahistralnykh hazoprovodakh [Environmental and economic consequences of accidents on main gas pipelines]. *Ekolohichna bezpeka ta zbalansovane resursokorystuvannia*, 1, 160–165 (in Ukrainian).
5. Hovdiak, R., & Kosnyriev, Yu. (2007). *Kilkisnyi analiz avariinoho ryzyku hazotransportnykh ob'iektiv pidvyshchanoi nebezpeky* [Quantitative analysis of emergency risk of high-risk gas transportation facilities]. Lviv: n. d. (in Ukrainian).
6. Fedorovych, I., & Horal, L. (2010). Metodychni aspekty vyznachennia ekonomichnykh vtrat vid vynyknennia avarii ta vidmov na mahistralnykh hazoprovodakh [Methodological aspects of determining economic losses from accidents and failures on main gas pipelines]. *Zbirnyk naukovykh prats NUK*, 5(434), 150–155 (in Ukrainian).
7. Honcharuk, M., Kryzhanivskiy, Ye., & Poberezhnyi, L. (2003). Koroziino-mekhanichna povedinka metalu hazoprovodu [Corrosion-mechanical behavior of gas pipeline metal]. *Naukovyi visnyk Natsionalnogo tekhnichnogo universytetu nafty i hazu*, 1(5), 54–59 (in Ukrainian).
8. Kovalko, M., Hrudz, V., Mykhalkiv, V., Tymkiv, D., Shlapak, L., & Kovalko, O. (2002). *Truboprovodnyi transport hazu* [Pipeline gas transportation]. Kyiv: Ahenstvo z ratsionalnogo vykorystannia enerhii ta ekolohii (in Ukrainian).
9. Rudnik, A. (2001). Tranzytni postavky hazu cherez terytorii Ukrainy: problemy ta perspektyvy [Transit gas supplies through the territory of Ukraine: problems and prospects]. *Rozvidka ta rozrobka naftovykh i hazovykh rodovyshch*, 1, 9–11 (in Ukrainian).
10. Honcharuk, M. (2003). Koroziia ta rozghermetyzatsiia hazoprovodiv [Corrosion and depressurization of gas pipelines]. *Naftova i hazova promyslovist*, 2, 56–57 (in Ukrainian).
11. Kryzhanivsky, Ye. I. (2005). Corrosive-Mechanical Behaviour of Buried Steel Gas Pipelines of Low and Average Pressure. *Nauka Ta Innovacii*, 1(5), 123–131. doi: [10.15407/scin1.05.123](https://doi.org/10.15407/scin1.05.123)
12. Arsenin, V. (1974). *Metody matematicheskoy fiziki i special'nye funktsii* [Methods of mathematical physics and special functions]. Moscow: Nauka (in Russian).
13. Kartashov, Je. (1985). *Analiticheskie metody v teorii teploprovodnosti tverdyh tel* [Analytical methods in the theory of thermal conductivity of solids]. Moscow: Vysshaja shkola (in Russian).

14. Avelino, A. M., de Paiva, J. A., da Silva, R. E. F., de Araujo, G. J. M., de Azevedo, F. M., de O. Quintaes, F., Maitelli, A. L., Neto, A. D. D., & Salazar, A. O. (2009). Real time leak detection system applied to oil pipelines using sonic technology and neural networks. *2009 35th Annual Conference of IEEE Industrial Electronics*. doi: [10.1109/iecon.2009.5415324](https://doi.org/10.1109/iecon.2009.5415324)
15. Santos, R. B., Sousa, E. O. de, Silva, F. V. da, Cruz, S. L. da, & Fileti, A. M. F. (2014). Detection and on-line prediction of leak magnitude in a gas pipeline using an acoustic method and neural network data processing. *Brazilian Journal of Chemical Engineering*, *31*(1), 145–153. doi: [10.1590/s0104-66322014000100014](https://doi.org/10.1590/s0104-66322014000100014)
16. Dzhala, R. M., Verbenets', B. Ya., & Melnyk, M. I. (2016). Measuring of Electric Potentials for the Diagnostics of Corrosion Protection of the Metal Structures. *Materials Science*, *52*(1), 140–145. doi: [10.1007/s11003-016-9936-y](https://doi.org/10.1007/s11003-016-9936-y)
17. Bermúdez, J.-R., López-Estrada, F.-R., Besançon, G., Valencia-Palomo, G., Torres, L., & Hernández, H.-R. (2018). Modeling and Simulation of a Hydraulic Network for Leak Diagnosis. *Mathematical and Computational Applications*, *23*(4), 70. doi: [10.3390/mca23040070](https://doi.org/10.3390/mca23040070)
18. Yuzevych, L., Skrynkovskyy, R., & Koman, B. (2017). Development of information support of quality management of underground pipelines. *EUREKA: Physics and Engineering*, *4*, 49–60. doi: [10.21303/2461-4262.2017.00392](https://doi.org/10.21303/2461-4262.2017.00392)
19. Yuzevych, V., Skrynkovskyy, R., & Koman, B. (2018). Intelligent Analysis of Data Systems for Defects in Underground Gas Pipeline. *2018 IEEE Second International Conference on Data Stream Mining; Processing (DSMP)*. doi: [10.1109/dsmp.2018.8478560](https://doi.org/10.1109/dsmp.2018.8478560)
20. Lozovan, V., Skrynkovskyy, R., Yuzevych, V., Yasynskiy, M., & Pawlowski, G. (2019). Forming the toolset for development of a system to control quality of operation of underground pipelines by oil and gas enterprises with the use of neural networks. *Eastern-European Journal of Enterprise Technologies*, *2*(5), 41–48. doi: [10.15587/1729-4061.2019.161484](https://doi.org/10.15587/1729-4061.2019.161484)
21. Lozovan, V., Dzhala, R., Skrynkovskyy, R., & Yuzevych, V. (2019). Detection of specific features in the functioning of a system for the anti-corrosion protection of underground pipelines at oil and gas enterprises using neural networks. *Eastern-European Journal of Enterprise Technologies*, *1*(5), 20–27. doi: [10.15587/1729-4061.2019.154999](https://doi.org/10.15587/1729-4061.2019.154999)
22. Yuzevych, L., Yankovska, L., Sopilnyk, L., Yuzevych, V., Skrynkovskyy, R., Koman, B., Yasynska-Damri, L., Heorhiadi, N., Dzhala, R., & Yasynskiy, M. (2019). Improvement of the toolset for diagnosing underground pipelines of oil and gas enterprises considering changes in internal working pressure. *Eastern-European Journal of Enterprise Technologies*, *6*(5), 23–29. doi: [10.15587/1729-4061.2019.184247](https://doi.org/10.15587/1729-4061.2019.184247)
23. Dinh, T. H., Ha, Q. P., & La, H. M. (2016). Computer vision-based method for concrete crack detection. *2016 14th International Conference on Control, Automation, Robotics and Vision (ICARCV)*. doi: [10.1109/icarcv.2016.7838682](https://doi.org/10.1109/icarcv.2016.7838682)
24. Maintworld. (n. d.). Kuva-4. Retrieved September 10, 2022, from https://www.maintworld.com/var/ezwebin_site/storage/images/media/images/kuva-4/2810-1-eng-GB/Kuva-4_large.jpg
25. Maintworld. (n. d.). Kuva-3. Retrieved September 10, 2022, from https://www.maintworld.com/var/ezwebin_site/storage/images/media/images/kuva-3/2806-1-eng-GB/Kuva-3_large.jpg
26. Tcorr Inspection. (2016). Pipeline. Retrieved September 10, 2022, from <https://www.tcorr.com.au/dev/wp-content/uploads/2016/10/Pipeline2.gif>
27. Workswell Thermal Imaging System. (2020). Pipeline. Retrieved September 10, 2022, from <https://www.drone-thermal-camera.com/wp-content/uploads/2020/01/Photo-03-01-2020-2-59-19-PM.jpg>

28. InfraTec. Pipeline. (n. d.). Thermal imaging image of the pipeline. Retrieved September 10, 2022, from <https://cdn.infratec.eu/en/thermography/service/thermography-service-support-glossar-leak-search-infratec.jpg>
29. Jenoptic. (n. d.). Thermal imaging image of the pipeline. Retrieved September 10, 2022, from <https://www.jenoptik.com/-/media/websiteimages/optics/optics-sys/evidir/thermal-image-rotary-kiln.jpg?impolicy=aoiv1&width=620&height=465>
30. Tcorr Inspection. (2016). The thermal image of the pipeline. Retrieved September 10, 2022, from <https://www.tcorr.com.au/dev/wp-content/uploads/2016/10/Pipeline-corosion-under-insulation.jpg>

From History to Modern Tendencies in the Sphere of Ethnolinguistics and Topical Issues in This Area

Aida Akif Mirzayeva¹

¹ *Baku Higher Oil School*

30 Khojaly ave., Baku, AZ1025, Azerbaijan

DOI: [10.22178/pos.86-3](https://doi.org/10.22178/pos.86-3)

LCC Subject Category: [PE1001-1693](#)

Received 20.09.2022

Accepted 20.10.2022

Published online 31.10.2022

Corresponding Author:

aidamirzayeva418@gmail.com

© 2022 The Author. This article is licensed under a [Creative Commons Attribution 4.0 License](#)



Abstract. As a linguistics field, ethnolinguistics is a science with great potential for development and research, in addition to having different names, tasks, goals and many controversial issues. This field of linguistics needs to be sufficiently studied and requires a more thorough investigation. From this point of view, the mentioned topic is crucial for modern linguistics. The object of ethnolinguistic research is language as a carrier of ethnocultural information, the relationship between language and folk mentality, and the role of language in the ethnic picture of the world. This article aims to shed light on the initial perception of the science and modern investigations in this field and draw attention to the topicality of the issue. For this purpose, throughout the research, the scientific literature related to the topic is analysed, and the development trends of Azerbaijani ethnolinguistics and its current state are reviewed and evaluated. The empirical analysis method was used during the research. From a practical point of view, the study can serve as a rich scientific resource for researchers conducting research in ethnolinguistics. As a result, it is noted that in the field of ethnolinguistics, which is developing as a particular field in Azerbaijani linguistics, new studies and research are conducted that resonate with the requirements of the modern stage of science, and they will contribute to world linguistics in this direction in the future.

Keywords: Language, ethnolinguistics, people, culture, Azerbaijani linguistics.

INTRODUCTION

As a linguistic discipline, ethnolinguistics began to develop in the first quarter of the 20th century in the United States under the name "Anthropological Linguistics", the founders of which were the American anthropologist F. Boas and his student E. Sapir. Later, B. Whorf, who is a follower of E. Sapir, in turn, developed this area. Both linguists considered the main task of ethnolinguistics to find differences in the picture of the world between language and culture. According to [32, p. 6], the "picture of the world" is the speaker's perception of the surrounding reality and the complex grammatical, lexical, historical, and cultural relationships that the language imposes on him.

However, the roots of ethnolinguistics trace back to the outstanding linguophilosopher W. von Humboldt, who studied various communities based on the spiritual organisation. He believed

that different languages are different visions, not just a different designation of the same thing. W. von Humboldt connects the vision of the world with the language spoken by the individual. In his opinion, other languages are more than different shells of human consciousness. They are different visions of the world. The scientist compares a foreign language between an object and a person with a language spoken between a person and nature, influencing him from the inside and outside. The researcher presents the nation as a circle of people to which it belongs, and, leaving it, he enters the process of another one [16, p. 37–38].

Undoubtedly, this judgment occurs in a circle of one nation since people in such a society speak the same language, have the same traditions and culture, and perceive another nation as a friend or enemy. However, in the modern world, people usually do not live in isolation, and any society consists of several people speaking different lan-

guages. On the one hand, the language is part of the people where it came from, but on the other hand, there are peoples in history who have adopted the language of another group of people and consider it their own. Thus, not only do people form a language, but language also forms people.

W. Humboldt's followers E. Sapir and B. Whorf put forward a hypothesis about linguistic relativity. According to them, people see the world in their way. Therefore, each nation differently reflects the real world. Language creates a picture of the world with the help of the thinking and worldview of the people [32, p. 245–247]. The role of B. Whorf in modern ethnolinguistics is perceived differently by anthropologists and linguists, not psychologists. Anthropologists and linguists are still interested in scientists' ideas about linguistic relativity and the critical importance of grammatical categories. As the Canadian researcher R. Darnell explains, B. Whorf raised a topical issue but needed an insufficiently complete methodology [8, p. 82–95].

Unlike previous studies, in this article, we plan to consider new development trends in ethnolinguistics and its fundamental issues for modern linguistics to analyse the future development of this area.

METHODS AND MATERIALS

The study used an empirical method, a method of analysing scientific literature and information, as well as an assessment of various approaches to this topic. The research material is scientific and theoretical literature.

RESULTS AND DISCUSSION

Modern Tendencies in the Sphere of Ethnolinguistics. Ethnolinguistics is a relatively new discipline and is located at the intersection of linguistics and ethnology. The term “ethnolinguistics” is commonly used in Russia, while it is called “Anthropological Linguistics” in foreign linguistics. The second term has a wider use due to the widespread use of the English Language [29, p. 12]. Anthropology includes a wider field of knowledge and studies a person in all areas of his manifestation and development. There are two branches of this field – Physical Anthropology and Cultural Anthropology. Physical Anthropology reveals man as a biological species, studying

his origin, evolution, and racial differences of humanity. In Russian linguistics, this branch is called Anthropology. The subject of Cultural Anthropology is the study of the culture of peoples and societies. In Russian linguistics, this science is called “ethnology”. Initially, this discipline was called “ethnography”, but it had only a descriptive character, studying a particular people's material and spiritual culture. At the same time, ethnology deals with interpreting the data obtained [29, p. 12–13].

To determine what is the object of ethnolinguistics, one should analyse the sciences from which it originated. Undoubtedly, the science of linguistics studies a language. E. Benveniste offers two subjects for the study of linguistics. According to him, linguistics is the science of language and languages. On the one hand, he considers language as the ability to speak, a universal characteristic of a person, as something unchanging. On the other hand, it implies separate languages that are constantly changing and in which this ability is realised [4, p. 21–22].

The main objects of ethnolinguistics are ethnic mentality, ethnic stereotype, ethnic culture, ethnic processes and ethnogenesis. The term “ethnic mentality” refers to the mentality of a nation, which has developed over many years and sometimes centuries, mainly due to culture and lifestyle. An ethnic stereotype is the perception of representatives of a different ethnic community through the prism of their thinking. On the other hand, ethnic culture is a set of cultural values inherent in people. As a result of ethnic processes, the features of an ethnic group can change, which may be accompanied by a change in cultural values, the development of a language, or the loss or change in customs [11, p. 1].

The subject of ethnolinguistic research is language as a carrier of ethnocultural information, the relationship between language and folk mentality, and the role of language in the ethnic picture of the world. For the first time, the concept of a “picture of the world” was touched upon by [14, p. 30]. In this term, the researcher combines the idea of a nation with another nation and a vision of themselves, their actions and their activity in the world [31, p. 18].

According to [9], a researcher is interested in the world and the ethnos that reflect its image while studying the linguistic world. The primary means of depicting an image is based on the result of communication. However, with the ineffective-

ness of cognitive and communicative means, other means of the semiotic system can be involved, such as painting, music, etc.

The modern Canadian scientist M. Danesi indicates that anthropological linguistics aims to study languages by collecting data directly from native speakers. The central idea of this approach, which he called ethnography, or participant observation, is that a linguist can better understand language and its relation to culture by observing language used in its natural social context [7].

The primary source for ethno-linguistics. The primary source for ethno-linguistics is etymological and dialect dictionaries, which include hundreds of words and expressions of folk vocabulary, making it possible to study the origin of ethnonyms in detail and penetrate the origins of folk culture. The main advantage of these dictionaries is that they include specific words used in the local environment that is not found in the literary language. Their illustrative material is derived from records of folk speech conversations. It is an invaluable source for analysing modern processes in society, speech situations, and people's attitudes towards their Language, neighbours, their Language, and other peoples. At the same time, literary texts make it possible to outline the image of a native speaker and provide a portrait of him from various strata of society [22, p.10-11].

Ethno-linguistics, existing at the intersection of linguistics and ethnology, has absorbed the data and methods of both sciences. Ethnology, in turn, is a science that studies people and their spiritual and material culture. This science examines the culture of humanity as a whole, describing the standard features inherent in all cultures and a separate nation with the peculiarities of its ethnic culture. However, one should remember the connection of ethno-linguistics with history and geography. As is known, many historical events have left their traces in the language, being the reason for the creation of many ethnonyms. At the same time, the geographical location is also of no minor importance [29, p. 13].

The difficulty of coordinating names lies in the fact that the term "linguistic anthropology", or ethno-linguistics, adopted by us in this scientific work, is associated with a change in the concept of discipline, or rather, the expansion of its focus, methods and theoretical orientation. As A. Duranty notes, from an almost exclusive interest in documenting the grammar of aboriginal

languages in North America and other continents, linguistic anthropology has moved to colloquial speech through social contexts throughout people's lives [10].

There is no doubt the connection between ethno-linguistics and sociolinguistics. The famous modern English scientist P. Trudgill points out two functions of the language: firstly, to establish a social relationship, and secondly, to convey information about the speaker. According to the researcher, if, during a conversation between two Englishmen, one of them comes from Norfolk County, he will speak the same way as people from that region. If the speaker is a middle-class businessman, his speech will correspond to the dialect of people in this profession. The examples establish a connection between Language and society [36, p. 2].

The author [35] characterised the relationship between language and the conceptual picture of the world as colouring the language through the system of its knowledge and their associations with national and cultural colours. However, the author [40] considers the reduction of the picture of the world to the conceptual system of its meaning as a narrowing and suggests that it is impossible to analyse the linguistic "picture of the world" only as part of the conceptual one.

Indeed, the concept of "picture of the world" has a relatively broad meaning, expressing the totality of knowledge, ideas, and opinions of the human community and its representative, based on their worldview, worldview, worldview and worldview. The prevailing ideas in any picture of the world are associated with value ideas against the background of philosophical, religious, scientific, aesthetic and everyday consciousness.

The author [39], the English anthropologist of the 19th century, is considered the father of Cultural Anthropology, who first determined the context of the scientific study of anthropology. The scientist points to the functional basis for the development of society and religion, which he defined as universal. Tylor argued that all clubs went through three main stages of development: from savagery through barbarism to civilisation. The scientist is also the founder of the science of social anthropology, and his scientific work helped build the discipline of anthropology in the nineteenth century. He believed that research in human history and prehistory could be used as a basis for the reform of British society.

Authors [38] believe that in any communication, speakers react to the social characteristics of their interlocutors and, as a result, can correct their linguistic behaviour. In addition to acting in response to the personal identity of interacting and actual use of linguistic features, speakers view their interlocutors as members of social groups. They may respond to perceived linguistic practices associated with those social groups. Socio-indicative meanings tied to linguistic forms are critical to this perceived usage. By examining linguistic variation in multiple-speaker interactions, we can shed light on settlement processes and the social meaning attached to linguistic forms.

The author [37] points out the importance of the semantic meaning of words and disagrees with the opinion of comparative linguists, who often believe that they can leave speech, content and meaning behind, focusing on a supposedly "deeper" level of language, grammatical form and construction. The researcher considers such an attitude as an absurd misunderstanding of the very nature of philology, denoting the love of language, and adds that if we leave meaning behind, then we leave people behind, and language about people is language about us.

Etymology research in Azerbaijani linguistics. Some studies related to ethnonyms have been carried out in Azerbaijani onomastics. It should be emphasised that A. Gurbanov is the founder of onomastic in Azerbaijan. Under the term "onomastics", the scientist united all proper names in the language. According to him, onomastics can be used broadly, covering the names of continents, countries and other large territories (macroonomastics) – the onomastics of Europe, the onomastics of America, and also, in the narrow sense, associated with small regions – the onomastics of Sheki. In an even narrower sense, it can be used as the onomastics of a certain author – the onomastics of the works of M. Hussein [30, p. 15–16]. The academician made a historical contribution to the development of Turkic linguistics in Azerbaijan and on a global scale [23, p. 7].

A great contribution to the onomastics of Azerbaijan, namely toponymy, was made by the great scientist G. Meshadiev. The scientist is engaged in studying toponyms of Turkic origin on the territory of Azerbaijan and beyond. The author, using historical and linguistic methods, reveals the

origin of toponyms of Turkic origin in the region of Transcaucasia [25].

Several scientific works on onomastics were written by such prominent scientists as [6, 20, 5] and many other researchers. But ethnonyms in most works are mainly considered in close connection with toponyms or anthroponyms. On the territory of present-day Azerbaijan, there are many ethnonyms derived from ethnotoponyms. They were studied by [19; 18, p. 8–11; 27; 28] and other geographers, historians and linguists. B. Khalilov conducted an etymological analysis of ethnonyms based on the work of M. Kashgari [21]. A. Bakikhanov mentioned the names of Azerbaijani tribes and localities and concluded that if you carefully examine the names of tribes, villages, buildings, ancient borders of the country, you can determine the origin of its population [3, p. 99–108].

Scientist G. Geybullayev, who most carefully studied the ethnogenesis of Azerbaijanis, is the author of books and numerous articles, such as [13, 12]. E. Ahmedova, who studies the Azerbaijani language ethnonyms, published the [2] in 2017, including about 300 ethnonyms with an explanation of their origin. Z. Abbasova, who studied onomastic units in poetry, writes: "Onomastic units used in written literature are more realistic indicators of life. However, in oral and written literature, onomastic units have rich stylistic possibilities" [1, p. 6]. The scientist studied the linguistic features of many onomastic units in the works of E. Efendiev, including ethnonyms.

In general, ethnonymy is less developed in Azerbaijan than anthroponymy or toponymy. A. Mikhailova explores anthroponyms, toponyms and idioms. The author notes that anthroponymy is the primary and most widespread area of onomastics [26, p. 9]. J. Huseynova also notes the importance of anthroponyms and toponyms in studying onomastic units [17, p. 9]. I. Mammadov notes that the ethnographic vocabulary of the Azerbaijani Language consists of everyday vocabulary and words related to finance, moral culture, traditions, folklore, and phraseological units [27, p. 24].

Mamedova K. studied the ethnographic realities of the English Language. The author divides them into denotative and connotative realities and notes that denotative realities reflect a particular people's cultural, historical, and geographical features [24, p. 3]. F. Gurbanova notes the need to study anthroponymy in Azerbaijan [15, p. 3].

A. Abbasova writes: "The relevance of studying Azerbaijani anthroponymic facts in comparison with the material of the English language is undeniable" [1, p. 3]. The spheres of research of Azerbaijani scientists indicated in the scientific work once again confirm that toponyms and anthroponyms are onomastic priority units.

CONCLUSIONS

Thus, ethnolinguistics as a field of linguistics, in addition to having different names, tasks, goals and many controversial issues, is a science with great potential for development and research. This field of linguistics needs to be sufficiently studied and requires a more thorough investigation.

REFERENCES

1. Abbasova, Z. (2016). *Elchin Afandiyev yaradycylyg'ynnda onomastik vahidlarin linqvistik khususijatlari* [Linguistic features of onomastic units in the works of Elchin Efendiyev]. Baku: n. d. (in Azerbaijani).
2. Ahmadova, E. (1995). *Azarbajzhdan etnonimlarinin leksik-semantik tadqiqi* [Lexical-semantic study of Azerbaijan ethnonyms]. Baku: n. d. (in Azerbaijani).
3. Bakikhanov, A. (2000). *Gulustani-Iram* [Gulustani-Iram]. Baku: Minara (in Azerbaijani).
4. Benvenist, E. (1974). *Obshaja lingvistika* [General Linguistics]. Moscow: Progress (in Russian).
5. Budagov, B. (1994). *Turk khalqlarynyn torpaq yaddashy* [Land memory of Turkic nations]. Baku: Elm. (in Azerbaijani).
6. Bunyadov, Z. (1960). *Azarbajzhdan arkeologiyasyna dair ocherklar* [Essays on the archeology of Azerbaijan]. Baku: Azernashr (in Azerbaijani).
7. Danesi, M. (2004). *Basic Course in Anthropological Linguistics*. Toronto: Canadian Scholars' Press Inc.
8. Darnell, R. (2006). Benjamin Lee Whorf and the Boasian foundations of contemporary ethnolinguistics. *Language, Culture, and Society*, 82–95. doi: [10.1017/cbo9780511616792.004](https://doi.org/10.1017/cbo9780511616792.004)
9. Domashev, A. (2017). Kartina mira kak osnova jetnicheskogo samosoznaniya [The picture of the world as the basis of ethnic self-consciousness]. *World of science, culture, education*, 3(64), 300 (in Russian).
10. Duranti, A. (2005). [History of Linguistic Anthropology](https://www.eolss.net). In *UNESCO Encyclopedia of Life Support Systems*. Oxford: EOLSS Publishers. www.eolss.net
11. Encyclopedia. (2022). Around the World. Retrieved September 10, 2022, from <http://www.krugosvet.ru/articles/77/1007708/10077008/10077008a1.htm> (in Russian).
12. Geibullaev, G. (1986). *Azarbajzhdan toponimiyasy* [Toponymy of Azerbaijan]. Baku: Elm (in Azerbaijani).
13. Gejullaev, G. (1991). *Azarbajzhdanlylaryn etnogenezi* [Ethnogenesis of Azerbaijanis] (Vol. 1). Baku: Elm (in Azerbaijani).
14. Gulick, D. (1999). Vtorichnye jetnonimy i jetnonimicheskie proizvodnye anglijskogo jazyka v svete jazykovej kartiny mira [Secondary ethnonyms and ethnonym derivatives of the English language in the light of the linguistic picture of the world]. *Onomastika i dialektnaja leksika*, 3, 81–86 (in Russian).
15. Gurbanova, F. (2013). *Antroponimiyany asaslary (Azarbazhdan, ingilis va alman dillarinin materiallary asasynda)* [The basics of anthroponymy (based on the materials of the Azerbaijani, English and German languages)]. Baku: n. d. (in Azerbaijani).
16. Humboldt, V. (1984). O razlichii stroenija chelovecheskih jazykov i ego vlijanii na duhovnoe razvitie chelovechestva (1830-1835) [On the difference in the structure of human languages and its influence on the spiritual development of mankind (1830-1835)]. In *Izbrannye raboty po jazykoznaniju*. Moscow: n. d. (in Russian).

17. Huseynova, C. (2017). *Mehdi Husejn romanlarynda antroponim və toponimlerin linqvistik xususijatlari* [Linguistic features of anthroponyms and toponyms in Mehdi Huseyn's novels]. Baku: n. d. (in Azerbaijani).
18. Huseynzade, A. (1975). Sabunchu toponiminin manshaji [The origin of the toponym Sabunchu]. *ASSR Scientific works of the Ministry of Higher and Secondary Specialized Education, History and philosophy series*, 7, 8–11 (in Azerbaijani).
19. Juzbashov, R. (1966). *Azərbayzhdan zhdog'rafijasy terminlari* [Azerbaijan geography terms]. Baku: Azerb. SSR EA (in Azerbaijani).
20. Khalilov, B. (2008). *Muasir Azərbaycan dilinin leksikasy* [Lexicology of modern Azerbaijani language]. Baku: Nurlan (in Azerbaijani).
21. Khalilov, B. (2009). *Mahmud Kashgarinin "Divani - luqat -it-turk" asarindaki etnonimlar* [Ethnonyms in Mahmud Kashgari's "Divani - lugat -it-Turk"]. Baku: Garisma (in Azerbaijani).
22. Kryuchkov, V. (2011). *Osnovy jetno- i sociolingvistiki* [Fundamentals of ethno- and sociolinguistics]. Saratov: Saratov National Research Institute named after N. G. Chernyshevsky (in Russian).
23. Mammadov, I. (2008). *Azərbayzhdan dilinin etnografik leksikasy* [Ethnographic lexicon of the Azerbaijani language]. Baku: Elm (in Azerbaijani).
24. Mammadova, Kh. (2013). *İngilis dilinin leksik inkishafynda etnografik fonun rolu* [The role of the ethnographic background in the lexical development of the English language]. Baku: n. d. (in Azerbaijani).
25. Mashadiyev, G. (1990). *Zaqafqaziyanın azərbaycanca toponimləri* [Azerbaijani toponyms of Transcaucasia]. Baku: Elm (in Azerbaijani).
26. Mikajylova, A. (2008). *Onomastik vahidların uslub imkanlary* [Stylistic possibilities of onomastic units]. Baku: n. d. (in Azerbaijani).
27. Mollazadeh, S. (1973). *Cog'rafi adlar və Azərbaycan dilinin tarixi* [Geographical names and the history of the Azerbaijani language]. Baku: Elm (in Azerbaijani).
28. Mollazadeh, S. (1979). *Azərbayzhdanyn shimal rayonlarynyn toponimijasy* [Toponymy of northern regions of Azerbaijan]. Baku: Maarif (in Azerbaijani).
29. Perekhval'skaya, Je. (2018). *Etnolingvistika* [Ethnolinguistics]. Moscow: Yurajt (in Russian).
30. Qurbanov, A. (2019). *Azərbayzhdan onomalogijasyynyn asaslary* [Fundamentals of Azerbaijani onomalogy] (Vol. 1). Baku: Azerbaijan National Academy of Sciences (in Azerbaijani).
31. Redfield, R. (1955). *The Little Community: Viewpoints for the Study of a Human Whole*. Chicago: University of Chicago Press.
32. Sapir, E. (1934). *Jazyk* [Language]. Moscow: Gosudarstvennoe social'no-jekonomicheskoe izdatel'stvo (in Russian).
33. Sejdalijev, N. (2019). *Afad Gurbanov va Umumi dilchilik* [Afad Gurbanov and General Linguistics]. Baku: n. d. (in Azerbaijani).
34. Sirotkina, T.A. (2009). Jetnonimija kak ob'ekt jetnolingvistiki (na materiale jetnonimov Permskogo kraja) [Ethnonymy as an object of ethnolinguistics (on material ethnonyms of the Perm region)]. *Etnolingvistika. Onomastika. Jetimologicheskie materialy mezhdunarodnoj nauchnoj konferencii*, 8(12), 245–247 (in Russian).
35. Teliya, V. (1988). *Metaforizacija i ee rol' v sozdanii jazykovoj kartiny mira: Rol' chelovecheskogo faktora v jazyke* [Metaphorization and its role in creating a linguistic picture of the world: The role of the human factor in language]. Moscow: Nauka (in Russian).
36. Trudgill, P. (2013). *Sociolinguistics an Introduction to Language and Society* (4th ed.). London: MTM.
37. Underhill, J. W. (2012). *Ethnolinguistics and Cultural Concepts*. doi: [10.1017/cbo9780511862540](https://doi.org/10.1017/cbo9780511862540)

38. Watt, D., Llamas, C., & Ezra Johnson, D. (2010). Levels of Linguistic Accommodation across a National Border. *Journal of English Linguistics*, 38(3), 270–289. doi: [10.1177/0075424210373039](https://doi.org/10.1177/0075424210373039)
39. Wikipedia. (2022). *Edward Burnett Tylor*. Retrieved September 10, 2022, from https://en.wikipedia.org/wiki/Edward_Burnett_Tylor
40. Yeshich, M. (2000). *Jazyk kak sredstvo peredachi kul'tury* [Language as a means of transmitting culture]. Moscow: Nauka (in Russian).

Специфіка відображення граматичної інформації у «Словнику мови усної народної словесності»

The Specificity of the Display of Grammatical Information in the “Dictionary of the Language of Oral Folk Literature”

Руслан Сердега¹
Ruslan Serdeha

¹ V. N. Karazin Kharkiv National University
4 Svobody maidan, Kharkiv, 61022, Ukraine

DOI: [10.22178/pos.86-7](https://doi.org/10.22178/pos.86-7)

LCC Subject Category:
[PE1001-1693](#)

Received 10.09.2022
Accepted 20.10.2022
Published online 31.10.2022

Corresponding Author:
ruslan.serdega@ukr.net

© 2022 The Author. This article
is licensed under a Creative
Commons Attribution 4.0
License 

Анотація. Мова фольклору своєрідна. Вона має виразні особливості на кожному мовно-структурному рівні. Граматика творів усної народної словесності теж має свою специфіку. Словник мови фольклору повинен мати виразне лінгвістичне спрямування. Вокабула, або ж реєстрова частина лінгвістичного словника, обов'язково має містити граматичну інформацію про слово. Подати усю граматичну інформацію про лексему, яка вноситься до реєстру словника, практично неможливо. Укладачам лексикографічних праць завжди доводиться обмежуватися певним найнеобхіднішим мінімумом, потрібним і достатнім для виконання тієї мети, яку вони перед собою ставлять. У цій розвідці ми спробуємо запропонувати такий граматичний мінімум, який буде, на нашу думку, достатнім для кваліфікованого лексикографічного опису граматики тих словесних фактів, що наявні у мові фольклору.

Мова фольклору – це передусім усне мовлення, для якого властивим є варіантність, причому не тільки на рівні текстів, а й на рівні граматики. Традиційно при іменниках подають флексію родового відмінка. Основні варіанти флексій цього відмінка обов'язково мають бути відбиті у Словнику усної народної словесності. При заголовних словах-іменниках необхідно подавати ремарку, що вказує на рід. Також необхідно фіксувати й певні дані про категорію числа, зокрема відзначати множинні іменники. Прикметники, порядкові числівники, займенники прикметникового типу фіксуємо в початковій формі (називний відмінок чоловічого роду однини). Досить характерними для текстів фольклору є нестягнені та короткі форми. Ця виразна граматична особливість вищезгаданих частин мови також потребує, на нашу думку, відображення у словниковій статті. Традиційно в українських лексикографічних працях указуються займенники, прислівники, вигуки, службові частини мови. Словникові статті, до яких входять дієслова, а вони зазвичай подаються в інфінітиві, традиційно будемо супроводжувати особливими формами (першою та другою особою однини або за необхідності іншими закінченнями). Обов'язково вказуватимемо вид дієслів, категорію перехідності і, якщо треба, неперехідності, особливо в тих випадках, якщо дієслово може виступати в текстах фольклору в обох граматичних формах. Неозначені форми на **-ти** і **-ть** слід подавати, на нашу думку, в одній словниковій статті. Дієслівні варіанти з суфіксами **-ова** й **-ува** слід подавати теж в одній словниковій статті, але форму на **-ова** виносити окремо без тлумачення і відсилати за допомогою перехресного посилання до основної форми з суфіксом **-ува**. До граматичної інформації можна включати й ті параметри, що виявляють себе нерегулярно, тому є непередбачуваними у певній загальній моделі лексикографічного опису.

Ключові слова: граматична інформація; Словник мови усної народної словесності; мова фольклору; фольклор.

Abstract. The language of folklore is peculiar. It has distinctive features at each linguistic and structural level. The grammar of works of oral folklore also has its specifics. The vocabulary of the folklore language should have an expressive linguistic direction. The vocabulary, or the register part of the linguistic dictionary, must contain grammatical information about the word. It is almost impossible to provide all the grammatical information about a lexeme entered into the dictionary register. Compilers of lexicographical works always have to limit themselves to a certain minimum necessary and sufficient to fulfil their purpose. In this paper, we will offer such a grammatical minimum, which, in our opinion, will be adequate for a qualified lexicographical description of the grammar of those verbal facts that are available in the language of folklore.

The language of folklore is primarily oral speech, characterized by variability, not only at the level of texts but also at the grammar level. Traditionally, nouns are inflected with the genitive case. In this case, the main variants of inflexions must be reflected in the Dictionary of Oral Folklore. For head nouns, it is necessary to give a remark indicating the gender. It is also essential to record specific data on the number category to mark plural nouns. Adjectives, ordinal numerals, and adjectival pronouns are recorded in the original form (masculine singular nominative case). Unstressed and short forms are pretty typical for folklore texts. This expressive grammatical feature of the parts mentioned above of speech also needs, in our opinion, to be reflected in the dictionary entry. Traditionally, in Ukrainian lexicographical works, pronouns, adverbs, interjections, and service parts of speech are indicated. Dictionary entries, which include verbs, usually given in the infinitive, will traditionally be accompanied by personal forms (first and second-person singular or other endings if necessary). Be sure to indicate the type of verbs, the category of transitivity and, if necessary, intransitivity, especially in cases where the verb can appear in folklore texts in both grammatical forms. We believe indefinite forms in **-ти** and **-ть** should be given in one dictionary entry. Verb variants with the suffixes **-ова** and **-ува** should also be given in the same entry, but the form in **-ова** should be given separately without interpretation and cross-referenced to the main form with the suffix **-ува**. Grammatical information may also include those parameters that appear irregularly and are, therefore, unpredictable in a certain general model of lexicographic description.

Keywords: grammatical information; Dictionary of oral folklore language; folklore language; folklore.

ВСТУП

Мова фольклору має особливості, які позначаються на всіх структурних рівнях, у тім числі й граматичному. На певні особливості граматики фольклорного тексту звертала увагу Н. М. Журавльова. Дослідниця відзначила, що рід використовуваних у творах усної і народної словесності іменників може відрізнятися від літературної мови, її загальноприйнятих еталонів. Причому хитання в роді, як зазначає Н. М. Журавльова, може спостерігатись у різних піснях, записаних в одній місцевості, або навіть у тій самій пісні [43, с. 49]. Граматичні особливості, вживаних у текстах українського фольклору прикметників, досліджували М. В. Іщук [24], Ю. В. Грицевич [21].

Мова усної народної творчості – це досить вагома форма будь-якої національної мови, зокрема й української. Вона суттєво впливала на формування й розвиток усної та писемної мовної практики українського народу. Доцільність і необхідність спеціального словника мови фольклору задавалось би не має викликати жодних сумнівів у філологів, проте українська усна народна творчість і досі не була об'єктом систематичного лексикографування. Слова, використовувані в усній народній словесності, можуть і мають бути об'єктом словникарства. Фольклорна лексикографія повинна стати одним із пріоритетних напрямів лінгвофольклористики, а створення словників мови фольклору – одним із головних

практичних завдань і цієї галузі знання, і української лінгвістики загалом.

Проблеми лексикографічного опису мови усної народної творчості торкаються у своїх працях такі українські мовознавці, як Т. П. Беценко, Н. О. Данилюк і Н. С. Колесник. Т. П. Беценко надала зразки лексикографування текстово-образних одиниць українських народних дум [3]. Граматичних позначок при описуваних словесних фактах, вилучених із текстів народних дум, вона практично не дає, хоча в «Словнику складних слів» [3, с. 68–82] натрапляємо на умовні скорочення, що вказують на частиномовну належність композитів і юкстапозитів (*дієсл.* – дієслово, *імен.* – іменник, *прикм.* – прикметник, *присл.* – прислівник): **цвісти-процвітати** *дієсл.*; **білозір** *імен.*, **царь-король** *імен.*; **цвіткована-мальована** *прикм.*; **трудно-нудно** *присл.* Заявлені в цій праці також позначки *займ.* – займенник, *числ.* – числівник, проте відповідних прикладів не наведено. Н. О. Данилюк належної уваги граматичній інформації про фольклорне слово теж не приділяє, хоч воно й має виразні особливості на цьому рівні. На її думку, у словнику мови фольклору «важливо представити не стільки частиномовну належність одиниць, скільки їхні семантико-синтаксичні функції» [9, с. 252]. Н. С. Колесник цікавили фольклорні власні назви. Вона запропонувала структуру словникової статті словника фольклоронімів, яка, на її думку, має містити, безперечно, спочатку реєстрове слово, потім у дужках указівку щодо загальної кількості його вживань, варіанти власної назви. Подала зразки лексикографування онімів бурлацьких та наймитських пісень [26], однак граматичні показники слова опускає. Деякі зразки лексикографування іменників та прикметників, вилучених із текстів фольклору, подано нами в статті «Граматичні риси народнопоетичних лексем та проблема їх відбиття у Словнику мови фольклору» [34], проте потрібно й далі вести пошуки в цьому напрямку. Словник мови фольклору, як і Словник мови письменника, повинен мати виразне лінгвістичне спрямування.

Вокабула, або ж реєстрова частина лінгвістичного словника, обов'язково має містити граматичну інформацію. Така інформація має на меті вказати найхарактерніші морфологічні та синтаксичні особливості тієї лексичної одиниці, що виноситься в заголовок словникової статті. Зрозуміло, що подати усю грама-

тичну інформацію про слово, яке лексикографується, практично неможливо. Укладачам словників завжди доводиться обмежуватися певним найнеобхіднішим мінімумом, потрібним і достатнім для виконання тієї мети, яку вони перед собою ставлять. У цій розвідці ми спробуємо запропонувати такий граматичний мінімум, який буде, на нашу думку, достатнім для кваліфікованого лексикографічного опису граматики тих словесних фактів, що наявні у мові фольклору.

РЕЗУЛЬТАТИ ДОСЛІДЖЕННЯ

Граматична інформація зазвичай містить дані про деякі форми непрямих відмінків іменників, передусім тих, що викликають певні труднощі у мовців. Традиційно при іменниках подають флексію родового відмінка: **ЗЕМЛЯ**, -і. *Своєї землі не мати – по світу блукати* [7, с. 22]; **СОБАКА**, -и. *Не собака, а на цепу, не людина, а ходить* [22, с. 45]; **ДОЩ**, -у. *Дорога після дощу була дуже погана* [37, с. 84]; **ПАРУБОК**, -бка. *Вийшов парубок один до сповіді* [6, с. 15]; **ДОБРО**, -а. *Вони й тепер там живуть і постолом добро возять* [32, с. 49]; **МІСЦЕ**, -я. *Колись давно село наше Кацмазова було на іншому місці, не тут, де тепер* [28, с. 155]; **КОХАННЯ**, -я. *Пісня та мила, пісня та люба – / Все про кохання, все про любов, / Як ми любились та й розійшлися, / Тепер зійшлися навіки знов* [11, с. 116]; **ПОСТІЛЬ**, -тєлі. *Первая любила – подарочок шила, / Другая любила – постіль білу слала* [33, с. 9]; **ХЛОП'Я**, -яти. *Прийшов раз селянин до пана з якимсь проханням, а з ним і мале хлоп'я припленталося – його дитина* [18, с. 4].

У текстах усної народної творчості спостерігаємо хитання в родовому відмінкові іменників II відміни чоловічого роду. Причому паралельність закінчень, їх варіантність у мові фольклору не настільки залежить від семантики, як це ми спостерігаємо в літературній мові, де вибір флексії залежить, наприклад, від значення одиничності (-а або -я) чи збірності (-у або -ю). Візьмемо зокрема слово «камінь». Так, згадана семантика *одиничності* / *збірності* певною мірою зумовлює використання того або того варіанта. Порівняймо, наприклад, такі контексти: *–Який же ти сільний? Я он, бач...–Та взяв камінь, як здавив, так з каменя мука й посипалась* [42, с. 194]; *Там, де Ятрань круто в'ється, вода з-під каменю біжить, / Там дівчина, а як зветься, –*

козак знає, та мовчить [19, с. 209]; *Тече вода з-під каменя, кінь не хоче пити, / Приступило до дівчини – не хоче любити* [11, с. 257]. У першому з них маємо виразне одиничне значення, що до двох останніх, то тут може бути значення збірності в одному випадку (вода біжить з-під багатьох каменів), а в іншому одиничності, оскільки вода може бігти й з-під одного (конкретного) каменя, проте наведені контексти не демонструють чітко відповідних значень, ми тут тільки можемо припустити, що вони присутні. Однак наведемо приклади речень зі словом *ліс* у формі родового відмінка – *Ой піду я до лісу, Та й дуба поколишу* [11, с. 131]. і *Піду я до ліса, вирву маляка* [11, с. 42]. В обох контекстах зазначене слово має семантику збірності. Однак закінчення різні. Тому, на нашу думку, в таких випадках граматичну інформацію про форму родового відмінка ми тоді маємо позначати так: **КАМІНЬ**, -ю / -я; **ЛІС**, -у / -а. У тих випадках, де вибір закінчення -у (-ю) або -а (-я) впливає все ж таки із семантики слова, слід послуговуватися вже наявними у традиційних словниках української мови напрацюваннями щодо лексикографічної репрезентації різних значень описуваної лексеми. Наприклад, якщо слово «дух» вживається в контексті в значенні «надприродна істота або безсмертна, нематеріальна основа в людині», то тоді воно в родовому відмінку має зазвичай тільки закінчення -а: *Ім'я отця за отця, / І сина за Максима, / І святого за сліпого, / І духа за Андруха, І амінь за камінь* [16, с. 162-163], а в стійкому народному виразі **І (й) духу нема (не зосталося, не стало, не чути** і т. ін.) «про відсутність кого-небудь, про брак чого-небудь» використовується зазвичай флексія -у. Тому напроти відповідного значення, позначуваного цифрою, слід ставити відповідну флексію, як це зокрема й роблять укладачі тлумачних словників української літературної мови: **ДУХ**, ч. 1. -у. 2. -а.

У текстах усної народної творчості спостерігаємо хитання в родовому відмінку однини іменників III відміни жіночого роду – флексію -и (**соли**) та -і (**солі**). М. С. Глушко, наприклад, у розвідці «Купальські пісні Східної Волині з села Дубрівки Баранівського району Житомирської області» подає кілька варіантів пісні «Вирву з рожі квітку» (А) *Піду до комори – Ни хліба, ни соли: / – Ой викупи, мамцю, / Із цієї неволі* [20, с. 83]; і (Б) *Піду до комори – Не хліба, не соли: / – Ой викупи, мамцю, / Із цієї неволі*

[20, с. 83]. Ці варіанти зафіксовані в одному й тому ж селі. Щоправда, записані від різних виконавців. У словниковій статті ми повинні відобразити обидва варіанти флексії родового відмінка – **СІЛЬ**, солі й соли. Подібні хитання в закінченнях родового відмінку однини, зрозуміло, спостерігаємо також і в інших іменників третьої відміни. Наприклад, **НІЧ**, ночі й ночі. *Через тебе впав я в яму, / Через твої чорні очі / Не спав же я сеї ночі!* [12, с. 534] і *Не спала я тої ночі, ні мої оченька, / Бо не була під головов милого рученька* [27, с. 91]; **СМЕРТЬ**, -і / -и. *Смійся, смійся, вражий сину, за сміх тобі буде: / Трястиме, страждатимеш, смерті бажатимеш, / У моєї паніматки води прохатимеш: «Ой дай мені, моя мати, холодної води, / Уже ж мені з твоєї дочки сміятися годі»* [11, с. 240] і *Скрипливі воротацька, / Трудно їх заперти, / Брешіть, брешіть, воріженьки, / До самої смерти* [11, с. 180].

У родовому відмінку однини іменників другої відміни (і чоловічого, і середнього роду), основа яких закінчується на приголосний **ц** ми можемо мати варіанти із закінченнями -а і -я. Граматичні форми на **-ця** виявлять себе як загальнонародні, а форми на **-ца** є виразно локальними. Ствердіння звукосполучення **ца** спостерігається в поліському наріччі української мови. Це одна з характерних фонетичних рис цього територіально-мовленнєвого утворення. Ствердіння звука **ц** якраз і спостерігаємо у фольклорних текстах, зафіксованих на Поліссі: *Бо приїде Іванко з-за сонця, / Йа привезе віночка-гостинця* [20, с. 82] і *Ой з-за сонця дружечки, з-за сонця, / Бо приїде Іванко з-за сонця* [20, с. 82]. В інших випадках маємо, як і в літературній мові, звукосполучення **ця**: *Дірявая та кишенья була, / За то тобі та гостинця нема* [8, с. 184] і *Стоїть місяць над горою, / А сонця немає...* [36, с. 29]. Отже, форми родового відмінка з кінцевим **-ца** є виразно регіональними. Їх теж треба фіксувати в словниковій статті, але, очевидно, вказувати тоді за допомогою відповідної ремарки, наприклад, *діал.*, на обмежено територіальне уживання таких форм родового відмінка: **ГОСТІНЕЦЬ**, -нця / *діал.* -нца. **СОНЦЕ**, -я / *діал.* -а.

Варіативність флексій спостерігаємо також і в інших непрямих формах відмінків іменників, уживаних у текстах фольклору. Наприклад, у місцевому відмінку однини: **ПІЧ**, на печі й на печи. *Лежить наша Ганнуся на печі* [20, с. 79] і *Кури в запічку несуться, / А на печі*

півні б'ються, / А на печі півні б'ються, / На столі миші гризуться [12, с. 395]; **КАМІНЬ**, на камені й на каменю. На камені ноги мию, / На камені стою, / Навкруг мене чари сиплять, / А я ся не бою [11, с. 146] і «Набери, сестро, піску в жменю / Та посій його на каменю, / Уставай, сестро, зіроньками, / Поливай пісок слізеньками; / Уставай, сестро, ранесенько, / Проривай пісок частенько, / А коли пісок той ізійде, / То тоді твій брат в гості прийде» [25, с. 65-66]. Мамо певну варіативність і в формах знахідного відмінка однини. Порівняймо: *Ой піду ж я утоплюся, / Об каменя розіб'юся, / Нехай люди усі знають, / Як з кохання помирають* [11, с. 208] і *Коли ж не то, – утоплюся, / Або об камінь розіб'юся, / Нехай люди будуть знати, / Як з кохання помирати* [11, с. 298]. Варіативність закінчень, зрозуміло, може спостерігатися й у формах множини, проте ми не ставимо перед собою завдання передати все різноманіття можливих граматичних варіацій непрямих відмінків. Така варіативність флексій у текстах фольклору може стати темою окремого дослідження і, припускаємо, що вона навіть може знайти лексикографічне відбиття у словниках вужчого (спеціального) призначення, спрямованих на фіксацію різних граматичних особливостей фольклорного тексту.

При заголовних словах-іменниках подають зазвичай ремарку, що вказує на рід (ч. – чоловічий, ж. – жіночий, с. – середній). Лексеми, вилучені з творів усної народної словесності, теж мають супроводжуватися відповідними позначками: **ЦІСАР**, -я, ч. *Та гуляйте, файні хлопці, / Завтра не будете:/ Прийшла звістка від цесаря – / На війну підете* [23, с. 55]; **ОРДА**, -и, ж. *Оглянутья женці – Коваленко йде, / А позад себе орду веде* [14, с. 234]; **БОРОШНО**, -а, с. *Біле, як борошно, але не борошно, хвіст, як у миші, та не миша* [22, с. 26].

Якщо слово, що наявне в текстах фольклору, вживається тільки у формі множини, то теж подаємо закінчення родового відмінка і супроводжуємо його ремаркою *мн.* (множина): **ВОРОТА**, воріт, *мн.* *Вийду за ворота / – Стоїть місяць в крузі* [20, с. 82]; **ДРОВА**, дров, *мн.* *Запала, закурила / Сирими дровами, / Бо приведе милий куму / З чорними бровами* [15, с. 210]; **СМІШКИ**, -ів, *мн.* *Не викуплю, доню, / Бо не маю звідки, / Оце тобі, доню, / Дівочії смішки* [20, с. 84].

Прикметники, діеприкметники, порядкові числівники, займенники прикметникового типу подають зазвичай в однині у формі чоловічого роду, при якій подають флексії жіночого та середнього роду: **БІЛИЙ**, -а, -е; **СІНИЙ**, -я, -е; **ЗБЕНТЄЖЕНИЙ**, -а, -е; **ПЕРШИЙ**, -а, -е; **ТРЕТІЙ** -я, -е; **НАШ**, -а, -е; **МІЙ**, моя, моє. Однак такий традиційний лексикографічний опис навряд чи здатний відбити виразні граматичні риси народнопоетичних текстів. Для текстів фольклору, наприклад, характерними (як в однині, так і множині) є нестягнені форми прикметників, порядкових числівників і займенників прикметникового типу. Вони становлять специфіку фольклорної мови загалом, є своєрідною стилістичною нормою усної народної творчості, тому й потребують, на нашу думку, лексикографічної репрезентації. Нестягнені форми виявляють себе в двох відмінках – називному (*Зелена та ліщинонька, / Гей! Чом без сонечка зів'яла?* [13, с. 95]; *Тонкая, високая тополя: / Чорнявая дівчина – то моя* [39, с. 266]; *Товкачики дубовії, сосновії, / Сім літ вони валялись, / Поки ступки дождались* [39, с. 6]) та знахідному («*Зелений барвінок сади устилає, / Запашний васильок три запахи має, / А над тую повну рожу, А над тую червону / І в світі немає!*» [11, с. 23]; *Зробіть же комору, зробіть же нову, / Зачиніть мене, молодую* [11, с. 33]; *Ой дав мене мій батечко за високі гори, / Не дав мені більше віна – лиш ярії бджоли* [13, с. 120]).

Модель відбиття цієї граматичної риси може бути такою: **ВИСОКИЙ**, -а / -ая; -е / -ее, *мн.* -і / -ії. *Що на сину росте високий явор, / А на невістці – біла береза* [39, с. 277]; *Ти, висока осока, / Стели дітям звисока* [13, с. 27]; *Одна гора високая, / А другая низька; / Одна мила далекая, / А другая близька* [11, с. 202]; *Ой в ліску, в ліску на жовтім піску / Росте деревце високе, тонке* [15, с. 265]; *Рости, рости древо, / Тонке, високе, / Кучеряве, / Кучеряве / Та розпусти гілля / Зверху до кореня, / Лист додолоньку, Лист додолоньку* [36, с. 140]; *Ми пустилися в високі гори, / Ідім за грішми та й до комори* [27, с. 603]; *Ой ви, гори високії, / Поточки бистренькі, / Скажіть мені, чи ще живе / Мій отець старенький* [23, с. 540]. Таку ж модель можна застосувати для опису порядкових числівників: **ТРЕТІЙ**, -я / -ая; -е / -ее; -третьє, *мн.* -ії. *А я ж тобі лишив аж два лани жита, / Аж два лани жита, а третій пшениці* [13, с. 88]; *А друга робота – вечерю зварити, / А*

третя робота – п'ять корів здоїти [13, с. 242]; Гостила я неділеньку, гостила дру- гую, / На третю неділеньку їхала додому [13, с. 94]; А й уродиться да трой-зіллячко: / Що перше зілля – тож василечки, / А другеє зілля – тож барвіночок, / А третє зілля – тож люби- сток [39, с. 246]; А третєє свято – то п'ятєє грудня [10, с. 621]; Літа сокіл літо, літа сокіл друге, / На третєє літо сокіл прилітає [13, с. 294]; А першеє шитє батеньку післала, / А другеє шитє матінці післала, / А третєє шитє, то шовкове нитє [27, с. 451]; Так і на- валиться на тебе щось темне та волохате і до самого світанку буде мучити, до третіх півнів [37, с. 176], Що одні гості да поза сада- ми, / А другії гості у присінечках, / А третії гості поза столами, / Що за садами, тим од- казали [27, с. 440].

Нестягнені форми властиві і для так званих займенників прикметникового типу (прис- війних, вказівних, означальних, деяких відно- сних, питальних і заперечних). Наведемо далі зразок лексикографічного опису таких за- йменників: **ТОЙ**, та / тая; те / теє / тоє; мн. ті / тії. Я одбився от роду, / Як той камінь од льоду [15, с. 39]; Ой давно, давно / В мамки я була, / Та вже ж моя та доріженька / Терном заросла [15, с. 57]; Росла, росла тая трава / Та й стала хилиться, / Ждала мати дочку в гості / Та й стала журиється [15, с. 68]; «Він хоч бідний, та щасливий, / Те багатство – не на вік, / Щоб могли нас розлучити, / Нема в світі таких лік» [11, с. 204]; Не боліло мене тєє коліно, / Що летіло грабовєє поліно [15, с. 169]; Не тая розмова, не тії брови, / Не тєє личенько, що до любови [11, с. 42]; Ой ходять вони [вдовині дочки], як ті королівни [11, с. 34]; Оженися, мій синочку, / Та й живіть укупці; / Кохайтеся, любітеся, / Як тії голуці [11, с. 98].

Дієприкметники у текстах фольклору прак- тично не набувають нестягненої форми, тому для їх опису, очевидно, слід застосовувати та- ку модель: **ПОРІЗАНИЙ**, -а, -е. Дієпр. пас. мин. ч. до **ПОРІЗАТИ**. А від Умані, гей, до Летичева / Недалекії милі, / Там лежать ляшки, там лежать / панки, / Як порізані свині [1, с. 136] або **ПОВ'ЮЧЕНИЙ**, -а, -е. Дієпр. пас. мин. ч. до **ПОВ'ЮЧИТИ**. Ой стоять коні да попутані, пов'ючені, – / Вони од Левенця не утечені! Од- нак у тому випадку, коли вони піддаються ад'єктивізації, тобто перетворюються на прик- метники дієприкметникового походження, вони зазвичай тоді теж можуть набувати не-

стягненої форми: «А де ж твої, Хмельничень- ку, **кованії** вози?» (тут «обковані залізом») [1, с. 79]. При лексикографічному описі ад'єктивованих дієприкметників слід вико- ристовувати тоді таку ж модель, як і для ін- ших прикметників, однак зазначити у знач. прикм. **КОВАНІЙ**, -а / -ая; -е / -ее, мн. -і / -ї. у знач. прикм.

Короткі форми прикметників теж становлять граматичну специфіку фольклорних текстів. Їх пропонуємо фіксувати таким чином вели- кими літерами подавати поряд із основною (повною стягненою) формою: **ПОВНИЙ**, **ПОВЕН**, -а / -ая, -е мн. -і / -її. Та й один жандар стукнув пальцем по черві малому та й каже: – Повний мішок галушок! [10, с. 137]; А ти, котик чорний, / Та сідай у човен, / Лови рибки повен, / Щоб було няньці й мамці, / І бабусі старенькій, / І дитинці маленькій [26, с. 193]; Старається йу комору, / Старається і в обору, / Старається – повна скриня, / Щоб я була го- сподиня [35, с. 413]; Як буде ще й книшик / І по- вная чара, / То скажемо: – Спаси, боже, / Сього дому господаря! [27, с. 507]; Нащо в море воду лити, коли море повне [30, с. 258]; Я сміюсь на повні груди, / Радію, мов дитя, / Перетворю- ють в нас люди / І край свій, і життя [40, с. 349]; Та лежить сучка й на боку, й на боку, / Та повнії вуха табаку, табаку [12, с. 474].

Коротку форму прикметника варто виносити в окрему словникову статтю, проте не опису- вати детально цю форму, а відсилати за до- помогою перехресного посилання до словни- кової статті з прикметником повної форми. **ПОВЕН**, див. **ПОВНИЙ**.

За потреби необхідно подавати відомості про належність слова до певної частини мови, особливо в тих випадках, коли може виник- нути проблема з визначенням його частино- мовної належності. Наприклад, порядковий числівник **третій** та його інші форми – **третя** (жіночий рід), **третє** (середній рід) **треті** (множина) можуть у певних синтаксичних конструкціях виступати в ролі іменника: Де на двох вариться, – третій поживеться [35, с. 111]; Одна збрехала, друга не розібрала, а третя по своєму перебрехала [35, с. 70]; Одно просить дня, друге просить ночі, третє каже: «Мені як удень, так і вночі витріщати очі» [35, с. 154]; Гроші – сила: одних підкуплять, других напоять, а третім лиха накоять [30, с. 32]. Для опису таких випадків можна використа- ти ремарку у знач. ім. Традиційно в українсь-

ких лексикографічних працях указуються займенники, прислівники, вигуки, службові частини мови. Наприклад, **НАШ**, а, е, *займ.* присв. [5, с. 238], **НАШАРМАКА́**, присл., розм. [5, с. 239], **НА²**, виг. [5, с. 239], **НА¹**, прийм. [5, с. 7], **НЕ**, част. *запереч.* [5, с. 244]; **АЛЕ¹**, спол. [4, с. 33]. Ми вважаємо, що не слід відступати від цієї традиції. Тому подаватимемо такі частини мови так само: **ПІШКИ**, присл. *А мудра баба і собі хвалиться: – Нехай бог приймає труда, ходила пішки туди й сюди, а маю рублика, то додому несу* [29, с. 50]; **СВІЙ**, своя, своє, *займ., присв. Свою звичку я вже знаю!* [29, с. 25]; **АТ**, виг. – *А що ж там по світах чувати? – питає пригінчий у захожого. – Ат! Що чувати! – одкажує той. – Біда! Б'ють і плакати не дають* [29, с. 23]; **ДО**, прийм. *Прийшли наймити до пана поскаржитись на погане харчування* [29, с. 24]; **ТА**, част., *підсил.* *Суддя до селян: – То ви бачили, як він задушив вашого пана? – Та... бачили... [29, с. 24];* **БО**, спол. *Вони [чоловік і жінка] були багаті, бо мали хатнього вужа, котрий сидів собі під печею в норі і тільки як хотів їсти, тогди виходив з норі* [2, с. 208].

Можуть також виникати певні труднощі при розрізненні прикметників і дієприкметників. Тому останні зазвичай теж позначаються. Наприклад, **НАВАНТАЖЕНИЙ**, -а, -е. *Дієпр. пас. мин. ч. до НАВАНТАЖИТИ. Якось святого Миколая і святого Касіяна послали з раю відвідати землю. І побачили вони одного разу на дорозі бідного селянина, віз якого, навантажений сіном, глибоко застряг в болоті і який робив безплідні зусилля, примушуючи свого коня зрушити з місця* [41, с. 277].

У словникових статтях, до яких входитимуть дієслова, інфінітив традиційно будемо супроводжувати особовими формами (першою та другою особою однини або відповідними закінченнями). Наприклад, **КУСАТИ**, -аю, -аєш. *Розумна та пчїлка: / Чому ж тебе не кусала, / Як ти була дівка? [15, с. 166];* **СТОЯТИ**, *стою, стоїш. Селянин, що стояв з сохою обіч, не пізнав Господа* [41, с. 89]. При дієсловах, які фактично не вживаються в першій та другій особах теперішнього чи майбутнього часу, а також при дієсловах середньо-зворотного стану на **-ся** слід подавати форму третьої особи однини: **КОРТІТИ**, -тить. *Я любила сього, того, парубочків много, / А ще кортить любити вїята молодого* [39, с. 175]; **ЗАМУТІТИСЯ**, *замутиться. Ходить козак по вулиці, нічим замутиться: «Добри вечір, мату-*

сенько, дай води напиться, / Пусту дочку на вулицю, хоча подивиться [11, с. 36]. До безособових дієслів теж необхідно додавати форму 3-ї особи однини теперішнього (майбутнього) часу й ставити при них відповідну позначку *безос.:* **ЗВЕЧОРІТИ**, -іє, *безос.* «*Жди, козаче, моя мріє, / Най надворі звечоріє, / Най на розжі роса ляже, – Правду тобі сон твій каже*» [11, с. 49].

Неозначені форми на **-ти** і **-ть** слід подавати, на нашу думку, в одній словниковій статті. З метою економії слід подавати лише одну повну форму, на **-ти**, а при ній зазначати варіантний суфікс **-ть**. Наприклад, **ЖІТИ**, **-ТЬ**, *живу, живеш. Всюди плачі, всюди крики – селян учать, як їм жити* [7, с. 21]; *У колгоспі добре жить – один робить сім лежить* [7, с. 23]. Дієслівні варіанти з суфіксами **-ова** й **-ува** слід подавати теж в одній словниковій статті, але форму на **-ова** виносити окремо без тлумачення і відсилати за допомогою перехресного посилання до основної форми з суфіксом **-ува**.

ВАНДРУВАТИ, ВАНДРОВАТИ, -ую, -уєш. *То не бідна ластівочка з ластів'ятком, / Ой то мати вандрувала із дитятком* [13, с. 298]; *Вандрувало пахоля / З Києва до Вільва* [13, с. 36].

ВАНДРОВАТИ див. **ВАНДРУВАТИ**.

Лексикографічний опис дієслова потребує також інформації про такі його граматичні показники, як категорія виду (*док., недок.*): **ПОБІГТИ**, *біжу, біжиш, док. Побігла лисичка до річки глечика топить* [2, с. 67], **БАЛАКАТИ**, -аю, -аєш, *недок. Сидять собі раз цап і баран та й балакають* [2, с. 102], *перехідності/неперехідності:* **ПРИНЕСТІЙ**, -су, -сеш, *док., перех.* У лексикографічних працях переважно використовують позначку *перех.* (перехідне), яка ставиться при дієсловах, що вживаються з прямим додатком. *Неперехідність* дієслова зазвичай не позначається, але коли перехідне дієслово може вживатися в якомусь значенні також і як неперехідне, то до кожного з цих значень (під окремими цифрами) подається відповідна позначка *перех.* або *неперех.*: **ПЕКТІЙ**, *печу, печеш., недок. 1. перех.* Готувати їжу на вогні або на жару в пічці або на іншому пристосуванні. *Своїм дітятонькам / Колачики пече, / А нам, сиротонькам, З отрубів загнете* [13, с. 407]; *2. перех. і неперех.* Обдавати жаром, надмірно гріти, палити. *Та й зап'яла польнеє віконце, / Щоб не пекло на козака сон-*

це [11, с. 103]; *Не йди, Гандзю, рано в поле, / Сонце пече, стерня коле* [12, с. 99].

При дієсловах, що можуть виступати як у доконаному так і недоконаному необхідно робити відповідне позначення *недок.* і *док.*: **ВЕЛІТИ**, -лю, -лиш. *Ой варила мама рибу, а сама не їла, / Ой любила мама хлопці та й мені веліла* [39, с. 212]; *Бодай тебе, Хмельниченьку, / перва куля не минула, / Що велів орді брати дівки й молодиці!* [31, с. 233].

До граматичної інформації можна включати й інші характеристики, що стосуються граматики слова, ті, що виявляють себе нерегулярно, тому є непередбачуваними у певній загальній моделі лексикографічного опису. Наприклад, безособова форма з твердим **т**: **СВЕРБІТИ**, -бить / *діал.*: -бит. *Ой дівчата, кайтесь, / Молодиці кайтесь, / Свербить часом під поясом, / Почухати дайтеся* [39, с. 49]; *Болит, свербит, і ще кортит* [17, с. 192] чи дієслово зворотньо-середнього стану **РОЗВИДНІТИСЯ, СЯ РОЗВИДНІТИ**, *діал.* -иться, *ся розвидняє. А я браму замикаю, брама ся втворює, Я милого виправею, як ся розвидняє* [39, с. 183]. Можна, наприклад, виносити в заголовок окремої словникової статті специфічні безособові форми, що лишилися поза увагою тлумачних словників української літературної мови: **НАТУЧИТЬСЯ** *безос.* Насупиться, захмариться, нахмариться; покрийється хмарами. *Натучиться, нагримиться – дрібен дощик піде; / Насудяться воріженьки – дівка заміж піде* [11, с. 178]. У цьому ж контексті маємо й безособову форму «нагримиться», проте маємо в літературній мові інфінітив **НАГРИМІТИСЯ**, -мійться, *безос.* «довго погриміти, багато разів»; **ВІДНЄЛО** *безос.* Відібрало. *Ой і рано-рано сонечко сходило, / А моему нелюбіві бесіду віднєло* [13, с. 98]; **ОБПЛЕТЯНО** *безос.* Обплетено. *Ще й барвіночком й обплетяно, / Ще й калиною й оптикано* [20, с. 78]. І в цьому ж контексті **ОПТИКАНО** *безос.* Обтикано.

ВИСНОВКИ

Отже, «Словник мови усної народної словесності», як і будь-який словник лінгвістичного типу, обов'язково має містити граматичну інформацію про слово. Граматична інформація має містити дані про деякі форми непрямих відмінків іменників, передусім тих, що

викликають певні труднощі у мовців. Традиційно при іменниках подають флексію родового відмінка, але за потреби можуть подаватися й інші закінчення. Мова фольклору – це передусім усне мовлення, для якого властивим є варіантність, причому не тільки на рівні текстів, а й на рівні граматики, тому основні варіанти флексій, принаймні родового відмінка, теж мають в ньому бути відбиті. При заголовних словах-іменниках треба, подавати, звичайно, ремарку, що вказує на рід. Це особливо важливо в тих випадках, коли родові форми відрізняються від аналогічних форм літературної мови. Також необхідно фіксувати й певні дані про категорію числа, зокрема відзначати множинні іменники. Прикметники, порядкові числівники, займенники прикметникового типу фіксуємо в чоловічому роді, але й зазначаємо флексії інших родових форм. Крім того, досить характерними для текстів фольклору є нестягнені та короткі форми. Ця виразна граматична особливість вищезгаданих частин мови також потребує, на нашу думку, відображення у словниковій статті. Традиційно в українських лексикографічних працях указуються займенники, прислівники, вигуки, службові частини мови. В якості реєстрового слова, як уже згадувалося вище, зрідка використовується безособова форма дієслова. У словникових статтях, до яких входять дієслова, а вони зазвичай подаються в інфінітиві традиційно будемо супроводжувати особовими формами (першою та другою особою однини або в разі потреби іншими закінченнями). Обов'язково вказуватимемо вид дієслів, категорію перехідності і, якщо треба, неперехідності, особливо в тих випадках, якщо дієслово може виступати в текстах фольклору в обох граматичних формах. Неозначені форми на **-ти** і **-ть** слід подавати, на нашу думку, в одній словниковій статті. Дієслівні варіанти з суфіксами **-ова** й **-ува** слід подавати теж в одній словниковій статті, але форму на **-ова** виносити окремо без тлумачення і відсилати за допомогою перекресного посилання до основної форми з суфіксом **-ува**. До граматичної інформації можна включати й інші характеристики, що стосуються граматики слова, ті, що виявляють себе нерегулярно, тому є непередбачуваними у певній загальній моделі лексикографічного опису.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ / REFERENCES

1. Berezovskii, I. (1970). *Istorychni pisni* [Historical songs]. Kyiv: Radianskii pysmennyk (in Ukrainian).
2. Berezovskii, I. (1986). *Kazky pro tvaryn* [Tales about animals]. Kyiv: Dnipro (in Ukrainian).
3. Betsenko, T. (2017). *Estetyka movy ukrainskykh narodnykh dum: tekstovo-obrazni odynytsi* [Aesthetics of the language of Ukrainian national dumas: textual and figurative units]. Sumy: Mriia-1 (in Ukrainian).
4. Bilodid, I. (Ed.). (1970). *Slovnnyk ukrainskoi movy* [Dictionary of the Ukrainian language] (Vol. 1). Kyiv: Naukova dumka (in Ukrainian).
5. Bilodid, I. (Ed.). (1970). *Slovnnyk ukrainskoi movy* [Dictionary of the Ukrainian language] (Vol. 5). Kyiv: Naukova dumka (in Ukrainian).
6. Brekhunencko, V. (2007). *Yaki anekdoty «travulu» ukraintsi v XIX st. vid Haluchunu do Donbasu* [Які анекдоти «травили» українці в XIX ст. Від Галичини до Донбасу]. Kyiv: n. d. (in Ukrainian).
7. Buhaievych, I. (1993). *Dozhylasia Ukraina: narodna tvorchist chasiv holodomoru i kolektyvizatsii na Ukraini* [Ukraine survived: folk creativity during times of famine and collectivization in Ukraine]. Kyiv: Ukrainskii pysmennyk (in Ukrainian).
8. Chebahiuk, O. (1987). *Kalendarno-obriadovi pisni* [Calendar and ritual songs]. Kyiv: Dnipro (in Ukrainian).
9. Danuliuk, N. (2011). *Pryntsypy ukladannia slovnnyka movu ukrainskoi narodnoi pisni* [Principles of compilation of the dictionary of the language of Ukrainian folk song]. *Ukrainska lexikohrafia v zahalnoslovianskomu konteksti: teoria, praktyka, typologia. Larusi Hrygorivni Skrupnuk - Principles of compilation of the dictionary of the language of Ukrainian folk song. Ukrainian lexicography in the all-Slavic context: theory, practice, typology. Larisa Hryhorivna Skrypnyk* (pp. 258-264). Kyiv: Instytut ukrainskoi vovy NAN Ukrainu (in Ukrainian).
10. Dei, O. (1965). *Koliadky ta shchedrivky: zumova obriadova poezia trudovoho roku* [Carols and carols. Winter ritual poetry of the working year]. Kyiv: Naukova dumka (in Ukrainian).
11. Dei, O. (1986). *Pisni kokhannia* [Love songs]. Kyiv: Dnipro (in Ukrainian).
12. Dei, O. (Ed.). (1967). *Zhartivlyvi pisni. Rodynno-pobutovi* [Funny songs. Family and household]. Kyiv: Naukova dumka (in Ukrainian).
13. Dei, O., & Yasenchuk, A. (1988). *Balady: rodunno-pobutovi* [Ballads: family and domestic]. Kyiv: Naukova dumka (in Ukrainian).
14. Dei, O., & Yasenchuk, A. (Ed.). (1987). *Balady* [Ballads]. Kyiv: Dnipro (in Ukrainian).
15. Dovzhenok, H. (1988). *Pisni rodynnoho zhyttia* [Songs of family life]. Kyiv: Dnipro (in Ukrainian).
16. Dovzhenok, H. (1986). *Dytiachyi folklore* [Children's folklore]. Kyiv: Dnipro (in Ukrainian).
17. Haiseniuk, V. (2019). *Moia babusia pry povidala... Folklor sela Letiache: zbirnyk* [My grandmother used to tell... Folklore of the village of Letyache: a collection]. Bila Tserkva: Vydavets Pshonkivskyyi O. V. (in Ukrainian).
18. Halchenko, P. (1971). *Prydniprovski smikhovyny: ukrainski narodni anekdoty, zhartu, dotepy* [Dnieper jokes: Ukrainian folk jokes, jokes, witticisms]. Dnipropetrovsk: Promin (in Ukrainian).
19. Halchenko, P. (1986). *Narodni usmishku: anekdoty, zharty, dotepy, buvalshchiny, nebylutsi* [Folk smiles: anecdotes, jokes, witticisms, anecdotes, fables]. Kyiv: Dnipro (in Ukrainian).
20. Hlushko, M. (2009). *Kupalski pisni Skhidnoi Voluni z sela Dubrivku Baranivskoho raionu Zhytomyrskoi oblasti* [Bathing songs of Eastern Volhynia from the village of Dubrivka, Baraniv district, Zhytomyr region]. *Mifologia i folklore*, 1(2), 75-84 (in Ukrainian).
21. Hrytsevych, Yu. (2018). *Dialektni osoblyvosti slovozmyny prykmetnykiv u folklornykh tekstakh iz Zakhidnoho Polissia* [Dialectal peculiarities of word change of adjectives in folklore texts from

- Western Polissia]. *Naukovyi visnyk SIENU imeni Lesi Ukrainku. Filolohichni nauky. Movoznavstvo*, 12, 23–30 (in Ukrainian).
22. Huryn, I. (1963). *Ukrainski narodni zahadku* [Ukrainian folk riddles]. Lviv: Lviv. knyzhno-zhurnalne vydavnytstvo (in Ukrainian).
 23. Ioanidi, A., & Pravdiuk, O. (1974). *Rekrutski ta soldatski pisni* [Recruit and soldier songs]. Kyiv: Naukova dumka (in Ukrainian).
 24. Ishchuk, M. (2012). Nestiahneni formy prykmetnykiv v ukrainskii narodnii pisni [Unstretched forms of adjectives in Ukrainian folk song]. *Kultura narodov Prichernomoria-Culture of the Black Sea region*, 3, 176–178 (in Ukrainian).
 25. Khmylevska, O. (1967). *Ukrainski narodni pisni: pisni suspilno-pobutovi* [Ukrainian folk songs: social and everyday songs]. Kyiv: Muzuchna Ukraina (in Ukrainian).
 26. Kolesnyk, N. (2014). Struktura statti v slovnyku folkloronimiv (na materialy burlatskykh ta naimytskykh pisen) [The structure of the article in the dictionary of proper folklore names (based on the material of songs of burlaks and hirelings)]. *Naukovyi visnyk SIENU imeni Lesi Ukrainku. Filolohichni nauky. Movoznavstvo*, 2, 7–14 (in Ukrainian).
 27. Lytvak, H. (1963). *Kolomyiky* [Kolomyiky]. Kyiv: Radianskii pysmennyk (in Ukrainian).
 28. Medvedyk, P. (1992). *Yevchan-zillia: lehendy ta perekazy Podillia* [Yevshan-potion: legends and tales of Podillia]. Lviv: Chervona kalyna (in Ukrainian).
 29. Mychanych, S. (1986). *Narodni opovidannia* [Folk stories]. Kyiv: Dnipro (in Ukrainian).
 30. Myshanych, S., & Paziak, M. (1984). *Ukrainski pruslivia ta prykazku* [Ukrainian proverbs and sayings]. Kyiv: Dnipro (in Ukrainian).
 31. Nudha, H. (1969). *Dumy* [Dumas]. Kyiv: Radianskii pysmennyk (in Ukrainian).
 32. Pushyk, S. (1983). *Zolota vezha: ukrainski narodni kazky, lehendy, prytchi, perekazy, zahadky ta prypovidky* [The Golden Tower: Ukrainian folk tales, legends, parables, tales, riddles and proverbs]. Uzhhorod: Karpaty (in Ukrainian).
 33. Revytskyi, D. (1964). *Zoloti kliuchi: pisennyk* [Golden Keys: Songbook] (Vol. 3). Kyiv: Mustetstvo (in Ukrainian).
 34. Serdeha, R. (2021). *Hramatuchni rysy narodnopoetychnych leksem ta problema yikh vidbyttia u Slovnyku movy folklore* [Grammatical features of folk poetic words and the problem of their transmission in the dictionary of the language of folklore]. *Visnyk Mariupolskoho derzavnoho universytetu. Filohia*, 24, 142–148.
 35. Shubravska, M. (1970). *Vesillia u dvoch knugakh* [A wedding in two books] (Vol. 2). Kyiv: Naukova dumka (in Ukrainian).
 36. Shumada, N. S. (1985). *Narod skazhe – yak zaviazhe: ukrainski narodni pryslivia, prykazky, zahadky, skoromovky* [The people will say - as they say: Ukrainian folk proverbs, sayings, riddles, colloquialisms]. Kyiv: Veselka (in Ukrainian).
 37. Stelmakh, M., & Synytsia, I. (1956). *Narodna liryka* [Folk lyrics]. Kyiv: Radianskii pysmennyk (in Ukrainian).
 38. Sukhobrus, H., & Fedas, Y. (1973). *Kolyskovi pisni* [Lullabies]. Kyiv: Muzychna Ukraina (in Ukrainian).
 39. Sulyma, M. (2001). *Bandurka: ukrainski soromitski pisni* [Bandurka: ukrainian shame songs]. Kyiv: Dnipro (in Ukrainian).
 40. Vasylenko, Z. (1962). *Zakarpatski narodni pisni* [Transcarpathian folk songs]. Kyiv: AN URSR (in Ukrainian).
 41. Vynnychuk, Yu. (2005). *Bibliini kazky* [Biblical tales]. Kharkiv: Folio (in Ukrainian).

42. Yaremiichuk, O. (1989). *Ukrainski narodni kazku* [Ukrainian folk tales]. Kyiv: Veselka (in Ukrainian).
43. Zhuravlova, N. (1987). Rid imennykiv u movi folkloru [Gender of nouns in the language of folklore]. *Kultura slova*, 32, 49–52 (in Ukrainian).

An Estimation of Money Demand Function Using Nigerian Data: Implication for Monetary Policy

Alex Oisaozoje Iriabije¹, Ubong Edem Effiong¹

¹ University of Uyo

Ikpa Road, PMB 1017, Akwa Ibom State, Nigeria

DOI: [10.22178/pos.86-5](https://doi.org/10.22178/pos.86-5)

JEL Classification:
C13, C51, E41, E51, E52

Received 21.09.2022
Accepted 25.10.2022
Published online 31.10.2022

Corresponding Author:
Ubong Edem Effiong
ubongeffiong3@gmail.com

© 2022 The Authors. This article is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/) 

Abstract. This study estimated Nigeria's Keynesian and augmented money demand function using time series variables from 1986 through 2021. The Keynesian money demand function is estimated by considering income and interest rates as the determinants of the money demand function. In contrast, the augmented money demand function incorporates critical variables like exchange rate, income, and interest rates. With the Robust Ordinary Least Squares estimation method, the income level exerted a positive and significant effect on money demand, while interest rate put forth a negative but insignificant impact. The a priori signs of these two variables align with the Keynesian postulation that income directly correlates with the actual money demand function. At the same time, the rate of interest has an inverse relationship.

Further findings from the augmented money demand function, as reported by the autoregressive distributed lag short-run estimates, indicate that the price level and exchange rate directly and significantly affect Nigeria's current money demand function. The money demand function so estimated was reported to be stable, given the cumulative sum of squares result. A general conclusion that can be drawn from the findings is that the money demand function is income elastic but inelastic regarding interest rate, price level, and exchange rate.

Keywords: Demand for Money, Liquidity Preference, Interest Rate, Monetary Policy, Price Stability.

INTRODUCTION

Money has a wide range of applications in consumption, manufacturing, and distribution [12]. People and corporations frequently have a combination of assets and cash. Money is thus in demand because of its roles as a unit of account, a means of payment, and a store of value. "The demand for money is the amount of wealth everyone in the economy wishes to hold in the form of money balance" [21]. The Classical, Keynesian, and Post-Keynesian schools of thought take one of three main approaches to the desire for money. Although the classical economists did not formally develop the demand for money theory, Fisher's quantity theory of money has elements of this theory. Author [13] stressed the need for cash in exchanges by focusing on its velocity of circulation. He claims that the income level at full employment determines the demand for money in sales. This is predicated on Say's Law on the idea that "supply creates its demand", given a level of income consistent with full employment.

As a result, Fisher's theory of demand for money retained a constant connection with the volume of transactions, which in turn held a continuous relationship with the volume of national income. Additionally, the amount of trade in an economy at a particular time is linked to the need for money [12].

Author [23] explored the three motives for holding money (transactions demand, precautionary demand, and speculative demand) which he termed "liquidity preference" to drive home his argument on the need for cash. In transaction demand, Keynes thinks that the demand for money arises from the utilisation of money as the medium of exchange. The precautionary demand for money is to meet unforeseen necessities, while the speculative need arises from uncertainty about the monetary value of other assets that an individual can hold. John Maynard Keynes associated the transaction demand and precautionary demand depending on the income level, while the speculative market depends on the in-

terest rate. The Keynesian theory of money demand is built around a trade-off between the benefit of holding more money versus the interest cost. The higher the interest loss from having a naira of funds, the less money we expect to save. The interest rate on cash is referred to as the “own rate of interest”, and the opportunity cost of holding cash is equal to the difference between the yield on other assets and the own rate [21].

From the above analogy, the Keynesian money demand function could be described as a function of two critical variables – income level and interest rate. The prediction here is that income has a direct relationship with money demand. Thus, an increase in income will increase the demand for accurate balances for the three motives for liquidity preference. An insight into Nigerian data on income and broad money reveals some exciting results about this postulation. This behaviour is reflected in Figure 1, where the value of broad money and income level are expressed in billions of naira.

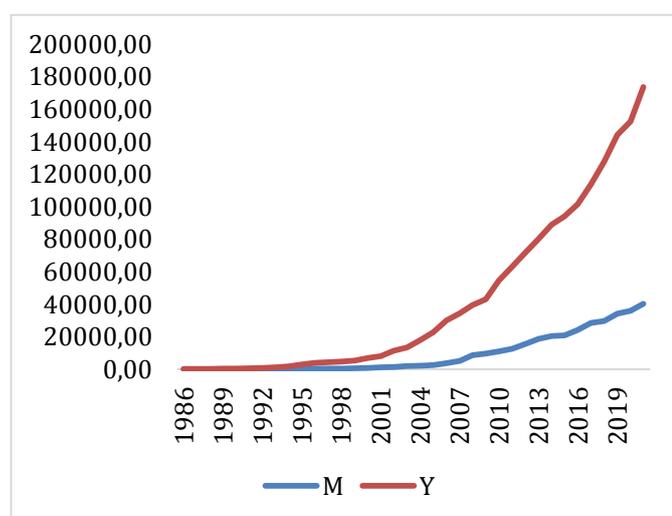


Figure 1 – Trend of Income (Y) and Money Demand (M)

From the 1980 to the 1990, the income level was below ₦20,000 billion, corresponding to a lower level of broad money within the same period. But as income level increased sharply from the early 2000 till 2021, the demand for money also rose. This depicts that both money demand and the price level move in the same direction and that an increase in income level will prompt an increase in the need for money. At the same time, a decline in income level will also exert a declining trend in demand for cash.

Since the Keynesian postulation on liquidity preference also centres on the fact that “the higher the interest loss from holding money, the less money we expect to hold” [21], it can be adduced that there is an inverse relationship between interest rate and liquidity preference. Thus, the higher interest rate will prevent individuals from holding more money, given the interest cost. This attribute can be linked to the inverse relationship between the value of the bond and the rate of interest. In a period of higher interest rates, individuals will prefer to buy bonds (since the price of bonds has declined), and the speculative demand for money will decrease (which hitherto leads to a decline in the total money demand). But as interest rate decreases, individuals will sell their bonds to take advantage of the increase in the value of bonds; hence, they hold more money. This will increase the speculative demand for money as they will have more money while waiting for the interest rate to rise.

One Can, therefore, vividly state that the role of interest rate in the Keynesian money demand function arises from the speculative demand for money which Keynes clearly stated to be a function of interest rate. However, Author [9] has added essential to Keynesian transaction's need for cash. “Keynes regarded transactions demand for money as a function of the income level, and the relationship between transaction demand and income is neither linear nor proportional”. He showed that the relationship between transaction demand and income is linear and proportional. Instead, changes in income lead to less than proportionate changes in transaction demand. Further, “Keynes regarded transactions demand as predominantly interest inelastic”. But [9] analysed the interest rate elasticity of the transaction's demand for money [21].

Author [35] developed a portfolio-based ‘risk aversion theory of liquidity preference. This theory fixed two significant flaws in the Keynesian theory of money demand. For Keynes' liquidity preference function to work, “expectations of future interest rates have to be inelastic because people typically keep either cash or bonds” [35]. His argument was based on the idea that “the expected value of any capital gain or loss from keeping interest-bearing assets is always zero, rather than on the elasticity of predictions of future interest rates” [12]. Additionally, it clarified that a person's portfolio consisted of owning cash and bonds collectively rather than just one at a time. The demand for real money, according to

[14], is a function of wealth (permanent income), projected returns on investments, bonds, equities, and the anticipated rate of inflation [12].

Since Friedman's seminal study in 1956, researchers, policymakers, and governors have paid close attention to the money demand function. The presence of "a stable money demand function" is critical in macroeconomics since the appropriate design of monetary policy is dependent on it [37]. According to [25], "no claim in macroeconomics has attracted greater attention than the existence of 'a stable demand for money function' at the aggregate economy level". The accurate money balances are related to a nominal interest rate and a gauge of current economic activity via the traditional money demand function. The monetary authority can adjust the average growth rate of money that is consistent with price stability, given the average growth rate of the economy and nominal interest rate, under the assumption that there is a strong and stable relationship between the goal variable (say, inflation) and targeted monetary aggregate [37]. However, as other nations have discovered, notably the United Kingdom, Canada, and Switzerland, economic targeting only functions if there is a strong and consistent link between the goal variables and the targeted monetary aggregates [37]. Accordingly, a weak and unstable connection will not have the desired effect on the objective variable, and the targeted total will no longer be able to convey the direction of monetary policy [30] adequately.

Different scholars have introduced other variables into the model in estimating the money demand function apart from the level of income and interest rate. Gong to Authors [15], exchange rate and consumer price index, along with revenue and interest rate, are critical in the money demand function. Authors [28] included the inflation rate, nominal exchange rate, financial depth, and the average treasury bill rate in their money demand function. Authors [12] recognised the role of the exchange rate, economic innovation, and total population as key variables along with income and interest rate in the money demand function. For Authors [1], the role of the domestic price level, expected exchange rate depreciation, and foreign interest rate is crucial variables to consider. Similar to the case of Authors [12], the role of the exchange rate and inflation rate was also considered by Authors [29] as being critical variables in the money demand function. The study of Authors [24] further thought consumer

price index, exchange rate, and credit to the private sector, in addition to income and interest rate, are the determinants of money demand. In all, only Authors [36] recognised the role of stock prices on the money demand function of a country.

This study aligns with the model of [34] by incorporating the exchange rate, the price level, and the exchange rate into the Keynesian money demand function for Nigeria. The estimation follows the total ordinary least squares and the autoregressive distributed lag (ARDL) approach, which aids in estimating both the short-run and long-run money demand functions. The study also tries to detect the stability of the money demand function in Nigeria to ascertain the potency of monetary policy on target variable(s). The study covers the period 1986 through 2021. It is intended to indicate the elasticity of the money demand function and how monetary policy can be channelled appropriately to achieve the desired effect on the quantity of money in circulation within the Nigerian economy to achieve price stability.

Review of related literature

Several empirical studies have been conducted to estimate the money demand function with diverse approaches being utilised. Authors [15] aimed to assess Author [10]'s money demand function with the aid of data from 1988-1998 for twenty-seven (27) countries using static and dynamic fixed effects approaches. The study's outcome further validates Cagan's theory as it revealed that interest rate negatively affected money demand, while the income level put forth a positive effect. Additionally, the estimated income elasticity of money demand was estimated to be 0.18. The study concluded that the estimated elasticity is far less than Cagan's theory suggested.

Authors [20] estimated India's money demand function using monthly and annual data from 1976 to 2007 using co-integration analysis and the dynamic OLS estimation approach. The study's result revealed that co-integration exists among accurate money balances, interest rates, and output when the money demand is expressed in terms of M_1 and M_2 , but absent when expressed in M_3 . The result from the dynamic OLS revealed a consistency in the sign of the interest rate and income as they relate to money

demand. The effect was significant when estimating the M_1 and M_2 functions. Thus, income exerts a positive and considerable influence on the M_1 and M_2 money demand function, while interest rate exerts a negative effect.

Analysing the money demand function for the case of Malawi was the core concern of the Authors [28] using monthly data from 1985 to 2010. Their findings revealed that co-integration exists with income and interest rates, both negatively affecting money demand. In contrast, the exchange rate, financial depth, and treasury bill rate exerted a positive impact. In the short-run, a similar effect exists, with financial innovation, exchange rate movements and lagged money supply displaying causality with money demand.

Authors [12] made an effort to assess the variables influencing Pakistan's actual money demand function. The study is based on an analysis of time series data from 1972 to 2011. The study used an autoregressive distributed lag (ARDL) framework and a bound testing technique to co-integration to estimate the money demand function. The study's conclusions showed that while factors like deposit and exchange rates are negatively connected to the current demand for money, real GDP, financial innovation, and the overall population positively affected the basic need for money. The study has implications for monetary policy that Pakistan's monetary authorities should consider to increase economic and commercial activity in the country.

Likewise, Authors [1] looked at how the monetary authority controls actual cash balances by manipulating the money supply. The study's empirical analysis used co-integration and vector error correction model testing. The co-integration test showed a long-run equilibrium link. In the long term, it was found that the influence of interest rates, inflation rates, and trade openness on money demand is negative. Still, the impact of gross capital formation, the exchange rate, and government spending are favourable in Nigeria.

Author [32] attempted to estimate Ghana's money demand function using data from 1991 to 2011. The data analysed using the ARDL approach in the M_1 , M_2 , and M_3 money demand functions, co-integration exists, and income puts forth a negative effect. At the same time, interest rate positively impacts the money demand functions. These findings negate the conventional a priori expectation of the slope coefficient of the

respective variables. Further, the result reported the instability of the country's M_1 and M_2 money demand functions. However, the actual money function for M_3 was regarded as stable compared to M_1 and M_2 in Ghana.

The study of Author [36] was geared towards estimating the money demand function for Turkey, plus ascertaining the stability of such a process. Data which covered the period of 1970 to 2013 was analysed using co-integration and dynamic regression analysis. The study revealed a cointegrating relationship with income, yielding a positive and significant effect on money demand. In contrast, the impact of interest rate was reported to be inverse. The result further revealed that the narrow money demand is stable as the cumulative sum of squares plot portrayed.

Authors [35] (2018) re-examined the broad money demand function plus its stability in Nigeria using data from the first quarter of 1985 to the fourth quarter of 2016. The data was analysed using the ARDL approach, and findings revealed that a long-run stable relationship exists amid money demand and its determinants (income, stock prices, foreign interest rates, and real exchange rate). Also, the effect of the stock market in the estimated long-run money demand function is positive and significant. This portrays a rising trend in the size and influence of the economy's financial institutions (financialisation).

The study of Authors [38] was geared towards examining the impact and stability of money demand in Cambodia. With data from 1996 to 2016, which was analysed using the ARDL approach, the result revealed a long-run stable relationship amid money supply and identified variables (real income, inflation rate and nominal exchange rate). Further empirical development indicated that domestic currency depreciation shrinks the demand for money in Cambodia.

Authors [31] explored the behaviour of the money demand function in Nigeria towards executing monetary policy. The study used data from the first quarter of 2010 to the second quarter of 2018 and analysed using the ARDL approach. Findings from the survey showcased that the effect of income, exchange rate, and financial innovation on money demand is positive. In contrast, the treasury bill rate and income lag exerted a negative impact. Further, the evidence of the established long-run relationship shows that only financial innovation exerted a significant influ-

ence. The implication of the significance of treasury bill rate connotes that an increase in treasury bill rate will prompt individuals to hold money more for transaction demand rather than substituting the domestic currency with foreign ones.

Authors [24] estimated the current intermediate money demand and fundamental broad money demand functions with a focus on the South African economy using data from the first quarter of 1990 to the fourth quarter of 2019. The money demand functions, estimated using the method of autoregressive distributed lag (ARD), were observed to have a cointegrating relationship with variables of interest (inflation rate, interest rate, exchange rate, real GDP, and credit to the private sector). The effect of credit to the private sector on both actual intermediate money demand and fundamental broad money demand functions exhibited significant positive long-term results. Further, inflation and exchange rate were observed to have a negative and significant effect, while income and interest rates were favourable.

Authors [29] used quarterly data from 1981-Q1 to 2018-Q4 to estimate a broad money demand function. The co-integration test was conducted using the autoregressive distributed lag/bounds test model. The empirical findings demonstrate that public money demand, income, interest, actual exchange rates, and inflation rates are all cointegrated throughout the time under consideration. Real GDP, inflation, and exchange rates were shown to have positive and substantial effects on actual money demand, whereas interest rates had a negative and significant impact. The empirical results showed that the velocity of money in the economy is predictable. As a result, a target for the money supply might be used to control levels of income and prices.

Authors [34] recently explored the money demand function for Sub-Saharan Africa (SSA) from 1980 to 2017. The study utilised the 'Panel Homogeneous Autoregressive Distributed Lag (PH-ARDL)', Panel Co-Integration Tests (P-CIT), and Dumitrescu and Hurlin Panel Causality Test (DH-PCT). While the co-integration test supported evidence of a long-run relationship within the model, the DH-PCT reported a bidirectional causality between money demand and the variables of interest (income, interest rate, price level, and exchange rate). Within the SSA, the study revealed that the core variable influencing money demand is the price level, which calls for price stabilisation policies within the region.

This study will incorporate crucial variables like income, interest rate, price level, and exchange rate in estimating the money demand function for Nigeria from 1986 to 2021. The study will also ascertain the stability of the money demand function over the years since it is crucial in measuring how monetary policy will be potent in targeting goal variables.

METHODOLOGY

Theoretical Framework

The theoretical framework for this study follows the conventional money demand function, where the money demand is expressed as a function of income and interest rate. Following the Keynesian analysis, the money demand function is derived from the three motives for holding money. These motives are:

Transaction Demand. According to Keynes, "the transaction demand for money arises from the lack of synchronisation between receipts and disbursement, implying that one is not likely to be paid at the exact instance one needs to make payment" [21]. So between pay cheques, one keeps money around to purchase goods and services. The transaction demand for cash varies positively (directly) with the income level (output). The higher the income (outcome) level of an individual or society, the greater the demand for transactional balance and vice versa. This relationship can be portrayed as:

$$M_t^d = f(Y) \text{ and } \frac{dM_t^d}{dY} > 0. \quad (1)$$

where M_t^d is the transaction demand for money; Y is the income (output) level.

Keynes thinks that the transactions demand for money is proportional to the level of income hence:

$$M_t^d = \delta Y \quad (2)$$

where δ is the proportion of the total income spent on transaction demand, note that $\delta > 0$ in this regard aligns with the Keynesian position of the direct connection between M_t^d and Y.

Precautionary Demand. The urge to plan for unanticipated possibilities for favourable purchases and emergencies demanding immediate expenditures is what the precautionary demand means [21]. Because consumers and businesses are uncertain about the degree to which payments and receipts will be synced, they hold money as a safeguard. The precautionary demand for money is a positive function of income, much as the transaction demand. Thus,

$$M_p^d = f(Y) \text{ and } \frac{dM_p^d}{dY} > 0. \quad (3)$$

where M_p^d is the precautionary demand for money. Since both M_p^d and M_t^d are a positive function of income. The demand for these two motives can be expressed in a single equation (4):

$$L_T = f(Y) \quad (4)$$

where L_T captures the liquidity preference for both transaction and precautionary demand for money.

Speculative Demand. The goal of speculative demand for money, also known as asset or liquidity preference, is to "secure profit by knowing better than the market what the future will bring forth" [21]. After setting aside enough money for transactions and precautions, individuals and company owners with cash choose to generate speculative gains by investing in bonds. As a liquid store of value, capital retained for speculative purposes can be invested in interest-bearing bonds and assets at the right time. The relationship between the speculative demand for money and interest rates is inverse. The need for money for speculative purposes decreases when interest rates rise and vice versa.

This can be expressed algebraically as:

$$M_s^d = f(r) \text{ and } \frac{dM_s^d}{dr} < 0. \quad (5)$$

where M_s^d is the speculative demand for money and r is the interest rate.

Given Equations (4) and Equation (5), the conventional money demand function, according to Keynes, is expressed as:

$$M^d = f(Y, r) \\ \frac{\partial M^d}{\partial Y} > 0; \frac{\partial M^d}{\partial r} < 0 \quad (6)$$

where M^d is the total demand for money (liquidity preference), Y is the income (output) level, and r is the interest rate.

Model Specification

The model for this study is derived from the conventional Keynesian money demand function, where the actual money demand function is expressed as a function of income (Y) and interest rate (R).

$$\frac{M^d}{P} = f\left(\frac{Y}{P}, \frac{R}{P}\right) \quad (7)$$

Equation (7) states that the real money demand ($\frac{M^d}{P}$) is a function of real income ($\frac{Y}{P}$) and real interest rate ($\frac{R}{P}$). By incorporating other variables into the model, we obtain the augmented money demand function as follows:

$$\frac{M}{P_t} = L\left(\frac{Y}{P_t}, R_t, E_t\right) \quad (8)$$

Equation (8) stipulates that the actual money demand is a function of real income, interest rate and exchange rate. Authors [5] argued that omitting the exchange rate in the money demand function may cause misspecification biases. M is broad money; Y is the gross domestic product in nominal terms (income); R is the domestic interest rate; E is the official exchange rate expressed in the nominal exchange rate, and P is the price level.

Adopting the model of Authors [34] who reassess the money demand function for Sub-Saharan Africa, the model for this study is specified as follows:

$$\ln M_t = \delta_0 + \delta_1 \ln Y_t + \delta_2 \ln R_t + \\ + \delta_3 \ln P_t + \delta_4 \ln E_t + \varepsilon_t \quad (9)$$

Equation (3) portrays a transformed model of the money demand function in logarithmic form, which will facilitate the estimation of the elasticities of the various variables regarding the total money demand. If the parameters (in their absolute value) are more significant than unity, then money demand is elastic for the variable; but if it is less than unity, it is inelastic. Meanwhile, the parameter estimates of the model are expected to follow this pattern: $\delta_0 \neq 0, \delta_1 > 0; \delta_2 < 0; \delta_3 > 0, \text{ and } \delta_4 > 0$. Therefore, income, price level, and exchange rate are expected to positively influence money demand, while the rate of interest is expected to put forth a negative effect. The broad money is the dependent variable, while income, interest rate, price level, and exchange rate are the explanatory variables in the model.

Sources and Nature of Data

The study's data spanning 1986 and 2021 were generally obtained from the Central Bank of Nigeria statistical bulletin. The variables upon which data were obtained include broad money, income (gross domestic product), interest rate, price level (inflation rate), and exchange rate. The income level and broad money are measured in billions of naira, interest rate and price level are measured in percentage, while the exchange rate is measured in terms of the naira/dollar rate.

Estimation Technique

The study first estimates the Keynesian and augmented money demand function at the general level using the total ordinary least squares estimation method. Further time series properties were ascertained using the unit root test. The unit root test is conducted using the augmented Dickey-Fuller (ADF) test, which is based on two assumptions: the constant assumption and the constant and trend assumption. The test model is specified as follows:

$$\Delta \ln M_t = \alpha_0 + \alpha_1 \ln M_{t-1} + \sum_{i=1}^p \gamma_i \Delta \ln M_{t-i} + \varepsilon_t \tag{10}$$

$$\Delta \ln M_t = \alpha_0 + \alpha_1 \ln M_{t-1} + \sum_{i=1}^p \gamma_i \Delta \ln M_{t-i} + \delta t + \varepsilon_t \tag{11}$$

Equation (10) captures the model for the ADF unit root test with constant assumption, while Equation (11) captures the one for the continuous and trend belief. The null hypothesis is that “there is a unit root” expressed as $\alpha_1 = 1$. The rejection of the null hypothesis will only occur if the ADF statistic is more damaging than the 5% critical tau value. Otherwise, the variable will be the difference in conducting the test further. For this study, we will only consider static variables at the level and first difference.

With the unit root properties of the series being ascertained, it becomes pertinent to check for the presence of co-integration among the variables. This is done using the autoregressive distributed lag (ARDL) bounds testing approach. This approach generates F-statistic, compared with the 5% lower and upper bounds. For co-integration (or levels relationship) to exist, it is expected that the F-statistic must lie outside the I(0) and the I(1) bounds at the 5% level.

With the establishment of co-integration based on the ARDL bounds testing approach, determining the short-run and long-run estimates of the model becomes an utmost necessity. This is done with the ADRL error correction model (ECM). The model is specified as follows:

$$\begin{aligned} \Delta \ln M_t = & \beta_0 + \sum_{i=0}^p \beta_1 \Delta \ln M_{t-i} + \sum_{i=0}^q \beta_2 \Delta \ln Y_{t-i} + \\ & \sum_{i=0}^q \beta_3 \Delta \ln R_{t-i} + \sum_{i=0}^q \beta_4 \Delta \ln P_{t-i} + \\ & \sum_{i=0}^q \beta_5 \Delta \ln E_{t-i} + \theta ECM_{t-1} + \varepsilon_t \end{aligned} \tag{12}$$

Equation (12) is the ARDL error correction (ECM) model specified to estimate how the short-run distortions are corrected to achieve a long-run equilibrium. The variables are as defined earlier, with p and q being the optimal lag length of the dependent and explanatory variables, respectively. The optimal lag is automatically selected based on an iterative process in estimating the ARDL model. This process generates a series of results, where the best is determined based on the Akaike Information Criterion (AIC). The coefficient of the ECM_{t-1} , being θ captures the speed of adjustment. It is expected to be negative and statistically significant before the model can be considered to adjust to long-run equilibrium. The greater the value of θ , the greater the speed at which the model changes to attain long-run equilibrium.

RESULTS AND DISCUSSION

Preliminary Issues. The preliminary analysis captures the descriptive properties of the variables, and the correlation analysis portrays the behaviours of the variables utilised in the study.

The descriptive measures of the variables indicate that changes in broad money ($\ln M$) averaged 7.4243%, and the variable's standard deviation is 2.1073%. The minimum and maximum values of the variable are respectively 3.17% and 10.6046% over the 36 years. In the case of changes in income ($\ln Y$), the variable averaged 9.3028% and possessed a standard deviation of 2.1258%; its maximum and minimum values are

12.064% and 5.2790%, respectively. For the changes in the rate of interest ($\ln R$), its mean value is 2.8869%, its standard deviation is 0.2120%, while 3.3945% is the maximum value and 2.3514% is the minimum value of the variable. The changes in the price level ($\ln P$) are characterised by a mean value of 2.6219% and a standard deviation of 0.9816%, with 4.3407% being its maximum value and -1.4979% being its minimum value. Changes in the exchange rate have a mean value of 4.1449%, while its standard deviation is 1.4448%. The minimum value of the variable is reported to be 0.7034%, while its maximum value is 5.9914%, as reported in Table 1.

Table 1 – Descriptive Statistics

| | $\ln M$ | $\ln Y$ | $\ln R$ | $\ln P$ | $\ln E$ |
|--------------------|---------|---------|---------|---------|---------|
| Mean | 7.4243 | 9.3028 | 2.8869 | 2.6219 | 4.1449 |
| Median | 7.6209 | 9.6495 | 2.8773 | 2.4932 | 4.8153 |
| Maximum | 10.6046 | 12.064 | 3.3945 | 4.3407 | 5.9914 |
| Minimum | 3.1700 | 5.2790 | 2.3514 | -1.4979 | 0.7034 |
| Standard Deviation | 2.4073 | 2.1258 | 0.2120 | 0.9816 | 1.4448 |
| Skewness | -0.2898 | -0.4455 | -0.1072 | -1.6945 | -0.7649 |
| Kurtosis | 1.7530 | 1.9148 | 3.9104 | 10.0742 | 2.4116 |
| Jarque-Bera | 2.8362 | 2.9573 | 1.3121 | 92.2952 | 4.0294 |
| Probability | 0.2422 | 0.2279 | 0.5189 | 0.0000 | 0.1334 |
| Observations | 36 | 36 | 36 | 36 | 36 |

The descriptive properties of the variables further disclose that all the variables are negatively skewed, given that their skewness coefficient is all negative. The interest rate and the price level are leptokurtic, given that their coefficient of kurtosis is greater than 3. In contrast, broad money, income, and exchange rate are all platykurtic, given their kurtosis coefficient is less than 3. Meanwhile, all the variables except the price level are normally distributed, given that their respective Jarque-Bera statistic is all insignificant at the 5% level.

In ascertaining how the variables correlate, the Person correlation coefficient is estimated, and Table 2 captures the result.

Table 2 – Correlation Analysis

| | $\ln M$ | $\ln Y$ | $\ln R$ | $\ln P$ | $\ln E$ |
|---------|---------|---------|---------|---------|---------|
| $\ln M$ | 1.0 | | | | |
| $\ln Y$ | 0.9963 | 1.0 | | | |
| $\ln R$ | -0.3614 | -0.3467 | 1.0 | | |
| $\ln P$ | -0.2236 | -0.2462 | 0.0693 | 1.0 | |
| $\ln E$ | 0.9545 | 0.9625 | -0.2066 | -0.2707 | 1.0 |

It is clear from Table 2 that both income ($\ln Y$) and exchange rate ($\ln E$) has a robust positive correlation with broad money ($\ln M$). This is evident in the high correlation coefficient of 0.9963 and 0.9545 for $\ln M$ and $\ln Y$, and $\ln M$ and $\ln E$, respectively. Thus, $\ln M$ moves in the same direction as $\ln Y$ and $\ln E$. The two variables exhibit a weak negative correlation with broad money for interest rate ($\ln R$) and the price level ($\ln P$). Therefore, $\ln M$ moves in an opposite direction from $\ln R$ and $\ln P$ within the study period. Since correlation does not establish a cause-effect relationship, such reported correlations cannot be used to show whether the explanatory variables affect the dependent variable. Consequently, further analysis will be conducted to establish a cause-effect relationship.

Robust Ordinary Least Squares (OLS) Estimation. The Robust OLS method estimates both the Keynesian and augmented money demand functions. Table 3 captures the money demand function based on the Keynesian postulation, and Table 4 captures the result of the increased money demand function.

Table 3 – Robust OLS estimates for the Keynesian Money Demand Function

| Variable | Coefficient | Standard Error | z-Statistic | Probability |
|---------------------------|-------------|------------------------------|-------------|-------------|
| $\ln Y$ | 1.1146 | 0.0195 | 57.1126 | 0.0000*** |
| $\ln R$ | -0.2660 | 0.1957 | -1.3594 | 0.1740 |
| C | -2.1275 | 0.6517 | -3.2647 | 0.0011** |
| Robust Statistics | | | | |
| R ² | 0.7586 | Adjusted R ² | 0.7440 | |
| Rw ² | 0.9961 | Adjust Rw ² | 0.9961 | |
| Akaike info criterion | 65.1798 | Schwarz criterion | 68.6831 | |
| Deviance | 1.1025 | Scale | 0.1380 | |
| Rn ² statistic | 3770.8250 | Prob (Rn ² stat.) | 0.0000 | |
| Non-robust Statistics | | | | |
| Mean dependent variable | 7.4243 | SD dependent variable | 2.4073 | |
| SE of regression | 0.2169 | Sum squared residual | 1.5524 | |

Notes: ** and *** denote significance at 1% and 5%, respectively.

The result in Table 3 captures the estimates of the variables constituting the Keynesian money demand function extracted to form the money demand function captured in Equation 13.

$$\ln M_t = -2.1275 + 1.1146 \ln Y_t - 0.2660 \ln R_t \quad (13)$$

Income put forth a positive and significant effect on the total money demand function, while the impact of interest rate is negative but insignificant. Based on the signs of the parameter estimates (positive for income and negative for interest rate), this result aligns with the prediction of the Keynesian postulations, where it is expected that the effect of income on money demand will be direct. In contrast, that interest rate should be an inverse one. Thus, a rise in income will increase the money demand for transitional purposes, while a rise in interest rate will result in a decline in the total demand for money. This is because individuals will like to take advantage of the market interest rate by purchasing bonds, thereby holding little money for speculative purposes. The money demand function portrayed in Equation 13 is income elastic but interest rate inelastic. A 1% increase in the level of income will cause the demand for money to increase by 1.1146% on average. The elasticity of

the money demand function for payment can be seen in how the change in money demand is far more significant than the change in income. This result of a positive effect of income and a negative effect of interest rate on the money demand function is to the findings of studies like Authors [1, 12, 15, 29, 36].

The robust estimates further reveal exciting issues surrounding the forecast. For instance, the R² shows that interest rate and income jointly explain 75.86% of the total variations in the money demand function. Meanwhile, the weighted R² (Rw²) indicates that the two variables account for about 99.61% of the unlimited money demand function variations.

With other variables being incorporated into the Keynesian money demand function, we obtain the augmented money demand function in which the estimates present in Table 4 are extracted to reflect Equation 14, in which the price level and exchange rate are incorporated.

Table 4 – Robust OLS estimates for the Augmented Money Demand Function

| Variable | Coefficient | Standard Error | z-Statistic | Probability |
|---------------------------|-------------|------------------------------|-------------|-------------|
| $\ln Y$ | 1.2503 | 0.0412 | 30.3751 | 0.0000*** |
| $\ln R$ | -0.0680 | 0.1142 | -0.5951 | 0.5518 |
| $\ln P$ | 0.0451 | 0.0209 | 2.1621 | 0.0306** |
| $\ln E$ | -0.1965 | 0.0585 | -3.3616 | 0.0008** |
| C | -3.2306 | 0.4440 | -7.2754 | 0.0000*** |
| Robust Statistics | | | | |
| R ² | 0.7388 | Adjusted R ² | 0.7051 | |
| Rw ² | 0.9989 | Adjust Rw ² | 0.9989 | |
| Akaike info criterion | 69.8666 | Schwarz criterion | 81.9079 | |
| Deviance | 0.6599 | Scale | 0.1015 | |
| Rn ² statistic | 14682.590 | Prob (Rn ² stat.) | 0.0000 | |
| Non-robust Statistics | | | | |
| Mean dependent variable | 7.4243 | SD dependent variable | 2.4073 | |
| SE of regression | 0.2355 | Sum squared residual | 1.7190 | |

Notes: ** and *** denote significance at 1% and 5%, respectively.

$$\ln M_t = -3.2306 + 1.2503 \ln Y_t - 0.0680 \ln R_t + 0.0451 \ln P_t - 0.1965 \ln E_t \quad (14)$$

The money demand function captured in Equation 14 still aligns with the income level, positively affecting the total money demand. At the same time, the interest rate puts forth a negative impact.

Also, the effect of income is significant, while that of interest rate is insignificant. In the augmented money demand function, a 1% increase in the level of income will cause the money demand to increase by 1.2503% on average (which is greater than that of the Keynesian money demand function in Equation 13). Further, the price level exerts a positive and significant influence on the total money demand, while the exchange rate wields a negative and significant effect. A 1% increase in the price level will lead to a 0.0451% increase in the demand for money. Due to rising prices, individuals will need more money to purchase the same bundle of commodities. A 1% increase in the exchange rate will likely lead to a 0.1965% decrease in money demand. This can be explained in terms of the fact that due to the de-

clining value of the domestic currency, individuals will instead demand the US dollar with a substantial value can continue holding the naira, which continuously loses its weight in the foreign exchange market. The augmented money demand function is income elastic but inelastic for the interest rate, price level, and exchange rate. The positive effect of the price level can be described to align with the findings of Authors [29], while the negative impact of the exchange rate on the money demand function aligns with the results of authors [12, 24].

Unit Root Test. The unit root test is conducted to determine the time series properties of the time series variables utilised in this study. The trial follows the augmented Dickey-Fuller (ADF) approach. The test is based on two assumptions – the constant assumption and the continuous with-trend assumption.

Table 5 captures the result of the test for all the variables.

Table 5 – The ADF Unit Root Test Result for the Variables

| Variable | Constant Assumption | | Order of Integration | Constant and Trend Assumption | | Order of Integration |
|------------|---------------------|------------------|----------------------|-------------------------------|------------------|----------------------|
| | ADF Statistic | | | ADF Statistic | | |
| | Levels | First Difference | | Levels | First Difference | |
| <i>lnY</i> | -3.9922* | - | I(0) | -0.1608 | -3.9521* | I(1) |
| <i>lnR</i> | -4.0026* | - | I(0) | -2.9848 | -5.3421* | I(1) |
| <i>lnP</i> | -4.5697* | - | I(0) | -4.7023* | - | I(0) |
| <i>lnE</i> | -2.6201 | -5.9304* | I(1) | -2.6166 | -6.1009* | I(1) |
| <i>lnM</i> | -2.7369 | -3.9891* | I(1) | 0.3618 | -4.9615* | I(1) |

Note: * denotes significance at the 5% level

Under the constant assumption, *lnY*, *lnR*, and *lnP* are all stationary at levels, while *lnE* and *lnM* only became stationary at the first difference. Thus, *lnY*, *lnR*, and *lnP* are I(0) variables, while *lnM* and *lnE* are I(1) variables. With the constant and trend assumption, only *lnP* is reported to be stationary at a level, while every other variable was reported to be fixed at the first difference. In both cases, the unit root test reveals that the variables are integrated in a mixed order of I(0) and I(1). This scenario requires a different approach to testing for co-integration apart from the conventional Engel-Granger test.

Cointegration Test. With the reported order of integration of the variables (mixed with I(0) and I(1)), the autoregressive distributed lag (ARDL) Bounds testing approach for co-integration becomes the potent approach to detect the rela-

tionship of the current level among the variables. Table 6 reflects the result where the test is conducted using an F-statistic.

Table 6 – F-Bounds Test for Cointegration Result

| F-Bounds Test | | Null Hypothesis: No levels of relationship | | |
|----------------|------------|--------------------------------------------|------|------|
| Test Statistic | Value | Significance, % | I(0) | I(1) |
| F-statistic | 21.5388*** | 10 | 2.20 | 3.09 |
| k | 4 | 5 | 2.56 | 3.49 |
| | | 1 | 3.29 | 4.37 |

Note: *** denotes significance at the 1% level

It is clear from Table 6 that the F-statistic of 21.5388 is outside the 5% and 1% critical

bounds values. For co-integration to exist, the F-statistic must be greater than the lower and upper necessary bounds statistics, so we cannot accept the null hypothesis of no levels relationship. Consequently, co-integration exists, and the need to estimate both the short-run and long-run estimates of the model becomes necessary. This is still being done using the ARDL approach.

ARDL Short-Run Error Correction Model

Model Selection. In estimating the model using the ARDL approach, it is pertinent to detect the best model. The model selection is based on the Akaike Information Criteria (AIC). The model with the lowest AIC is considered to be the best. Figure 2 presents the result.

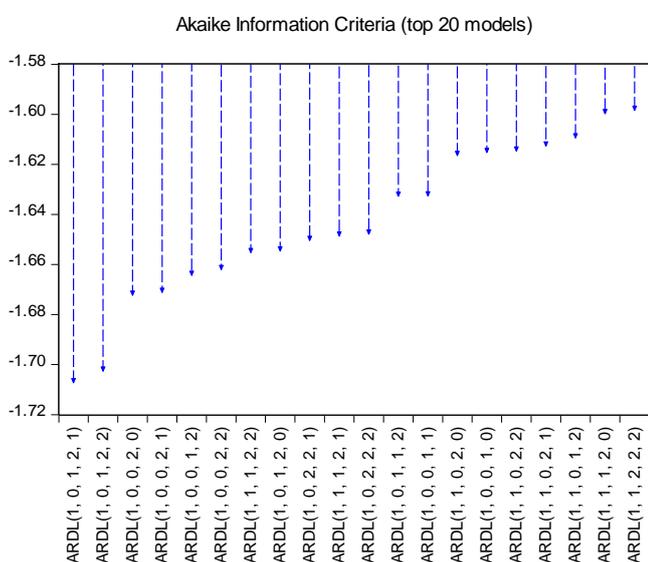


Figure 2 – Model Selection Criteria using AIC

With 81 models being evaluated, our result considered the top 20 models. The least AIC is -1.71, corresponding to ARDL(1, 0, 1, 2, 1) model. Therefore, the model utilised in estimation follows the above ARDL model with the selected lags.

Short-Run Error Correction Estimates. With the optimal model being ARDL(1, 0, 1, 2, 1), it is worth noting that the level of income (lnY) will be excluded from the short-run model estimation; hence, the reason for its disappearance in the ARDL short-run error correction model (ECM) presented in Table 7.

Table 7 captures the ARDL short-run estimates of the money demand function where the variables are expressed differently.

Table 7 – Short-Run ECM Result

| Variable | Coefficient | Standard Error | t-Statistic | Probability |
|-------------------------|-------------|-----------------------|-------------|-------------|
| $\Delta(\ln R)$ | -0.0921 | 0.0828 | -1.1122 | 0.2771 |
| $\Delta(\ln P)$ | 0.0611 | 0.0134 | 4.5621 | 0.0001*** |
| $\Delta(\ln P(-1))$ | 0.0465 | 0.0135 | 3.4392 | 0.0021*** |
| $\Delta(\ln E)$ | 0.1061 | 0.0618 | 1.7165 | 0.0989* |
| CoIntEq(-1) | -0.2852 | 0.0228 | -12.4962 | 0.0000*** |
| R ² | 0.6238 | Mean dependent var | | 0.2143 |
| Adjusted R ² | 0.5719 | SD dependent var | | 0.1271 |
| SE of regression | 0.0832 | Akaike info criterion | | -2.0004 |
| Sum squared resid | 0.2007 | Schwarz criterion | | -1.7760 |
| Log-likelihood | 39.0074 | Hannan-Quinn criteria | | -1.9239 |
| Durbin-Watson stat | 1.6106 | | | |

Note: * and *** denotes significance at the 10% and 1% level, respectively

An extract of the forecast is utilised to construct the money demand function portrayed in Equation 15.

$$\Delta \ln M_t = -0.092 \Delta \ln R_t + 0.0611 \Delta \ln P_t + 0.0465 \Delta \ln P_{t-1} + 0.1061 \Delta \ln E_t - 0.2852 ECM_{t-1} \tag{15}$$

The short-run money demand function expressed in Equation 15 reveals that changes in interest rate have a negative but insignificant influence on changes in the total money demand function. However, the sign aligns with the prediction of economic theory. The changes in the price level and its one-period lag are observed to positively and significantly influence the short-run current money demand function. A 1% increase in the price level increases the demand for money by 0.0611% on average, while its one-period lag increases money demand by 0.0465% on average. The lag effect so experienced can be explained from the point of view that if high prices characterised the past period, the individuals would hold more money in anticipation that such rising prices will continue to the next period. Also, the exchange rate positively and significantly

influences the short-run money demand at the 10% level. Therefore, a 1% increase in the exchange rate will call for a 0.1061% increase in money demand in the short run. Consequently, an increase in the exchange rate will increase the cost of imports, causing individuals to demand more money to purchase foreign goods in the domestic market. It is also worth noting that the short-run money demand function is inelastic for interest rate, price level, and exchange rate.

The error correction mechanism (ECM_{t-1}), having an error correction coefficient of -0.2852 indicates that only 28.52% of the entire short-run distortions in the current money demand function are corrected annually. This speed of adjustment is relatively slow, suggesting that it will take an average of about three years and five months before the model can be completely restored to long-run equilibrium. The R^2 portrayed that the variables account for 62.38% of the total variations in the money demand function, while the Durbin-Watson statistic of 1.6106 confirms the absence of serial correlation.

ARDL Long-Run Levels Estimates. The long-run estimates of the model are presented in Table 8, in which it can be observed that the only variable that has a significant long-run influence on the money demand function is the income level.

Table 8 – Long-Run Levels Estimates

| Variable | Coefficient | Standard Error | t-Statistic | Probability |
|-------------------------------------------------------------------------------------|-------------|----------------|-------------|-------------|
| $\ln Y$ | 1.2257 | 0.1706 | 7.1837 | 0.0000*** |
| $\ln R$ | 0.3990 | 0.5817 | 0.6859 | 0.4993 |
| $\ln P$ | -0.0700 | 0.1218 | -0.5747 | 0.5708 |
| $\ln E$ | -0.2013 | 0.2260 | -0.8909 | 0.3818 |
| C | -3.6717 | 2.3350 | -1.5724 | 0.1289 |
| EC = $\ln M - (1.2257 \ln Y + 0.3990 \ln R - 0.0700 \ln P - 0.2013 \ln E - 3.6717)$ | | | | |

Note: *** denotes significance at the 1% level

The result in Table 8 is extracted to obtain the long-run money demand function expressed in Equation 16.

$$\ln M_t = -3.6717 + 1.2257 \ln Y_t + 0.3990 \ln R_t - 0.0700 \ln P_t - 0.2013 \ln E_t \quad (16)$$

It is evident that the long-run money demand function is income elastic, and a 1% increase in

revenue will lead to a 1.2257% increase in the demand for money. Further, the long-run money demand function is inelastic for the interest rate, price level, and exchange rate. Interest rate now positively influences the long-run money demand function though the such effect is not significant. A similar scenario on the reverse can be observed for the price level and exchange rate, where they now put forth a negative but insignificant long-run effect. As noted by Authors [28], the negative impact of the exchange rate suggests that “depreciation leads to increased demand for money balances for transaction purposes”. Further, the adverse effects of the price level on the money demand function are similar to the findings of authors [1, 24]; and the positive effect of interest rate on the money demand function is identical to the results of the authors [24].

Stability Test. The estimated model is tested for stability of the parameter estimates using the cumulative sum (CUSUM) of squares. For the parameters to be stable, the CUSUM line must lie within the 5% critical upper and lower bounds, as indicated in Figure 3.

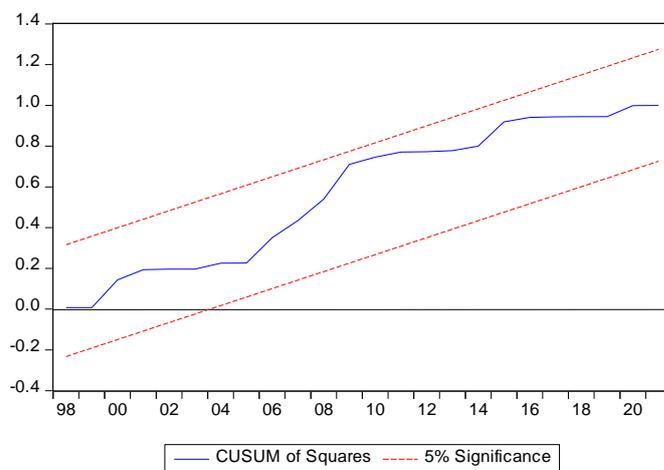


Figure 3 – Cumulative Sum (CUSUM) of Squares Test for Stability

Given that the CUSUM of squares lies within the 5% significant upper and lower bounds, we can conclude that the parameter estimates are stable for making inferences. The stability of the money demand function is an assurance that monetary policy will work effectively on a target variable, as earlier reported by Author [27, 19, 17, 37, 7, 33, 8, 2, 6, 3, 16, 11, 27, 22, 36].

CONCLUSIONS

1. The money demand function is income elastic in the long run: These findings imply that a slight change in the level of income in the economy will affect the demand for money which is a replica of the purchasing power of the individuals. This points to the fact that income is a critical variable that can be utilised to regulate the level of money demand in the economy, which is a crucial variable that determines the price level. These findings on the monetary policy imply that for the monetary authority to contract the level of money in circulation in the economy, an approach geared towards reducing the purchasing power of the individuals, such as the open market sales of securities, could be practical.

2. The money demand function is inelastic regarding interest rate, price level, and exchange rate: The implication here is that more significant changes in these variables will not bring a more remarkable change in the demand for money.

3. The price level and exchange rate have a positive and significant effect on the short-run money demand function: A rising price level and the exchange rate will put upward pressure on the demand for money to augment to depreciation in the value of the domestic currency. More money will be demanded at higher prices to purchase a given bundle of the commodity.

4. Income has a positive and significant influence on total money demand: In the presence of a money illusion, an increase in income level will prompt the individual to demand more money. This arises from the fact that the individual will likely wish to consume more, and the marginal propensity to finish will be high, thus calling for a greater demand for money to meet different needs.

5. The interest rate has a negative but insignificant influence on the total money demand function: Based on the Keynesian demand for money theory, the speculative market for money is a declining function of the interest rate. Thus, individuals will prefer to hold bonds when the interest rate is high, and the speculative demand for money is low. The reverse case has when the rate of interest reduces. This is because there is an inverse relationship between the bond value and interest rate.

6. The money demand function for Nigeria is stable: This points to the fact that monetary policy will have the desired outcome if applied in tar-

getting any policy variable of interest. As identified by [30], a weak and unstable connection will not have the desired effect on the objective variable, and the targeted aggregate will no longer be able to convey the direction of monetary policy adequately.

The estimation of the money demand function is crucial for determining the potency of monetary policy in regulating the volume of money in circulation. This study estimated the Keynesian money demand function, a function of income and interest rate and the augmented money demand function that incorporates the price level and exchange rate in the Keynesian model. With data from 1986 to 2021, the study utilised the robust ordinary least squares approach. Since our research utilised time series data, detecting the time series properties of the variables becomes necessary. This was done using the augmented Dickey-Fuller (ADF) unit root test to see the stationary of the series. This is followed by the test for co-integration using the autoregressive distributed lag (ARDL) bounds testing approach. The error correction model was also utilised to detect short-run and long-run estimates of the model and the speed at which the model adjusts from the short-run distortions to a long-run equilibrium.

In line with the robust OLS, the result indicates the validity of the postulation of the Keynesian money demand function in Nigeria since income wielded a positive effect and interest rate put forth a negative impact. However, the result of income was significant, while that of the rate of interest was reported to be insignificant. In the augmented money demand function, where the price level and exchange rate were incorporated into the Keynesian money demand function, the result still revealed that income has a positive and significant effect on the demand for money. In contrast, interest rates generated a negative but insignificant effect. Meanwhile, the price level is reported to exert a positive and significant influence on money demand. At the same time, the impact of the exchange rate is seen to be harmful and essential simultaneously. In all cases, the money demand function is elastic regarding the income level but inelastic for the interest, price, and exchange rates.

With the introduction of the time series properties of the variables, our result from the ADF test under constant assumption revealed that income, interest rate, and price level were stationary at

the station. In contrast, exchange rates and broad money were fixed at first differences. With the introduced constant and trend assumption, only the price level was reported stationary at a station, while all other variables were static at the first difference. In general, it can be reported that the variables exhibited stationary in a mixed order of level and first difference. This prompts the use of the ARDL bounds testing approach to examine if any long-run relationship exists in the model. Findings from the analysis revealed that co-integration exists, indicating a long-run relationship between money demand and the explanatory variables. Therefore, we estimate both the model's short- and long-run estimates. The short-run result showed that changes in the interest rate put forth a negative but insignificant influence on changes in money demand.

In contrast, changes in the price level, its one-period lag, and changes in the exchange rate positively and significantly influence money demand. The implication is that the key variables that drive the demand for money in Nigeria are price level and the exchange rate. Higher prices entail that individuals will need more money to purchase the exact value of the commodity they used to buy with a lesser amount of money.

In contrast, a higher exchange rate indicates that the individual will demand domestic currency to purchase imported commodities. In the long run,

the only variable that exerts a significant influence on money demand is the level of income. This is because it exerted a positive and significant effect on money demand. Apart from the income level, the interest rate also wielded a positive but insignificant impact on money demand. In contrast, the development of the price level and exchange rate became negative but insignificant in the long run.

In conclusion, the money demand function in Nigeria is elastic for the income level but inelastic for the interest rate, price level, and exchange rate. The implication is that any slight change in the income level will generate a more significant difference in the demand for money. Whereas changes in interest rate, price level, and the exchange rate will only bring a slight change in the need for cash. These points to the fact that monetary policy action geared towards influencing the rate of interest to influence the quantity of money in circulation will only partially bring forth the desired effect on the economy. Instead, a policy stance that will affect the income level will be more active. Consequently, the open market sales of securities which mop-up excess liquidity from the economy will be more effective in reducing the volume of money in circulation rather than an increase in the rate of interest. The effectiveness of such action is assured given that the money demand function for Nigeria is stable.

REFERENCES

1. Aiyedogbon, J. O., Ibeh, S. E., Edafe, M., & Ohwofasa, B. O. (2013). *Empirical Analysis of Money Demand Function in Nigeria: 1986–2010*. *International Journal of Humanities and Social Science*, 3(8), 132–147.
2. Akinlo, A. E. (2006). The stability of money demand in Nigeria: An autoregressive distributed lag approach. *Journal of Policy Modeling*, 28(4), 445–452. doi: [10.1016/j.jpolmod.2005.09.001](https://doi.org/10.1016/j.jpolmod.2005.09.001)
3. Algan, N., & Gencer, S. (2011). Modelling the money demand function in Turkey. *Ç. Ü. Sosyal Bilimler Enstitüsü Dergisi*, 20(1), 195–212 (in Turkish).
4. Altıntaş, H. (2008). *The stability of money demand in Turkey and predicting with bound testing approach: 1985–2006*. *Erciyes Üniversitesi İİBF Dergisi*, 30, 15–46 (in Turkish).
5. Arango, S., & Ishaq Nadiri, M. (1981). Demand for money in open economies. *Journal of Monetary Economics*, 7(1), 69–83. doi: [10.1016/0304-3932\(81\)90052-0](https://doi.org/10.1016/0304-3932(81)90052-0)
6. Baharumshah, A. Z., Mohd, S. H., & Mansur M. Masih, A. (2009). The stability of money demand in China: Evidence from the ARDL model. *Economic Systems*, 33(3), 231–244. doi: [10.1016/j.ecosys.2009.06.001](https://doi.org/10.1016/j.ecosys.2009.06.001)
7. Bahmani-Oskooee, M., & Chomsisengphet, S. (2002). Stability of M2 money demand function in industrial countries. *Applied Economics*, 34(16), 2075–2083. doi: [10.1080/00036840210128744](https://doi.org/10.1080/00036840210128744)

8. Bahmani-Oskooee, M., & Rehman, H. (2005). Stability of the money demand function in Asian developing countries. *Applied Economics*, 37(7), 773–792. doi: [10.1080/0003684042000337424](https://doi.org/10.1080/0003684042000337424)
9. Baumol, W. J. (1952). The Transactions Demand for Cash: An Inventory Theoretic Approach. *The Quarterly Journal of Economics*, 66(4), 545. doi: [10.2307/1882104](https://doi.org/10.2307/1882104)
10. Cagan, P. (1956). *The Monetary Dynamics of Hyperinflation*. In M. Friedman (Ed.), *Studies in the Quantity Theory of Money* (pp. 25–117). Chicago: University of Chicago Press.
11. Dogru, B. (2014). Analysis of long-and short-run balance of money demand in turkey using ARDL and VEC approaches. *The International Journal of Economic and Social Research*, 10(2), 20–31 (in Turkish).
12. Faridi, M. Z., & Akhtar, M. H. (2013). *An Estimation of Money Demand Function in Pakistan: Bound Testing Approach to Cointegration*. Retrieved from https://www.researchgate.net/publication/257526938_An_Estimation_of_Money_Demand_Function_in_Pakistan_Bound_Testing_Approach_to_Cointegration
13. Fisher, I. (1911). *The Purchasing Power of Money: Its Determination and Relation to Credit, Interest and Crisis*. New York: Macmillan.
14. Friedman, M. (1956). The Quantity Theory of Money – A Restatement. In M. Friedman (Ed.), *Studies in the Quantity theory of Money* (pp. 9–21). Chicago: University of Chicago Press.
15. Garcia-Hiernaux, A., & Cerno, L. (2006). Empirical Evidence for a Money Demand Function: A Panel Data Analysis of 27 Countries 1988-98. *Applied Econometrics and International Development*, 6(1), 51–58.
16. Gencer, S., & Arisoy, İ. (2013). Türkiye de Uzun Dönem Geniş Para (M2Y) Talebinin Tahmini: Zamanla Değişen Katsayılar Yönteminden Bulgular. *Ege Akademik Bakis (Ege Academic Review)*, 13(4), 515–515. doi: [10.21121/eab.2013418085](https://doi.org/10.21121/eab.2013418085)
17. Hayo, B. (1999). *Estimating a European Demand for Money*. Retrieved from <https://www.econstor.eu/bitstream/10419/39470/1/255041853.pdf>
18. Hoffman, D. L., & Rasche, R. H. (1991). Long-Run Income and Interest Elasticities of Money Demand in the United States. *The Review of Economics and Statistics*, 73(4), 665–674. doi: [10.2307/2109405](https://doi.org/10.2307/2109405)
19. Hoffman, D. L., Rasche, R. H., & Tieslau, M. A. (1995). The stability of long-run money demand in five industrial countries. *Journal of Monetary Economics*, 35(2), 317–339. doi: [10.1016/0304-3932\(95\)01189-u](https://doi.org/10.1016/0304-3932(95)01189-u)
20. Inoue, T., & Hamori, S. (2009). An Empirical Analysis of the Money Demand Function in India. *Economics Bulletin*, 29(2), 1224-1245.
21. Jhingan, M. L. (2013). *Monetary Economics* (7th ed.). New Delhi: Vrinda Publications.
22. Jung, A. (2016). Is euro area money demand for M3 still stable? *The Quarterly Review of Economics and Finance*, 60, 29–39. doi: [10.1016/j.qref.2016.01.002](https://doi.org/10.1016/j.qref.2016.01.002)
23. Keynes, J. M. (1936). *The General Theory of Employment, Interest, and Money*. London: Macmillan.
24. Kole, A., Wali, H. N., Idris, A. M., & Sanusi, I. H. (2020). Analysis of the Determinants of Money Demand in South Africa: 1990-2019. *Bullion*, 44(3) 74-90.
25. Laideler, D. (1982). *Monetarist Perspectives*. Oxford: Phillip Allan Ltd.
26. Lucas, R. E. (1988). Money demand in the United States: A quantitative review. *Carnegie-Rochester Conference Series on Public Policy*, 29, 137–167. doi: [10.1016/0167-2231\(88\)90009-7](https://doi.org/10.1016/0167-2231(88)90009-7)
27. Lucas, R. E., & Nicolini, J. P. (2015). On the stability of money demand. *Journal of Monetary Economics*, 73, 48–65. doi: [10.1016/j.jmoneco.2015.03.005](https://doi.org/10.1016/j.jmoneco.2015.03.005)
28. Lungu, M., Simwaka, K., Chiumia, A., Palamuleni, A., & Jombo, W. (2012). Money Demand Function for Malawi- Implications for Monetary Policy Conduct. *Banks and Bank Systems*, 7(1), 50–63.

29. Manasseh, C., C. Nwakoby, I., C. Abada, F., C. Alio, F., & Okanya, O. (2021). Money Demand in Nigeria: Application of Autoregressive Distributed Lag (ARDL) Approach. *Asian Economic and Financial Review*, 11(4), 308–321. doi: [10.18488/journal.aefr.2021.114.308.321](https://doi.org/10.18488/journal.aefr.2021.114.308.321)
30. Mishkin, F. (1999). *International Experiences with Different Monetary Policy Regimes*. doi: [10.3386/w6965](https://doi.org/10.3386/w6965)
31. Nakorji, M., & Asuzu, O. C. (2019). Money Demand in the Conduct of Monetary Policy in Nigeria. *Economic and Financial Review*, 57(1), 1–21.
32. Osei, V. (2016). Estimating Money Demand for Ghana. *International Journal of Developing and Emerging Economies*, 4(2), 28–43.
33. Teles, P., & Zhou, R. (2005). A Stable Money Demand: Looking for the Right Monetary Aggregate. *Economic Perspectives*, 29(1), 50–63.
34. Odeleyea, A. T., & Akam, D. (2022). Money Demand Function: A Re-assessment in Sub-Saharan Africa. *Iranian Economic Review*, 26(1), 61–77.
35. Tobin, J. (1956). The Interest-Elasticity of Transactions Demand For Cash. *The Review of Economics and Statistics*, 38(3), 241–247. doi: [10.2307/1925776](https://doi.org/10.2307/1925776)
36. Tule, M. K., Okpanachi, U. M., Ogiji, P., & Usman, N. (2018). A Reassessment of Money Demand in Nigeria. *CBN Journal of Applied Statistics*, 9(1), 47–75.
37. Tumturk, O. (2017). Stability of Money Demand Function in Turkey. *Business and Economics Research Journal*, 8(1), 35–48. doi: [10.20409/berj.2017126243](https://doi.org/10.20409/berj.2017126243)
38. Clausen, V., & Kim, J.-R. (2000). The Long-Run Stability of European Money Demand. *Journal of Economic Integration*, 15(3), 486–506. doi: [10.11130/jei.2000.15.3.486](https://doi.org/10.11130/jei.2000.15.3.486)
39. Vorlak, L., Abasimi, I., & Salim, A. (2018). Estimating Money Demand in Cambodia. *Journal of Business Management and Economic Research*, 2(7), 32–42. doi: [10.29226/tr1001.2018.47](https://doi.org/10.29226/tr1001.2018.47)

The Effect of Online Marketing Mix, Online Product Representation, and Digital Content Marketing on the Marketing Performance of MSMEs in NTB Mall Mataram during the COVID-19 Pandemic

Handry Sudiarta Athar¹, Prayitno Basuki¹, Lalu Edy Herman Mulyono¹

¹ University of Mataram

Jl. Majapahit No. 62 Mataram, Nusa Tenggara Barat, Indonesia

DOI: 10.22178/pos.86-5

JEL Classification: M31

Received 21.09.2022

Accepted 25.10.2022

Published online 31.10.2022

Corresponding Author:
Handry Sudiarta Athar
handrysudiarta@gmail.com

© 2022 The Authors. This article is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/) 

Abstract. In today's technological era, marketers and entrepreneurs need to know that many digital variables determine marketing performance. This study aims to assess the effect of the online marketing mix, online product representation, and digital content marketing on the marketing performance of MSMEs NTB Mall Mataram in the era of the Covid-19 pandemic. The type of research used is quantitative research with causal methods. The population in this study is MSME actors who have been incorporated into NTB Mall, which is 1803 people. The number of samples was 95 MSME actors aged 20-60. The sampling technique used was a simple random sampling technique. The data analysis used was the SEM-PLS method with SmartPLS 3.0 application. The results showed that the online marketing mix and digital content marketing had a positive and significant effect on marketing performance. Meanwhile, online product representation was found to have no significant impact on marketing work.

Keywords: Online Marketing Mix; Online Representation; Digital Content Marketing; Marketing Performance.

INTRODUCTION

After the emergence of the COVID-19 pandemic in Indonesia, especially in West Nusa Tenggara, people began to look for ways to restore their economy and business. Especially Micro, Small and Medium Enterprises (MSMEs) have emerged in recent years. The emergence and development of MSMEs in West Nusa Tenggara is seen as a new opportunity by the government to improve the community's economy. Various MSME sub-sectors have begun to emerge. Thus innovation is needed that can help accelerate its growth and development. The government facilitates multiple types of training for MSME actors to improve the ability and creativity of human resources, which is expected to enhance the performance of MSMEs. However, more than this step is needed because the marketing strategy for MSME products must also be considered.

NTB Mall is an innovation from the NTB Provincial Trade Office to market original products made by MSME players in Lombok and Sumbawa. In addition to having an offline store on Langko Street No 61 Mataram, NTB Mall is also based on online purchasing sites (e-commerce)

in the form of websites, Android and IOS applications. MSME products found in NTB Mall consist of food and beverages such as Lombok and Sumbawa coffee, processed pastries, processed seaweed, various kinds of NTB's typical chilli sauce, and so on. In addition, there are also different fashion products such as woven fabrics/ sockets, clothes and bags from woven fabrics/sockets, and others. In addition to fashion products, beauty and health products have even been registered with BPOM, such as face masks, scrubs, and herbal oils. Furthermore, there are handicraft products such as handicrafts, wood, earthenware, *ketak*, *cukli* and recycled waste, and there are also jewellery, namely silver and NTB pearls, that are known for their quality, not only domestically but also abroad.

Digital marketing planning is inseparable from offline marketing planning. However, special planning is needed digitally or online to help transition or distribute marketing information to customers appropriately. Online product representation to digital content marketing must be appropriately planned to achieve the company's goals. Today's leading companies have used the internet for their online marketing activities,

such as through blogs, websites, and online communities of companies [1]. A company blog is an online web where companies can present company content, brand-related, promotional, or relational, to be circulated to consumers. As blog content increases, online readership and circulation increase through incoming and outbound links from and to other websites, or in general, called engagement.

Measuring the success or failure of a management step carried out in business, such as increasing sales volume, the number of customers, and the growth of company profits, can be done by looking at marketing performance. Many variable variables influence marketing performance itself. In this study, the influence factor seen is the influence of online marketing strategies such as online marketing mix, online product representation, and digital content. These three factors were chosen because they are relevant to the types and patterns of business developing today, especially in the West Nusa Tenggara area.

The author [2] mentions that the marketing mix is not a scientific theory but only a conceptual framework that identifies the critical decision-making managers makes in configuring their offerings to match the needs and expectations of consumers. This marketing mix can be used to develop long-term strategies and short-term tactical programs [3]. The author [4] mentioned that most marketing practitioners consider marketing mix as a marketing transaction tool and an archetypal pattern for marketing planning. Although empirical evidence of the role and exact contribution of marketing mixes to the success of commercial enterprises is still limited. Some studies confirm that 4Ps Mix is a reliable concept according to practitioners who handle marketing issues tactically/operationally [5, 6, 7].

The marketing mix used by a particular company will vary according to its resources, market conditions, and changing client needs. The importance of some elements in the marketing mix will vary [2]. After the bombardment of internet use, marketing managers learned to cope with all the new marketing elements emerging from the online world. In some ways, this new marketing element has a similar analogue in the offline world but with an unknown, more revolutionary effectiveness and characteristics called e-Marketing (or online marketing mix) [8]. The online marketing mix is an essential point of marketing today due to the significant growth of

internet use by the world's population. In Indonesia alone, it is recorded that as of 2021, internet users are 212.35 million people or around 76.8 % of the total population of Indonesia. This is a new opportunity and challenge for all producers and marketers to reach consumers more broadly and almost infinitely, so the right digital marketing strategy is needed.

In addition, this research stems from the limited research on digital marketing concepts such as online marketing mix, online product representation, and digital content marketing in their influence on the performance of forcing, especially for MSME products that are constantly changing and developing rapidly.

Literature review

Marketing Performance. One of the keys for companies, especially MSME-based companies, to be successful in this very dynamic business world is knowing how to maintain a competitive advantage. The author [9] defines competitive advantage as the ability to obtain returns from investments consistently above average for the industry. Meanwhile, the author [10] states that companies with a competitive advantage implement a different strategy than current competitors or potential competitors so that other companies cannot duplicate the benefits of the process.

The author [11] defines marketing performance as the effectiveness and efficiency of an organisation or company's marketing activities that relate to all goals related to the market, such as revenue, growth, and market share. Marketing performance measurement is part of measuring business or company performance, a field of science that aims to support the implementation of business strategies by creating insights into company performance. The author [12] describes this performance measurement as a series of organisational processes and applications designed to optimise the execution of business strategies and are part of the managerial planning process. This planning process should ideally consist of four steps: (1) planning, (2) doing, (3) checking, and (4) acting [13, 14]. Nevertheless, marketing performance measurement focuses on the third step, observing the quality of strategy execution and identifying improvement areas.

The Effect of Online Marketing Mix on Marketing Performance. Authors [15] define a marketing mix as a collection of controlled tactical marketing tools that companies combine to generate the desired response in the target market. More specifically, online marketing strategies are product-centric in the form of dynamic and customised information, unlimited reach by location and time, competitive prices and informative and personalised promotions. Meaning marketers must be able to present advertisements that can touch all types of consumers and are not limited to a specific time and location only. In addition, authors [8] describe an electronic or online marketing mix in their research. The 4P on which the traditional marketing mix is based is still used, but with adjustments and changes that are considered more relevant to the current market situation. In addition, other elements characterise the online marketing mix, namely P2C2S2 (Personalization, Privacy, Customer Service, Community, Site, Security, and Sales Promotion).

Many studies prove that the right marketing mix strategy can improve marketing performance. The author [16], based on the results of his research, stated that price is one of the determining factors for buyers to determine a purchase decision on a product or service. Authors [17], in their research, proved that the marketing mix positively and significantly affects marketing performance. In addition, author [18] in his study also showed that distribution channels (place) and promotion significantly affect marketing performance. Similarly, authors [19] in their research prove that the 4P Marketing mix positively and significantly affects the company's marketing performance. Therefore, this study puts forward the first hypothesis as follows:

H₁: Online Marketing Mix has a significant effect on the marketing performance of MSMEs in NTB Mall Mataram

The Effect of Online Product Representation on Marketing Performance. Consumers currently have broad access to products and services offered by various companies and MSME products. These products and services have been widely available in the digital/online market, so, logically, companies are currently competing to create short videos or excellent and attractive images to represent their products digitally. This is undoubtedly a challenge for marketers [20].

One of the studies by [20] showed that short videos as a form of product representation can be an

effective tool for marketing products online. However, marketers still have to refrain from using videos that make consumers hesitant to buy their products. Ineffective advertising videos interfere with the browsing activities of potential consumers, which results in the extreme reaction of consumers in the form of avoidance of advertising (or can be said to avoid online stores of marketers/companies) [21]. This is to the results of research that shows a significant effect between length and video content on the level of consumer disruption, which leads to consumers avoiding these products and advertisements [22]. Therefore, the second hypothesis proposed in this study is:

H₂: Online Representation has a significant effect on the marketing performance of MSMEs in NTB Mall Mataram

The Effect of Digital Content Marketing on Marketing Performance. Digital content marketing is a management process responsible for profitably identifying, anticipating, and satisfying customer needs in the context of digital content or objects distributed through electronic channels [23]. In digital content, both marketing communications and the product itself are information.

In marketing communications, digital content can be used as a consumer attractor. Therefore, in the literature, it can be seen that many researchers are interested in and conduct research regarding digital content [24, 25, 26]. A study by [27] found that digital content has a positive and significant effect on consumers' buying interest, which is beneficial for improving the company's marketing performance. Thus, this digital content needs to be adequately planned before being published to consumers. Institutions or organisations can post information about their products through different digital channels, such as blogs, social networking sites, online videos and dictionaries, e-commerce, online marketplaces, e-books, e-articles, smartphones, and mobile application content. Thus, consumers can learn about the products offered while sharing their ideas and experiences.

In addition, through digital content, the company can also create the right brand image to ensure a sustainable competitive advantage. The digital content must be persuasive so that it can improve marketing performance. In this case, digital content is a driving factor for consumers to make purchases [27]. Thus, the perception of digital content that convinces consumers can ultimately also encourage consumers to recommend

products to others through electronic word-of-mouth communication. Based on this explanation, the third hypothesis proposed in this study is as follows:

H3: Digital Content Marketing has a significant effect on the marketing performance of MSMEs in NTB Mall Mataram.

Based on the explanation above, the conceptual framework of this study presents in Figure 1.

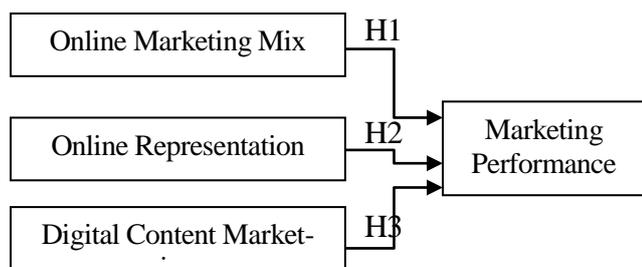


Figure 1 – The Studies' Conceptual Framework

METHODS

The data collection of this study was carried out by utilising google Forms, an online questionnaire application. Respondents came from diverse demographics regarding gender, age, and educational background. The sampling technique used was simple random sampling, and then the questionnaire was distributed to 95 respondents who were MSME actors aged between 20-60 years. The measurement of variable indicators adopts from previous research, namely the online marketing mix from [8]), online representation from [28], digital content marketing from [29], and marketing performance from [30, 31, 32]. All items are evaluated using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Data analysis in this study used a variance-based structural equation test with the SEM partial least square (PLS) method using Smart PLS 3.0 software. The selection of the PLS method in this study is based on the characteristics of the data on the SEM-PLS model that can test and identify with a low error rate even with a relatively small sample size.

Respondent's Characteristics. The study collected responses from 95 respondents. Because it uses an online questionnaire form, all questions can be mandatory so that respondents answer all the questions asked. The characteristics of respondents vary widely. Among all the respondents, 23

men and 72 women, most of whom (44.21%) were between the ages of 31-40. The most dominant respondent's educational background was high school (47.37%), where 38 (40%) of the respondents were included in the MSME actors who had joined NTB Mall for one year. The complete data can be seen in the following Table 1.

Table 1 – Respondent's Characteristics

| Variable | Description | Sum | % |
|------------------|----------------------------------------------------|-----|-------|
| Gender | Male | 23 | 24.21 |
| | Female | 72 | 75.79 |
| Age | 20-30 years old | 20 | 21.05 |
| | 31-40 years old | 42 | 44.21 |
| | 41-50 years old | 22 | 23.16 |
| | 51-60 years old | 11 | 11.58 |
| Education | Elementary School | 5 | 5.26 |
| | Junior High School | 22 | 23.16 |
| | Senior High School | 45 | 47.37 |
| | Bachelor degree | 23 | 24.21 |
| Years of join | One year | 38 | 40.00 |
| | Two years | 19 | 20.00 |
| | Three years | 14 | 14.74 |
| | Four years | 15 | 15.79 |
| | Five years | 9 | 9.47 |
| Types of Product | Food and drink | 16 | 16.84 |
| | Fashion Products (Clothing, Bags, Jewellery, etc.) | 17 | 17.89 |
| | Beauty and Health Products | 16 | 16.84 |
| | Woven Fabrics | 15 | 15.79 |
| | Songket Fabric | 14 | 14.74 |
| | Household Products | 5 | 5.26 |
| | Other products | 12 | 12.63 |

RESULTS AND DISCUSSIONS

Measurement Model (Outer Model)

Item Reliability Test Results are presents in Table 2. It can be seen from the table that all indicators of this study variable have a loading factor value greater than 0.70 [34]. All the hands are said to be valid and used as items to test this research model.

Discriminant Validity Test Results. The discriminate validity test was performed using the Average Variance Extract (AVE) value. The first condition must be met at this testing stage, and the AVE value must be greater than 0.50. Table 3 shows that the AVE values of all variables are> 0.50, so the first condition is said to be met.

Table 2 – Nilai Loading Factor

| Variable | Statement | Loading Factor | Criteria |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------|
| Online Marketing Mix | The types of my MSME products displayed in the NTB Mall web/application vary with complete displays (photos, information, how to use) | 0.845 | Valid |
| | The chosen pricing strategy is adjusted to the product offered | 0.797 | Valid |
| | I always choose the most effective promotional design (advertising, online banners, coupons), in my opinion | 0.803 | Valid |
| | I do affiliate with NTB Mall to make it easier for customers to access my products | 0.796 | Valid |
| | Customer Service at NTB Mall is good, complete, and very helpful | 0.824 | Valid |
| | There is a customer community in NTB Mall to allow customers to interact with other customers | 0.748 | Valid |
| Online Representation | I display an exciting and clear image on the NTB Mall web/app | 0.867 | Valid |
| | I also feature videos without narration to illustrate my MSME products | 0.885 | Valid |
| | I say products with narratives to explain my products to consumers | 0.897 | Valid |
| Digital Content Marketing | My digital content creation is tailored to its purpose, benefits, and specifications, so it's not boring | 0.794 | Valid |
| | The content created answers the needs and desires of consumers with a website appearance that consumers can understand, can be used efficiently, and is not confusing | 0.861 | Valid |
| | My digital content contains information and products that are offered well and make it easier for consumers to make purchasing decisions | 0.858 | Valid |
| | The language used in my range is so consistent that it can make it easier for readers to understand what they are reading | 0.850 | Valid |
| | The content information is concise and only contains essential information. | 0.842 | Valid |
| | The quality of the information provided is excellent, and it is ensured that it is helpful for consumers to learn about the product and its usefulness | 0.758 | Valid |
| | My product sales always meet the target | 0.731 | Valid |
| Marketing Performance | Relative product sales figures are increasing every month | 0.808 | Valid |
| | The number of subscribers is growing every year | 0.761 | Valid |
| | Promotional strategies used to increase sales figures | 0.813 | Valid |
| | The pricing strategy used adds to the company's profits | 0.736 | Valid |
| | Images and videos displayed on the NTB mall web increase the number of customers | 0.752 | Valid |
| | I always get a profit every month | 0.801 | Valid |
| | Digital content displayed on the NTB Mall web/application increased the number of visitors to my online store | 0.789 | Valid |

Table 3 – Quality Criteria

| Variable | AVE | Composite Reliability | Cronbach's Alpha |
|---------------------------------------------|-------|-----------------------|------------------|
| Online Marketing Mix (X ₁) | 0.644 | 0.916 | 0.890 |
| Online Representation (X ₂) | 0.780 | 0.914 | 0.860 |
| Digital Content Marketing (X ₃) | 0.686 | 0.929 | 0.909 |
| Marketing Performance (Y) | 0.600 | 0.923 | 0.905 |

Based on the data in Table 3, it can also be concluded that all items are qualified, so all items are valid and can be used to test this research model.

Internal Consistency Test Results. Based on the Table 3, it can be seen that the value of the composite reliability of each variable is more significant than 0.70. Likewise, the value of Cronbach's alpha is by the value recommended by [34], which is greater than 0.60. Therefore, the internal consistency is concluded to have been fulfilled.

Hypothesis Test

It is carried out to determine the degree of significance of the path coefficient by looking at the resulting t-value (t-count). In this step, the test is carried out by running the Bootstrapping algorithm to determine whether the hypothesis proposed is accepted. The hypothesis will be supported at a significance level of 0.05 if the significance level is below 0.05 (5%).

In principle, this study uses one dependent variable, which is influenced by three other variables. The result of the R² value of the marketing performance variable (Y), which is 0.529 or 52.9%, means that the online marketing mix, online representation, and digital content marketing variables can substantially explain the marketing performance variable with a rate of 52.9%. At the same time, the rest is influenced by other factors not discussed in this study.

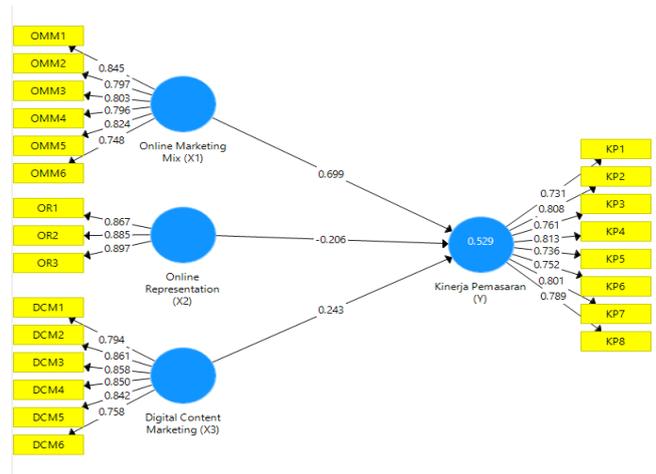


Figure 3 – Inner Model Structure

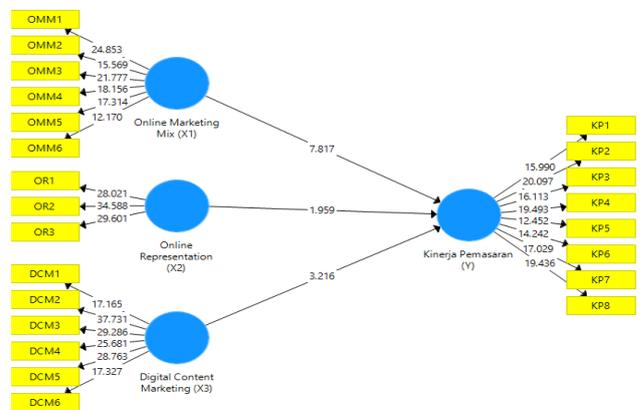


Figure 4 – Bootstrapping Test Results on Smart PLS

Table 4 – Structural Model Test Results

| Influence between Variables | Coefficient | T Statistics | P Value | Conclusion |
|---------------------------------------------------|-------------|--------------|---------|---------------|
| Online Marketing Mix -> Marketing performance | 0.699 | 7.817 | 0.000 | Significant |
| Online representation -> Marketing performance | -0.206 | 1.959 | 0.051 | Insignificant |
| Digital Content Marketing-> Marketing performance | 0.243 | 3.216 | 0.001 | Significant |

This study's H₁ states, "Online marketing mix has a significant effect on marketing performance". Through hypothesis testing with PLS, the test results showed a coefficient value of 0.699 with a p-value of 0.000, which is smaller than 0.05. So there is a significant influence of the online marketing mix on the marketing performance of NTB Mall MSMEs by H₁ (therefore, H₁ is accepted).

This study's H₁ test proves that the online marketing mix positively and significantly affects the marketing performance of MSMEs in NTB Mall.

This means that the better the online marketing mix strategy applied by MSME players, the more it will improve their marketing performance. Vice versa, if the online marketing mix strategy used by MSME players is wrong, the lower the marketing performance will be.

This study's H₂ states, "Online representation has a significant effect on marketing performance". Through hypothesis testing with PLS, the test results showed a coefficient value of -0.206 with a p-value of 0.051, which is greater than 0.05. It can be concluded that there is no significant in-

fluence of online representation on the marketing performance of NTB Mall MSMEs, which is contrary to H₂ of this study (thus, H₂ is rejected).

This study's H₂ test proves that online representation does not positively or significantly influence the marketing performance of MSMEs in NTB Mall. This means that online indication applied by MSME actors is not believed to be able to improve marketing performance, so only a few MSME players continue to implement this strategy.

This study's H₃ states, "digital content marketing has a significant effect on marketing performance". Through hypothesis testing with PLS, a coefficient value of 0.243 with a p-value of 0.001, which is smaller than 0.05, was obtained. It can be concluded that digital content marketing significantly affects the marketing performance of MSMEs in NTB Mall, which means that it is by H₃ (therefore, H₃ is accepted).

This study's H₃ test proves that digital content marketing has a positive and significant effect on the marketing performance of MSMEs in NTB Mall. This means that the better the digital content marketing mix strategy implemented by MSME players, the more it will improve their marketing performance. Vice versa, if the digital content marketing strategy implemented by MSME players is wrong, the lower the marketing performance will be.

CONCLUSIONS

Online marketing mix has a positive and significant effect on marketing performance. This means marketing performance will improve if MSME players implement an excellent online marketing mix strategy. Some examples of online marketing mixes that MSME players apply are displaying various products. These price strategies are affordable but affordable, promoting through endorsers and collaborating with NTB Mall as their distribution channel.

Online representation has no significant influence on marketing performance. This means that efforts to change the online representation strat-

egy carried out by MSME players are not believed to be able to improve marketing performance. This can be caused by the perception of a good video or image between consumers and MSME actors are different. So what is considered a good video by MSME actors can be uninteresting or disturbing to consumers?

In addition, digital content marketing positively and significantly influences marketing performance. This means that the better the digital content marketing strategy implemented by MSME players, the more it will increase sales figures, the number of customers and the profits of MSMEs. The digital content marketing strategy that MSME players have implemented is to create content with helpful but concise information, using excellent and consistent language, and tailored to MSMEs' goals and target market.

This research is expected to provide various benefits and information for MSME actors to improve their marketing performance. The findings of this study can be used as a reference for MSME actors to take more appropriate considerations and steps in implementing online representation strategies so that they can be used to improve their marketing performance. MSME players are generally categorised as highly creative in the online marketing mix and digital content marketing. They can still be improved again by proactively looking for references regarding creating and providing digital content and determining effective pricing and promotion strategies.

This research was specifically conducted regarding the influence of online marketing mix, online representation, and digital content marketing from the perception of MSME actors only, and the sample was relatively small. Based on the limitations and findings in this study, subsequent researchers should use different sampling techniques so that the number of pieces is more numerous and more representative, describing a large population. In addition, researchers can then conduct research with the same or other variables from a consumer point of view, namely consumer perceptions of digital content marketing, online marketing mix, and online representation applied by MSME actors.

REFERENCES

1. Jackson, G., & Ahuja, V. (2016). Dawn of the digital age and the evolution of the marketing mix. *Journal of Direct, Data and Digital Marketing Practice*, 17(3), 170–186. doi: [10.1057/dddmp.2016.3](https://doi.org/10.1057/dddmp.2016.3)

2. Goi, C. L. (2009). A Review of Marketing Mix: 4Ps or More? *International Journal of Marketing Studies*, 1(1). doi: [10.5539/ijms.v1n1p2](https://doi.org/10.5539/ijms.v1n1p2)
3. Palmer, A. (2004). *Introduction to Marketing. Theory and Practice*. Oxford: Oxford University Press.
4. Grönroos, C. (1994). From Marketing Mix to Relationship Marketing. *Management Decision*, 32(2), 4–20. doi: [10.1108/00251749410054774](https://doi.org/10.1108/00251749410054774)
5. Sriram, V., & Sapienza, H. J. (1991). An Empirical Investigation of the Role of Marketing for Small Exporters. *Journal of Small Business Management*, 29, 33–43.
6. Romano, C. (1996). The Role of Marketing. *European Journal of Marketing*, 29(7), 9–24.
7. Coviello, N. E., Brodie, R. J., & Munro, H. J. (2000). An investigation of marketing practice by firm size. *Journal of Business Venturing*, 15(5–6), 523–545. doi: [10.1016/s0883-9026\(98\)00035-4](https://doi.org/10.1016/s0883-9026(98)00035-4)
8. Kalyanam, K., & McIntyre, S. (2002). The E-Marketing Mix: A Contribution of the E-Tailing Wars. *Journal of the Academy of Marketing Science*, 30(4), 487–499. doi: [10.1177/009207002236924](https://doi.org/10.1177/009207002236924)
9. Porter, M. (1985). *Competitive Advantage. Creating and Sustaining Superior Performance*. New York: The Free Press.
10. Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99–120. doi: [10.1177/014920639101700108](https://doi.org/10.1177/014920639101700108)
11. Homburg, C., Grozdanovic, M., & Klarmann, M. (2007). Responsiveness to Customers and Competitors: The Role of Affective and Cognitive Organizational Systems. *Journal of Marketing*, 71(3), 18–38. doi: [10.1509/jmkg.71.3.018](https://doi.org/10.1509/jmkg.71.3.018)
12. Eckerson W. W. (2011). *Performance dashboards: measuring monitoring and managing your business* (2nd ed.). Hoboken: Wiley.
13. Deming, W. E. (1982). *Quality, Productivity and Competitive Position*. Cambridge: MIT Press.
14. Walton, E. J. (1986). Managers' prototypes of financial terms. *Journal of Management Studies*, 23(6), 679–698. doi: [10.1111/j.1467-6486.1986.tb00442.x](https://doi.org/10.1111/j.1467-6486.1986.tb00442.x)
15. Kotler, Ph., & Armstrong, G. (2008). *Principles of marketing*. (10th ed.). Toronto: Pearson.
16. Tjiptono, F. (2017). *Strategi Pemasaran [Marketing Strategy]* (4th ed.). Yogyakarta: ANDI.
17. Risal, M., & Salju, S. (2017). [Pengaruh Bauran Pemasaran \(4ps\) Dalam Meningkatkan Kinerja Pemasaran. Studi Kasus Pada: Industri Kecil Pengolahan Rumput Laut di Provinsi Sulawesi Selatan \[The Effect of Marketing Mix \(4ps\) in Improving Marketing Performance. Case Study: Seaweed Processing Small Industries in South Sulawesi Province\]](#). *Balance*, 14(1), 1–18 (in Indonesian).
18. Nurseto, S. (2018). [Pengaruh Saluran Distribusi dan Promosi Terhadap Kinerja Pemasaran \(Studi Kasus Pada UKM Furniture Kota Semarang\) \[The Effect of Distribution Channels and Promotion on Marketing Performance \(Case Study on Furniture SMEs in Semarang City\)\]](#). *Jurnal Administrasi Bisnis*, 7(2), 103. doi: [10.14710/jab.v7i2.22695](https://doi.org/10.14710/jab.v7i2.22695) (in Indonesian).
19. Tirtayasa, S., & Daulay, Y. A. (2021). [Pengaruh Marketing Mix Terhadap Kinerja Pemasaran Industri Kecil Menengah Sektor Kontruksi Bengkel Las di Moderasi Kebijakan Pemerintah Pada Masa Pandemi Covid 19 \[The Effect of Marketing Mix on the Marketing Performance of Small Industries Medium Construction Sector Welding Workshop in Moderation of Government Policy Government Policies During the Covid 19 Pandemic\]](#). *Maneggio: Jurnal Ilmiah Magister Manajemen*, 4(1), 106-122 (in Indonesian).
20. Liu, X., Shi, S. W., Teixeira, T., & Wedel, M. (2018). Video Content Marketing: The Making of Clips. *Journal of Marketing*, 82(4), 86–101. doi: [10.1509/jm.16.0048](https://doi.org/10.1509/jm.16.0048)
21. Li, H., Edwards, S. M., & Lee, J.-H. (2002). Measuring the Intrusiveness of Advertisements: Scale Development and Validation. *Journal of Advertising*, 31(2), 37–47. doi: [10.1080/00913367.2002.10673665](https://doi.org/10.1080/00913367.2002.10673665)

22. Goodrich, K., Schiller, S. Z., & Galletta, D. (2015). Consumer Reactions to Intrusiveness Of Online-Video Advertisements. *Journal of Advertising Research*, 55(1), 37–50. doi: [10.2501/jar-55-1-037-050](https://doi.org/10.2501/jar-55-1-037-050)
23. Rowley, J. (2008). Understanding digital content marketing. *Journal of Marketing Management*, 24(5–6), 517–540. doi: [10.1362/026725708x325977](https://doi.org/10.1362/026725708x325977)
24. Stephen, A. T. (2016). The role of digital and social media marketing in consumer behavior. *Current Opinion in Psychology*, 10, 17–21. doi: [10.1016/j.copsyc.2015.10.016](https://doi.org/10.1016/j.copsyc.2015.10.016)
25. Gelter, H. (2017). *Digital tourism - An analysis of digital trends in tourism and customer digital mobile behaviour. Visit Arctic Europe*. Retrieved from <https://archipelagobusiness.nu/rapporter/digital-tourism-an-analysis-of-digital-trends-in-tourism-and-customer-digital-mobile-behaviour/>
26. De Pelsmacker, P., van Tilburg, S., & Holthof, C. (2018). Digital marketing strategies, online reviews and hotel performance. *International Journal of Hospitality Management*, 72, 47–55. doi: [10.1016/j.ijhm.2018.01.003](https://doi.org/10.1016/j.ijhm.2018.01.003)
27. Yazgan Pektas, S., & Hassan, A. (2020). The Effect of Digital Content Marketing on Tourists' Purchase Intention. *Journal of Tourismology*, 79–88. doi: [10.26650/jot.2020.6.1.0011](https://doi.org/10.26650/jot.2020.6.1.0011)
28. Jiang, Z., & Benbasat, I. (2007). Research Note: Investigating the Influence of the Functional Mechanisms of Online Product Presentations. *Information Systems Research*, 18(4), 454–470.
29. Kissane, E., & Halvorson, K. (2011). *The Elements Of Content Strategy*. New York: A Book Apart.
30. Pertiwi, Y. D., & Siswoyo, B. B. (2016). Pengaruh Orientasi Pasar Terhadap Kinerja Pemasaran pada UMKM Kripik Buah di Kota Batu [The Effect of Market Orientation on Marketing Performance in Fruit Crackers MSMEs in Batu City]. *Syariah Paper Accounting FEB UMS*, 3, 231-238 (in Indonesian).
31. Baker, W. E., & Sinkula, J. M. (2009). The Complementary Effects of Market Orientation and Entrepreneurial Orientation on Profitability in Small Businesses. *Journal of Small Business Management*, 47(4), 443–464. doi: [10.1111/j.1540-627x.2009.00278.x](https://doi.org/10.1111/j.1540-627x.2009.00278.x)
32. Laukkanen, T., Nagy, G., Hirvonen, S., Reijonen, H., & Pasanen, M. (2013). The effect of strategic orientations on business performance in SMEs. *International Marketing Review*, 30(6), 510–535. doi: [10.1108/imr-09-2011-0230](https://doi.org/10.1108/imr-09-2011-0230)
33. Abdillah, W., & Jogiyanto. (2014). *Konsep & Aplikasi PLS (Partial Least Square) untuk Penelitian Empiris* [PLS (Partial Least Square) Concepts & Applications for Empirical Research]. Yogyakarta: BPFE (in Indonesian).
34. Hair, J. F., William, C., Babin, B., Anderson, R., & Black, J. (2010). *Multivariate data analysis a global perspective* (7th ed.). New Jersey: Pearson.

Tourist Risk Perception, Destination Image and Tourist Experience towards Revisit Intention Post COVID-19 Pandemic

Astrid Octavia Bahari¹, Lalu Edy Herman Mulyono¹, Handry Sudiarta Athar¹

¹ *University of Mataram*

Jl. Majapahit No 62 Mataram, Nusa Tenggara Barat, Indonesia

DOI: [10.22178/pos.86-11](https://doi.org/10.22178/pos.86-11)

JEL Classification: L83

Received 21.09.2022

Accepted 25.10.2022

Published online 31.10.2022

Corresponding Author:
Handry Sudiarta Athar
handrysudiarta@gmail.com

© 2022 The Authors. This article is licensed under a Creative Commons Attribution 4.0

License 

Abstract. West Nusa Tenggara Province, especially the island of Lombok, has many tourist destinations, namely nature tourism, cultural tourism, and tourist attractions (sports tourism). Still, the tourism sector in NTB is one of the sectors most affected by the COVID-19 pandemic era. This study aimed to determine tourist risk perception, destination image and tourist experience on revisit intention after the Covid-19 pandemic. This study uses a quantitative approach with an explanatory research design. This research was conducted in Kuta Tourism Destinations, Central Lombok Regency, Lombok Island, West Nusa Tenggara Province, Indonesia. The research population is all people who have visited the Mandalika KEK tourist attraction on the island of Lombok after the COVID-19 pandemic in March 2020. The sampling technique is non-random sampling, so the number of research samples is 85 people. Data collection techniques used are questionnaires and documentation. Data analysis was carried out using the Partial Least Square approach. The results showed that 1) Tourist Risk Perception has a negative and significant effect on Destination Image; 2) Destination Image has a positive and significant impact on Tourist Experience; 3) Tourist Experience has a positive and significant effect on Revisit Intention; 4) Tourist Risk Perception has a negative and significant effect on Kuta Lombok Tourist Destinations after the COVID-19 pandemic; and 5) Destination Image has a positive and significant impact on the Revisit Intention of Tourists of Kuta Lombok Tourism Destinations after the COVID-19 pandemic.

Keywords: tourist risk perception; destination image; tourist experiences; revisit intention; COVID-19.

INTRODUCTION

West Nusa Tenggara Province, especially the island of Lombok, has many tourist destinations, namely nature tourism, cultural tourism, and tourist attractions (sports tourism). In 2018, tourism in West Nusa Tenggara (NTB) was shaken by a powerful earthquake. Not even two years after continued recovery efforts after the devastating earthquake, the economic COVID19-downturn has occurred again, which is marked by a drastic decline in tourist visits to NTB.

Several studies related to tourism have discussed the relationship between vacation motivation and risk perception. Tourism researchers classify risk perceptions in several ways. For example, risk perception can influence medical tourists to avoid specific destinations or even a tendency not to travel at all [1]. Research conducted by [2] identified that two dimensions of risk perception (namely financial risk and performance risk) significantly impact the destination's image. At the

same time, the author [3] categorises risk perceptions into six dimensions: physical, financial, performance, social, psychological, and economic. For example, backpacker tourists may not face the same risk factors as recreational tourists. Another approach is that the risk perceived by potential tourists may change from time to time and from destination to destination.

In addition, many studies have examined risk perceptions about tourist destination images that lead to revisiting intentions [4, 5, 6, 7]. Customer complaints against tourist destinations can result in lower post-purchase behaviour because what is desired does not materialise [8]. Destination image is necessary to influence tourist decision-making, destination choice, post-trip evaluation, and future behaviour [9, 10, 11]. Many destinations range from city/rural, region or country. If the goal is the whole country, the image of the country/nation may be an essential factor in influencing the idea of the destination and the choice of international tourist destinations [11,

12]. Existing international trade and marketing studies show that consumers' perceptions of the country's image influence attitudes, evaluations and purchase intentions of the country's products [13].

Destination image plays two critical roles in behaviour. Some researchers have suggested that such behaviour allows one to test places, thereby influencing decision-making [14, 15]. Others have argued that decision-making behaviour [16, 17] consists of participation (onsite experience), evaluation (satisfaction), and future behavioural intentions (intention to revisit and willingness to recommend). More theoretical and empirical research needs to be done in this area. This study aimed to examine the relationship between destination image, experience, perceived expertise and decision-making for future behavioural intentions.

Restoring tourist trust is needed, amid anxiety and the need to travel, especially during the COVID-19. This research was conducted using a quantitative approach to analyse consumer behaviour (tourists), identify behaviours that can change the tourism industry and understand their needs. Based on relevance data review, it illustrates the low awareness of the people of the island of Lombok about the importance of the natural beauty of tourism that is required to create interest in revisiting on the island of Lombok.

METHODS

This research uses a quantitative approach. According to the conventional wisdom, quantitative research is closely related to social survey techniques, including structured interviews and structured questionnaires, experiments, structured observations, content analysis, formal statistical analysis and many more. The design or design of this research includes explanatory research, namely research that aims to analyse the relationships between one variable and another or how one affects other variables [18].

This research was conducted in Kuta Tourism destinations, Central Lombok Regency, Lombok Island, West Nusa Tenggara Province, Indonesia. The researchers took the location because the location is one of the areas that is a means of proving Indonesian tourism, especially Lombok Island, in the international arena. Population refers to the whole group of people, events, or things of interest investigated by the research-

er [19]. The population in this study were all people who had visited the Mandalika SEZ tourist attraction on the island of Lombok after the COVID-19 in March 2020. The sample was part of the population. The model comprises some members selected from the people [19].

The sampling technique used in this study is non-random sampling, namely using the purposive sampling technique, which is one of the sampling techniques by selecting samples based on the required information that can be obtained from a particular target group to be able to provide the information desired by the researcher. This study involved 17 manifest variables from 4 existing latent variables, so the sample taken is based on the above criteria: several $5 \times 17 = 85$ people.

In this study, the data collection techniques used were questionnaires and documentation.

The quantitative approach used in this analysis is the Partial Least Square (PLS) approach.

Outer Model Analysis. The outer model analysis is carried out to ensure that the measurement used is feasible to be used as a measurement (valid and reliable). This model's analysis specifies the relationship between latent variables and their indicators. Outer model analysis can be seen from several indicators:

1. Convergent Validity is an indicator assessed based on the correlation between the item score and the construct score, which can be seen from the standardised loading factor, which describes the magnitude of the correlation between each measurement item (indicator) and its construct. The individual reflexive measure is said to be high if it has a correlation > 0.7 with the construct to be measured. According to [20], the outer loading value between 0.5-0.6 is considered sufficient.
2. Discriminant Validity is a measurement model with reflexive indicators, assessed based on cross-loading measurements with constructs. If the construct's correlation with the measurement item is more significant than the size of the other constructs, it indicates that their block size is better than the other blocks. Meanwhile, another method to assess discriminant validity is by comparing the square root value of the average variance extracted (AVE).
3. Composite reliability is an indicator to measure a construct seen in the view of latent variable coefficients. Two measuring tools to evaluate

composite reliability are internal consistency and Cronbach's Alpha. In this measurement, if the value achieved is > 0.70, it can be said that the construct has high reliability.

4. Cronbach's Alpha is a reliability test carried out to strengthen the results of composite reliability. A variable can be declared reliable if it has Cronbach's alpha value > 0.7

The test carried out above is on the outer model for reflective indicators. For formative indicators, different tests were carried out. The tests for formative indicators are:

1. Significance of weights. The value of the formative indicator weight with its construction must be significant.

2. Multicollinearity. A multicollinearity test was conducted to determine the relationship between indicators. To determine whether the formative indicators have multicollinearity by knowing the VIF value. The VIF value between 5-10 can be said that the hand occurs multicollinearity.

Inner Model Analysis. Inner model analysis, usually referred to as inner relations, structural models and substantive theory describe the relationship between latent variables based on substantive theory. The inner model analysis can be evaluated by using R² for the dependent construct, the Stone-Geisser Q² test for predictive relevance and the t-test, and the significance of the coefficients of structural path parameters. In evaluating the inner model with PLS, it begins by looking at the R² for each latent dependent variable. Then the interpretation is the same as the interpretation of the regression. Changes in the value of the R² can be used to assess the effect of certain independent latent variables on the latent dependent variable and whether it has a substantive impact. In addition to looking at the R² value, the PLS model is also evaluated by looking at the predictive Q² relevance value for the constructive model. Q² measures how well the model and its parameter estimates generate the observed values. A Q² value greater than 0 indicates that the model has predictive relevance, while if the Q² value is less than zero, the model lacks predictive relevance.

Hypothesis test. In testing the hypothesis, it can be seen from t-statistics and probability values. To test the idea using statistical values, for Alpha 5%, the t-statistic value used is 1.96. So the criteria for acceptance/rejection of the hypothesis are

that H_a is accepted and H₀ is rejected when the t-statistic > 1.96. To reject/accept the hypothesis using probability, H_a is accepted if the p-value < 0.05.

Hypotheses:

H₁: Getting lower tourist risk perception the higher the Destination Image.

H₂: The higher the Destination Image, the higher the Tourist Experience.

H₃: The higher it is tourist Experience so the higher the revisit intention

H₄: Lower Tourist risk perception so the higher it Revisits intention.

H₅: The higher the destination Image so the higher is Revisit intention.

The conceptual framework of this research is shown in Figure 1.

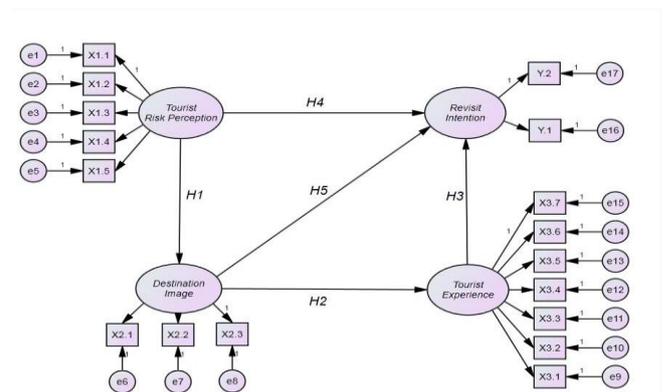


Figure 1 – Conceptual framework

RESULTS AND DISCUSSION

Measurement Model. Testing with the PLS approach is practical because this test is not limited by the fulfillment of normally distributed data and limitations on the number of data samples. Data analysis using the PLS approach was first carried out by evaluating the measurement model. Using SmartPLS, Figure 2 is obtained, the output path diagram in SmartPLS 3.3.

Loading factor (convergent validity). Convergent validity testing looks at the loading factor value (the correlation between item scores and construct scores). The indicators that measure the construct whose value is greater than 0.5 are considered significant so that they meet the convergent validity criteria [21].

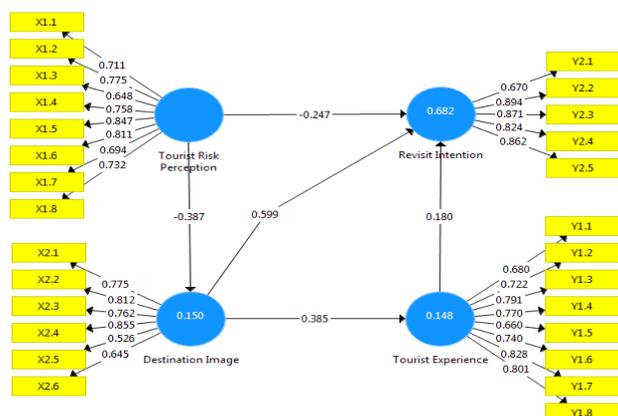


Figure 2 – PLS-SEM Outputs

Variable tourist risk perception. The Table 1 presents the results of the calculation of the loading factor of the tourist risk perception variable.

Table 1 – Loading factors tourist risk perception

| No | Variable Items | Outer Loading |
|----|----------------|---------------|
| 1 | X1.1 | 0.711 |
| 2 | X1.2 | 0.775 |
| 3 | X1.3 | 0.648 |
| 4 | X1.4 | 0.758 |
| 5 | X1.5 | 0.847 |
| 6 | X1.6 | 0.811 |
| 7 | X1.7 | 0.694 |
| 8 | X1.8 | 0.732 |

From Table 1, it can be seen that all tourist risk perception indicators have a factor loading value > 0.50. Therefore, these indicators are then used as items in model testing.

Variable Destination Image. The following Table 2 presents the results of the calculation of the loading factor for the destination image variable.

Table 2 – Loading factors for destination image

| No | Variable Items | Outer Loading |
|----|----------------|---------------|
| 1 | X2.1 | 0.775 |
| 2 | X2.2 | 0.812 |
| 3 | X2.3 | 0.762 |
| 4 | X2.4 | 0.855 |
| 5 | X2.5 | 0.526 |
| 6 | X2.6 | 0.645 |

From Table 2, it can be seen that all destination image indicators have a factor loading value >

0.50. Therefore, these indicators are then used as items in model testing.

Variable tourist experience. Table 3 presents the calculation results for the tourist experience variable loading factor.

Table 3 –Loading factor for tourist experience

| No | Variable Items | Outer Loading |
|----|----------------|---------------|
| 1 | Y1.1 | 0.680 |
| 2 | Y1.2 | 0.722 |
| 3 | Y1.3 | 0.791 |
| 4 | Y1.4 | 0.770 |
| 5 | Y1.5 | 0.660 |
| 6 | Y1.6 | 0.740 |
| 7 | Y1.7 | 0.828 |
| 8 | Y1.8 | 0.801 |

From Table 3, it can be seen that all tourist experience indicators have a factor loading value > 0.50. Therefore, these indicators are then used as items in model testing.

Revisit intention. The following are the results of the calculation of the Reliability of the Revisit intention Variable.

Table 4 – Loading factors for revisit intention

| No | Variable Items | Outer Loading |
|----|----------------|---------------|
| 1 | Y2.1 | 0.670 |
| 2 | Y2.2 | 0.894 |
| 3 | Y2.3 | 0.871 |
| 4 | Y2.4 | 0.824 |
| 5 | Y2.5 | 0.862 |

From Table 4, it can be seen that all of the revisit intention indicators have a factor loading value of > 0.50. Therefore, these indicators have met the criteria.

In addition to looking at the loading factor, Convergent Validity can be evaluated by looking at the Average Variance Extracted (AVE) value. The AVE > 0.50 is said to have met the convergent validity criteria [20]. The value can be seen in Table 5.

It can be seen in Table 5 that the AVE value is more than 0.50. Therefore, the convergent validity criteria have been met.

Table 5 – Composite Reliability

| No | Variable | AVE |
|----|-------------------------|-------|
| 1 | Tourist risk perception | 0.561 |
| 2 | Destination Image | 0.544 |
| 3 | Tourist Experience | 0.564 |
| 4 | Revisit intention | 0.686 |

Composite Reliability. In PLS SEM measuring the reliability of a construct with reflective indicators can be done in two ways, namely Cronbach Alpha and Compo-site Reliability, often referred to as Dillon-Goldstein's. Using Cronbach's Alpha in the construct reliability test will give a lower value (underestimate), so it is better to use composite reliability. The rule of thumb usually used to assess construct reliability is that the composite reliability value must be greater than 0.7 [20], although 0.6 is still accepted [21]. The value of the test results can be seen in Table 6.

It can be seen in Table 6 that the composite reliability value of each variable is more significant than 0.70, as well as the Cronbach's alpha value is by the recommended value (> 0.70). Therefore, composite reliability has been met.

Table 7 – Discriminant Validity

| Variable | Destination image | Revisit intention | Tourist experience | Tourist risk perception |
|-------------------------|-------------------|-------------------|--------------------|-------------------------|
| Destination image | 0.737 | | | |
| Revisit intention | 0.764 | 0.828 | | |
| Tourist experience | 0.385 | 0.498 | 0.751 | |
| Tourist risk perception | -0.387 | -0.543 | -0.355 | 0.749 |

Evaluation of the Structural Model. The Goodness of Fit Model measured using R^2 dependent latent variable with the same interpretation as regression. Q^2 - predictive relevance for structural models - measuring how well conservation values are generated by the model and also the estimated parameters. Q^2 value > 0 indicates the model has predictive relevance. On the other hand, if the value of $Q^2 < 0$ suggests that the model lacks predictive relevance. The formula does the Q^2 calculation (1):

$$Q^2 = 1 - ((1 - R_1^2)(1 - R_2^2)(1 - R_p^2)), \quad (1)$$

where R_1^2 , R_2^2 , R_p^2 is the R^2 the endogenous variable in the equation model.

Table 6 – Composite Reliability

| Variable | Composite Reliability | Cronbach's Alpha |
|-------------------------|-----------------------|------------------|
| Tourist risk perception | 0.911 | 0.888 |
| Destination Image | 0.875 | 0.831 |
| Tourist Experience | 0.911 | 0.889 |
| Revisit intention | 0.915 | 0.883 |

Discriminant Validity. The method can be used to compare the value of each construct's square root AVE with the correlation between other constructs in the model. If the AVE root value of each construct is greater than the correlation value between the construct and other constructs in the model, it is said to have a good discriminant validity value [20].

Table 7 shows that the value of the square root of the AVE (the number that is in the diagonal) for each variable is greater than the value of the correlation with the other variables (the number that is in one row and one column with the corresponding variable AVE). Thus, the research model has met discriminant validity.

The value of determination Q^2 generated as a result of the evaluation of this research model can be seen in the following Table 8.

Table 8 – Model Determination Value

| No | Variable | R^2 |
|----|--------------------|-------|
| 1 | Destination image | 0.150 |
| 2 | Tourist experience | 0.148 |
| 3 | Revisit intention | 0.682 |

The total diversity of data that this research model can explain is measured by:

$$Q^2 = 1 - ((1 - 0.1502)(1 - 0.6822)(1 - 0.1482)) = 0.769$$

The value of $Q^2 > 0$ is 0.769, which indicates that the model has very good predictive relevance. This means that the diversity of data that can be explained by this research model is 76.9%. While the rest is explained by other variables from outside the model that is not included in this research model.

Results Significance Test (Hypothesis Testing). To determine the significance level, the p-value generated by running the Bootstrapping algorithm is

used to determine whether the proposed hypothesis is accepted. The hypothesis will be supported at a significance level of 0.05 if the p-value is less than the critical value of 0.05 (5%). The results of the significance level test can be seen in Table 9, summarising the results of hypothesis testing with the PLS approach. The coefficient value is obtained from the SmartPLS output, which can be seen below.

Table 9 – Structural Model Test Results

| Effect Between Variables | Coefficient | t-Statistics | p-value | Information |
|---------------------------------------------|-------------|--------------|---------|-------------|
| Tourist risk perception-> Destination image | -0.387 | 2,328 | 0.011 | Significant |
| Destination image-> Tourist experience | 0.385 | 4,154 | 0.000 | Significant |
| Tourist experience-> Revisit intention | 0.180 | 2,832 | 0.003 | Significant |
| Tourist risk perception-> Revisit intention | -0.247 | 1,895 | 0.031 | Significant |
| Destination Image-> Revisit intention | 0.599 | 5,879 | 0.000 | Significant |

The results of the significance of the SmartPLS output image can be seen in Figure 3.

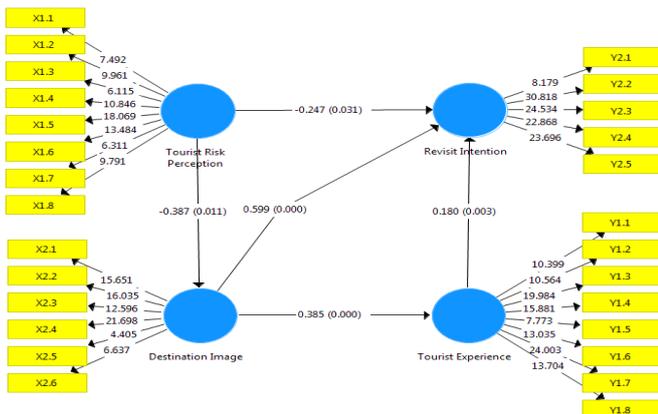


Figure 3 – Bootstrapping Test Results on SmartPLS

The H_1 in this study states, "It is suspected that Tourist risk perception has a negative and significant influence on destination image Kuta Lombok destinations after the COVID-19 ". Through hypothesis testing with PLS, the test results show that the coefficient value is -0.387 with a p-value of 0.028 (smaller than the 5% (0.05) error tolerance) which is significant. It can be stated that the first hypothesis is accepted.

The H_2 in this study states, "It is suspected that destination image has a positive and significant influence on tourist experience tourist destination Kuta Lombok after the COVID-19 ". Hypothesis testing with PLS with test results shows that

the coefficient value of 0.385 with a p-value of 0.000 (lower than the error tolerance of 5% (0.05) means significant. It can be stated that the second hypothesis can be accepted.

The H_3 in this study states, "It is suspected that tourist experience has a positive and significant influence revisit intention Kuta Lombok tourism destination after the COVID-19 ". Hypothesis testing with PLS test results shows that the coefficient value is 0.180 with a p-value of 0.003 (lower than the error tolerance of 5% (0.05), which means it is positive and significant. It can be stated that the third hypothesis is accepted.

The H_4 in this study states, "Allegedly tourist risk perception has a negative and significant effect on revisit intention tourists at Kuta Lombok tourism destination after the COVID-19 ". Hypothesis testing with PLS test results shows that the coefficient value is -0.247 with a p-value of 0.031 (lower than the error tolerance of 5% (0.05), which means it is significant. It can be stated that the fourth hypothesis can be accepted.

The H_5 in this study states, "Allegedly destination image has a positive and significant influence on the revisit intention of tourists of Kuta Lombok tourism destination after the COVID-19 ". Hypothesis testing with PLS test results shows that the coefficient value is 0.599 with a p-value of 0.000 (lower than the error tolerance of 5% (0.05), which means it is significant. It can be stated that the fifth hypothesis can be accepted.

Influence tourist risk perception to destination image. Researchers in tourism studies classify risk perceptions in several ways. For example, a study by [22] discussed the perceptions of risk associated with travellers when making their travel decisions and categorised them into four groups: war and political instability, health problems, crime and terrorist attacks. Five years later, authors [23] identified seven types of risk such as physical, financial, time, equipment, satisfaction, social, and psychological risks.

When tourists perceive a destination as an uncertain place to visit, it can influence the minds of potential tourists and discourage them from travelling to the destination or sometimes the entire region [24].

After an extensive literature review on the perceived risks associated with tourism activities, a study by [3] categorises them into six dimensions: physical risk, financial risk, performance risk, social risk, psychological risk, and security risk. Authors [25] identified six common types of risk associated with tourist destinations. However, due to the difficulty of interviewing tourists to distinguish between psychological and social risks, they combined these two types into one point. As a result, this study uses five dimensions of risk perception by [25]: perceived physical risk, perceived financial risk, perceived time risk, perceived socio-psychological risk and performance.

Natural disasters and associated risks can undermine the favourable image of the affected destination [26]. Authors [27] empirical evidence reveals that physical constraints related to security and safety are very significant to goal images. This empirical evidence implies that perceived risk tends to influence the image of a destination [5].

The results obtained through hypothesis testing with a coefficient value is -0.253 with a p-value of 0.032, so it can be stated that Tourist risk perception has a negative and significant effect on destination image.

Influence destination image to tourist experience. Destination image is an essential factor that influences the tourist experience. Tourism experience research has evolved from the basics of the initial incident through satisfying experiences, quality experiences, and extraordinary experiences, to unforgettable experiences [28]. During the satisfying and quality experience stage, satis-

faction is considered one of the components of the tourist experience [29]. The satisfaction level is determined by tourists' response to service quality subjectively and effectively [30]. Previous studies have shown that the image of a destination significantly influences tourist satisfaction and revisit intention. For example, research by [31] found that destination image affects perceived quality, influencing satisfaction and behavioural choices. Authors [32] designed a quantitative study to examine the relationship between destination image, experience quality, perceived value, satisfaction and behavioural intention. The results reveal that the image of the destination has a direct positive influence on perceived value and experience quality. The quality of experience has a direct impact on satisfaction and an indirect effect on satisfaction through perceived value.

Authors [33] investigated the effect of destination image on tourist experience (i.e. satisfaction) and supported the relationship. Authors [32] designed a quantitative study to examine the relationship between destination image, experience quality, perceived value, satisfaction and behavioural intention. The results reveal that the idea of the destination has a direct positive influence on perceived value and experience quality. The quality of experience has a direct impact on satisfaction and an indirect effect on satisfaction through perceived value.

Based on the findings of this study, the researcher expands on the effect of destination image on experience quality and satisfaction on the tourist experience as an unforgettable experience. In a recent survey, [34] explores destination attributes related to MTE (Memorable Tourism Experience). These attributes essentially comprise a cognitive destination image, including the following ten dimensions: local culture, diversity of activities, friendliness, infrastructure, environmental stewardship, accessibility, service quality, physiography, place attachment, and superstructure. However, the author did not empirically test how this attribute affects MTE.

The results obtained through hypothesis testing with a coefficient value of 0.288 with a p-value of 0.027. It can be stated that destination image has a positive and significant effect on tourist experience.

Influence Tourist Experience to revisit intention. According to [35] experience is an event that involves the individual personally. While [36] de-

fine the experience as something fun, attractive, an unforgettable form of encounter for those who consume this event. Authors [35] revealed that the concept of consumer experience (customer experience) is the final stage of economic development that has evolved from the form of commodities, shifting to products and finally to the level of service (service). Authors [37] say that the experience economy is a comprehensive concept for service providers in the entertainment and recreation industry whose primary goal is to provide a high-quality experience.

Research conducted by [38] states that there is the more perceived value after experiencing a pleasant impression and experience so that the experience experienced will always be remembered in the consumers' lives after the consumer uses these services. This is in line with research conducted by [39], which states that to develop the tourism sector it is necessary to create pleasant conditions that will be a memorable experience consisting of components: hedonism, novelty, local culture, reflection, meaningfulness, involvement and knowledge.

Tourists who visit for tourist trips prioritise experience, visit, see, learn, and enjoy, and try to get out of routine activities that are usually felt daily. Tourists travel to gain experience, whether behavioural or perceptual, cognitive or emotional, or implied or explicit.

Results were obtained through hypothesis testing with a coefficient value of 0.176 with a p-value of 0.009. So it can be stated that tourist experience has a positive and significant effect on revisit intention.

Influence of Tourist risk perception on revisit intention. In general, risk perception is used to describe the concept of people's attitudes and intuitive assessments of risk [40]. Author [41] define it as a certain probability level that can be attached to risk to determine the probability of loss. Perceived risk can also be defined as the probability that an action may expose a traveller to a hazard that could influence travel decisions if the perceived threat is deemed to be beyond an acceptable level [42].

The involvement of tourist activities occurs due to motivations such as adventure, excitement, religious purposes, sporting events, and sometimes looking for new things [43]. The last thing a traveller wants is to waste valuable vacation time and be in an unsafe destination; therefore, per-

ceived risk has become a pressing concern among travellers around the world. In addition, based on the fact that the tourism industry is an intangible and experiential service-oriented industry, tourism products or services are considered more risky and vulnerable to threats such as crime, socio-political instability, terrorists, attacks [44], disease [45] and disaster [36].

From a marketing point of view, destinations that are considered safe are considered a pull factor, as well as a very important destination attribute that initiates travel desires. Thus, tourism destination managers go to great lengths to demonstrate that their destination is a risk-free place to visit as perceived risk has a significant impact on pre-visit decision-making by reminding rational decision-making regarding destination choice [44]. That means that potential tourists should consider the destination safe and protected from the dangers posed by unwanted events.

Results research obtained through hypothesis testing with the coefficient value is -0.249 with a p-value of 0.028. It can be stated that tourist risk perception has a negative and significant effect on Kuta Lombok tourist destination after the COVID-19.

Influence destination image against revisit intention. Destination image is an impression created by tourists in their minds through several compressions, namely cognitive, affective, conative and also some things related to the way they view a tourist destination [46]. Meanwhile, [47] proved that destination image significantly influences tourist satisfaction and the desire of tourists to visit again.

Destination image is defined as an individual's mental representation of knowledge (beliefs), feelings and overall perceptions about a particular destination [14]. Goal images play two critical roles in behaviour: 1) influencing destination choice decision-making processes; 2) behavioral conditions after decision making including participation (on-the-spot experience), evaluation (satisfaction) and future behavioural intentions (intention to revisit and willingness to recommend) [16, 31]. Following a marketing perspective, [31] suggest that individuals have a favourable attitude toward destination imagery to view their onsite experience (i.e. travel quality) positively.

Results research obtained through hypothesis testing with coefficient value of 0.602 with a p-

value of 0.000. So it can be stated that the destination image has a positive and significant effect on the revisit intention of tourists of Kuta Lombok tourism destination after the COVID-19.

CONCLUSIONS

From the results of research and discussion, it is concluded that.

1. Tourist risk perception has a negative and significant effect on destination image. This means that the higher the tourist risk perception felt by the Kuta Lombok destination after the COVID-19, the lower destination image they. On the other hand, if the lower tourists risk perception what tourists feel about Kuta Lombok after the COVID-19, the higher the perception destination image they.
2. Destination image positive and significant effect on tourist experience. That is, the higher the perception of the destination image, the higher the tourist experience is perceived by tourists. On the other hand, the lower the perception of the Kuta Lombok tourism destination image, the lower the tourist experience they have.

3. Tourist experience has a positive and significant effect on revisit intention. The higher the tourist experience, the higher the revisit intention of tourists. Conversely, if the lower the tourist experiences of the tourists, the lower the revisit intention of tourists to the Kuta Lombok tourism destination.

4. Tourist risk perception has a negative and significant effect on Kuta Lombok tourist destination after the COVID-19. The higher the tourist risk perception felt by the Kuta Lombok tourism destination tourists, the lower their Revisit intention. On the other hand, the lower the tourist risk perception felt by the Kuta Lombok tourist destinations, the higher their revisit intention.

5. Destination image positively and significantly affects the revisit intention of tourists of Kuta Lombok tourism destinations after the COVID-19. This means that the higher the tourists' perception of the destination image Kuta Lombok after the COVID-19, the higher their revisit intention. On the other hand, the lower the destination image perception, the lower their revisit intention to the Kuta Lombok tourism destination after the COVID-19.

REFERENCES

1. Khan, M. J., Chelliah, S., Haron, M. S., & Ahmed, S. (2017). Role of Travel Motivations, Perceived Risks and Travel Constraints on Destination Image and Visit Intention in Medical Tourism: Theoretical model. *Sultan Qaboos University Medical Journal*, 17(1), e11-17. doi: [10.18295/squmj.2016.17.01.003](https://doi.org/10.18295/squmj.2016.17.01.003)
2. Khasawneh, M. S., & Alfandi, A. M. (2019). Determining behaviour intentions from the overall destination image and risk perception. *Tourism and Hospitality Management*, 25(2), 355–375. doi: [10.20867/thm.25.2.6](https://doi.org/10.20867/thm.25.2.6)
3. Hasan, Md. K., Ismail, A. R., & Islam, MD. F. (2017). Tourist risk perceptions and revisit intention: A critical review of literature. *Cogent Business & Management*, 4(1), 1412874. doi: [10.1080/23311975.2017.1412874](https://doi.org/10.1080/23311975.2017.1412874)
4. Fuchs, G., & Reichel, A. (2011). An exploratory inquiry into destination risk perceptions and risk reduction strategies of first time vs. repeat visitors to a highly volatile destination. *Tourism Management*, 32(2), 266–276. doi: [10.1016/j.tourman.2010.01.012](https://doi.org/10.1016/j.tourman.2010.01.012)
5. Chew, E. Y. T., & Jahari, S. A. (2014). Destination image as a mediator between perceived risks and revisit intention: A case of post-disaster Japan. *Tourism Management*, 40, 382–393. doi: [10.1016/j.tourman.2013.07.008](https://doi.org/10.1016/j.tourman.2013.07.008)
6. George, R. (2010). Visitor perceptions of crime-safety and attitudes towards risk: The case of Table Mountain National Park, Cape Town. *Tourism Management*, 31(6), 806–815. doi: [10.1016/j.tourman.2009.08.011](https://doi.org/10.1016/j.tourman.2009.08.011)
7. Reza Jalilvand, M., & Samiei, N. (2012). The effect of electronic word of mouth on brand image and purchase intention. *Marketing Intelligence & Planning*, 30(4), 460–476. doi: [10.1108/02634501211231946](https://doi.org/10.1108/02634501211231946)

8. Campo-Martínez, S., Garau-Vadell, J. B., & Martínez-Ruiz, M. P. (2010). Factors influencing repeat visits to a destination: The influence of group composition. *Tourism Management*, 31(6), 862–870. doi: [10.1016/j.tourman.2009.08.013](https://doi.org/10.1016/j.tourman.2009.08.013)
9. Baloglu, S., & McCleary, K. W. (1999). A model of destination image formation. *Annals of Tourism Research*, 26(4), 868–897. doi: [10.1016/s0160-7383\(99\)00030-4](https://doi.org/10.1016/s0160-7383(99)00030-4)
10. Stylos, N., Vassiliadis, C. A., Bellou, V., & Andronikidis, A. (2016). Destination images, holistic images and personal normative beliefs: Predictors of intention to revisit a destination. *Tourism Management*, 53, 40–60. doi: [10.1016/j.tourman.2015.09.006](https://doi.org/10.1016/j.tourman.2015.09.006)
11. Zhang, H., Xu, F., Leung, H. H., & Cai, L. A. (2015). The Influence of Destination-Country Image on Prospective Tourists' Visit Intention: Testing Three Competing Models. *Asia Pacific Journal of Tourism Research*, 21(7), 811–835. doi: [10.1080/10941665.2015.1075566](https://doi.org/10.1080/10941665.2015.1075566)
12. Nadeau, J., Heslop, L., O'Reilly, N., & Luk, P. (2008). Destination in a country image context. *Annals of Tourism Research*, 35(1), 84–106. doi: [10.1016/j.annals.2007.06.012](https://doi.org/10.1016/j.annals.2007.06.012)
13. Hsieh, M.-H., Pan, S.-L., & Setiono, R. (2004). Product-, Corporate-, and Country-Image Dimensions and Purchase Behavior: A Multicountry Analysis. *Journal of the Academy of Marketing Science*, 32(3), 251–270. doi: [10.1177/0092070304264262](https://doi.org/10.1177/0092070304264262)
14. Fakeye, P. C., & Crompton, J. L. (1991). Image Differences between Prospective, First-Time, and Repeat Visitors to the Lower Rio Grande Valley. *Journal of Travel Research*, 30(2), 10–16. doi: [10.1177/004728759103000202](https://doi.org/10.1177/004728759103000202)
15. Gartner, W. C. (1994). Image Formation Process. *Journal of Travel & Tourism Marketing*, 2(2–3), 191–216. doi: [10.1300/j073v02n02_12](https://doi.org/10.1300/j073v02n02_12)
16. Mansfeld, Y. (1992). From motivation to actual travel. *Annals of Tourism Research*, 19(3), 399–419. doi: [10.1016/0160-7383\(92\)90127-b](https://doi.org/10.1016/0160-7383(92)90127-b)
17. Bigné, J. E., Sánchez, M. I., & Sánchez, J. (2001). Tourism image, evaluation variables and after purchase behaviour: inter-relationship. *Tourism Management*, 22(6), 607–616. doi: [10.1016/s0261-5177\(01\)00035-8](https://doi.org/10.1016/s0261-5177(01)00035-8)
18. Sugiyono. (2012). *Metode Penelitian Pendidikan* [Educational Research Methods]. Bandung: Alfabeta (in Indonesian).
19. Bougie, R., & Sekaran, U. (2020). *Research methods for business : a skill-building approach* (8th ed.). New York: John Wiley & Sons.
20. Ghozali, I., & Hengky, L. (2015). *Konsep, Teknik, Aplikasi Menggunakan Smart PLS 3.0 Untuk Penelitian Empiris* [Concepts, Techniques, Applications Using Smart PLS 3.0 for Empirical Research]. Semarang: BP Undip (in Indonesian).
21. Hair, J., Anderson, R., Tatham, R., & Black, W. (1995). *Multivariate Data Analysis with Reading* (4th ed.) New Jersey: Prentice Hall.
22. Moutinho, L. (1987). Consumer Behaviour in Tourism. *European Journal of Marketing*, 21(10), 5–44. doi: [10.1108/eum000000004718](https://doi.org/10.1108/eum000000004718)
23. Roehl, W. S., & Fesenmaier, D. R. (1992). Risk Perceptions and Pleasure Travel: An Exploratory Analysis. *Journal of Travel Research*, 30(4), 17–26. doi: [10.1177/004728759203000403](https://doi.org/10.1177/004728759203000403)
24. Fuchs, G. (2013). Low versus high sensation-seeking tourists: A study of backpackers' experience risk perception. *International Journal of Tourism Research*, 15, 81–92. doi: [10.1002/jtr.878](https://doi.org/10.1002/jtr.878)
25. Fuchs, G., & Reichel, A. (2006). Tourist Destination Risk Perception: The Case of Israel. *Journal of Hospitality & Leisure Marketing*, 14(2), 83–108. doi: [10.1300/j150v14n02_06](https://doi.org/10.1300/j150v14n02_06)
26. Lehto, X., Douglas, A. C., & Park, J. (2008). Mediating the Effects of Natural Disasters on Travel Intention. *Journal of Travel & Tourism Marketing*, 23(2–4), 29–43. doi: [10.1300/j073v23n02_03](https://doi.org/10.1300/j073v23n02_03)

27. Chen, Y. Q., & Zhang, H. (2012). Investigation of sports tourism visitors risk perception and coping behavior. *Journal of Hebei Institute of Physical Education*, 26(3), 38–43 (in Chinese).
28. Ritchie, J. R. B., & Hudson, S. (2009). Understanding and meeting the challenges of consumer/tourist experience research. *International Journal of Tourism Research*, 11(2), 111–126. doi: [10.1002/jtr.721](https://doi.org/10.1002/jtr.721)
29. Holbrook, M. B., & Hirschman, E. C. (1982). The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun. *Journal of Consumer Research*, 9(2), 132–140.
30. Otto, J. E., & Ritchie, J. R. B. (1996). The service experience in tourism. *Tourism Management*, 17(3), 165–174. doi: [10.1016/0261-5177\(96\)00003-9](https://doi.org/10.1016/0261-5177(96)00003-9)
31. Lee, C.-K., Lee, Y.-K., & Lee, B. (2005). Korea's destination image formed by the 2002 World Cup. *Annals of Tourism Research*, 32(4), 839–858. doi: [10.1016/j.annals.2004.11.006](https://doi.org/10.1016/j.annals.2004.11.006)
32. Chen, C.-F., & Tsai, D. (2007). How destination image and evaluative factors affect behavioral intentions? *Tourism Management*, 28(4), 1115–1122. [10.1016/j.tourman.2006.07.007](https://doi.org/10.1016/j.tourman.2006.07.007)
33. Lu, L., Chi, C. G., & Liu, Y. (2015). Authenticity, involvement, and image: Evaluating tourist experiences at historic districts. *Tourism Management*, 50, 85–96. doi: [10.1016/j.tourman.2015.01.026](https://doi.org/10.1016/j.tourman.2015.01.026)
34. Kim, J.-H., & Ritchie, J. R. B. (2013). Cross-Cultural Validation of a Memorable Tourism Experience Scale (MTES). *Journal of Travel Research*, 53(3), 323–335. doi: [10.1177/0047287513496468](https://doi.org/10.1177/0047287513496468)
35. Pine, J. B., & Gilmore, J. H. (1999). *The experience economy: Work is theatre & every business a stage*. Boston: Harvard Business School Press.
36. Tasci, A. D. A., & Gartner, W. C. (2007). Destination Image and Its Functional Relationships. *Journal of Travel Research*, 45(4), 413–425. doi: [10.1177/0047287507299569](https://doi.org/10.1177/0047287507299569)
37. Mehmetoglu, M. & Engen, M., 2011, Pine and Gilmore's concept of experience economy and its dimensions: An empirical examination in tourism. *Journal of Quality Assurance in Hospitality & Tourism*, 12(4), 237–255. doi: [10.1080/1528008x.2011.541847](https://doi.org/10.1080/1528008x.2011.541847)
38. Lee, R. (2008). *Corporate Social Responsibility – Doing the Most Good for Your Company and Your Cause*. New Jersey: John Wiley & Sons.
39. Kim, J.-H., Ritchie, J. R. B., & McCormick, B. (2010). Development of a Scale to Measure Memorable Tourism Experiences. *Journal of Travel Research*, 51(1), 12–25. doi: [10.1177/0047287510385467](https://doi.org/10.1177/0047287510385467)
40. Cui, J., Jo, H., & Na, H. (2016). Does Corporate Social Responsibility Affect Information Asymmetry? *Journal of Business Ethics*, 148(3), 549–572. doi: [10.1007/s10551-015-3003-8](https://doi.org/10.1007/s10551-015-3003-8)
41. Stone, R. N., & Grønhaug, K. (1993). Perceived Risk: Further Considerations for the Marketing Discipline. *European Journal of Marketing*, 27(3), 39–50. doi: [10.1108/03090569310026637](https://doi.org/10.1108/03090569310026637)
42. Reichel, A., Fuchs, G., & Uriely, N. (2007). Perceived Risk and the Non-Institutionalized Tourist Role: The Case of Israeli Student Ex-Backpackers. *Journal of Travel Research*, 46(2), 217–226. doi: [10.1177/0047287507299580](https://doi.org/10.1177/0047287507299580)
43. Madden, K., Rashid, B., & Zainol, N. A. (2016). Beyond the Motivation Theory of Destination Image. *Tourism and Hospitality Management*, 22(2), 247–264. doi: [10.20867/thm.22.2.1](https://doi.org/10.20867/thm.22.2.1)
44. Sönmez, S. F., & Graefe, A. R. (1998). Influence of terrorism risk on foreign tourism decisions. *Annals of Tourism Research*, 25(1), 112–144. doi: [10.1016/s0160-7383\(97\)00072-8](https://doi.org/10.1016/s0160-7383(97)00072-8)
45. Rittichainuwat, B. N., & Chakraborty, G. (2009). Perceived travel risks regarding terrorism and disease: The case of Thailand. *Tourism Management*, 30(3), 410–418. doi: [10.1016/j.tourman.2008.08.001](https://doi.org/10.1016/j.tourman.2008.08.001)

46. Gallarza, M. G., Gil-Saura, I., & Holbrook, M. B. (2011). The value of value: Further excursions on the meaning and role of customer value. *Journal of Consumer Behaviour*, 10(4), 179–191. doi: [10.1002/cb.328](https://doi.org/10.1002/cb.328)
47. Pratminingsih, S. (2014). Roles of Motivation and Destination Image in Predicting Tourist Revisit Intention: A Case of Bandung – Indonesia. *International Journal of Innovation, Management and Technology*, 5(1). doi: [10.7763/ijimt.2014.v5.479](https://doi.org/10.7763/ijimt.2014.v5.479)

Harmonization Village based on Dalihan Na Tolu in Sibadoar Village, Sipirok District, Selatan Tapanuli Regency, Indonesia

Indra Muda¹, Effiati Juliana Hasibuan¹, Mulia Siregar¹, Waridah Pulungan¹

¹ *Universtas Medan Area, Medan*

79B Jalan Setia Budi Nomor, Medan, 20112, Indonesia

DOI: [10.22178/pos.86-4](https://doi.org/10.22178/pos.86-4)

LCC Subject Category:
HM(1)-1281

Received 21.09.2022
Accepted 25.10.2022
Published online 31.10.2022

Corresponding Author:
Indra Muda
indramuda211@gmail.com

© 2022 The Authors. This article is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/) 

Abstract. People from different ethnicities, tribes, clans and religions inhabit a harmonisation village. The research problem is why the people of Sibadoar village have obedience to preserve the harmonisation village and whether there is a threat to maintaining Sibadoar village as a harmonisation village. To obtain the data used, descriptive qualitative research methods with data collection techniques, in-depth interviews, direct observation, Focus Group Discussion (FGD) and literature study. Research informants consisted of the Sipirok sub-district head, the Sibadoar village head, the LMD head, village officials, and non-village apparatus groups, namely, community leaders, religious leaders, traditional leaders and youth and community leaders who knew the object being asked. Based on research, the community's obedience to preserve the Harmonized Village's status is mainly due to the fabric of a sense of kinship in the Dalihan Na Tolu bond. With this concept, they feel like one unit, so whatever their brother's shortcomings must be forgiven because it will be an embarrassment for the villagers. Dalihan Na Tolu custom strongly influences the community in daily activities, including traditional, both in the form of siriaon (joy) and siluluton (sadness).

However, the development of technology, transportation and information has slowly influenced the community's determination to maintain the status of a harmonisation village, especially among teenagers.

Keywords: Harmonisation village; Dalihan Na Tolu; Sibadoar Village.

INTRODUCTION

A harmonisation village is inhabited by people from different ethnicities, different tribes, different clans and different religions. But they can live side by side and create an atmosphere of harmonisation. The name of the harmonisation village comes from the people who live side by side in various activities. The creation of harmonisation between residents is mainly due to the bond of local wisdom of Dalihan Na Tolu which functions to regulate the pattern of life relations between community members, acting, acting and interacting with each other. Such an order of community life can be found in the village of Sibadoar, Sipirok District.

Sibadoar Village is approximately 6 km from the capital city of Sipirok District. The lives of the people in this village are not much different from those in other lands. The livelihood sector of the population is generally rice farmers, farming and some raising livestock in the form of chickens

and goats. But what is unique about this village is that the people live in an atmosphere of inter-religious harmony that exists under the local wisdom of Dalihan Na Tolu. According [1], "in the society of Sipirok Dalihan Na Tolu consists of "kahanggi, mora and anak boru".

Author [2] suggests: "There are attempts to fight over the congregation. Various activities are often considered to reveal the potential for conflict, although rarely until it becomes an open conflict. They start from schools, recitation activities to loudspeakers in mosques. In Medan, schools with specific religious missions are bustling being held from elementary school to university. The religion of Islam, Christianity, Hinduism, Buddhism, and those studying at the school come from beliefs related to the mission of the school in question".

Dalihan Na Tolu means a three-masted furnace. Dalihan Na Tolu reflects a balance that maintains harmony in the family furnace relationship con-

sisting of *mora*, *kahanggi* and *anak boru*. These three terms are inherent in every Sapiro community. Therefore, a person's function at each formal event will be different, for example, as a *mora*, *anak boru* or *kahanggi*. It depends on their position and role in the formal event.

Even though the people follow different religions, clans, and tribes, there is always harmony. It is said that according to residents, they come from the descendants of the same ancestor, namely from the Sapiro pagan community (before they embraced religion). After Islam and Christianity entered Sapiro, according to their respective beliefs, some people adhered to Islam and Christianity. According [3], the houses of the Muslim population and the Christian houses are not infrequently adjacent to the wall because the hermitage of the place they live in is an inheritance from their ancestors, who were previously a family lineage unit.

METHODS

This research was conducted in Sibadoar Village, with a population of around 585 people, in 2021. A qualitative historical approach was used to obtain data. The research process was carried out with a natural background. The process formed a cycle focused on understanding the object under study using field research of the research team's farm of reference. This study does not use the term population in the sense that each informant has the same opportunity to be the research object.

According to [4], research mechanisms on respondents include several types: key respondents, primary respondents, and additional respondents. In this case, the respondents consist of residents who have backgrounds that come from religious leaders (*ustadz*, religious scholars, priests), community leaders, and traditional leaders. The selection of these respondents used the snowball-throwing technique. If the question asked of the respondents is saturated in the sense that the answers given are the same, then the interview will be stopped. According to [5]: "The selection of samples through the snowball sampling technique, both for examples of respondents and social situations, will eventually reach a limit where there is no variation in information (information saturation occurs). At a time like this, the selection of a new sample is no longer needed. In other words, data or infor-

mation collection activities in the field are considered over".

Respondents consist of:

- 1) Key respondents: Sapiro Sub-district Head;
- 2) Primary respondents: Village apparatus, namely, the Sibadoar Village Head, Head of the Village Consultative Body and village officials; Non-village apparatus groups, namely, community leaders, religious leaders, traditional leaders and youth leaders;
- 3) Additional respondents: Communities deemed eligible to provide information according to the object research.

The process of field research used next techniques:

1. Direct observation is made to determine the object's condition about various community activities interacting with each other to harmonise life between religious adherents. Participating statement performs two roles at once, namely as an observer and at the same time being an official member of the group being observed.
2. Interviews, namely, direct questions and answers conducted with respondents and people related to the problems being studied. In this study, the form of discussion used was an in-depth interview. An in-depth interview collects data directly from the respondents, aiming to get a complete picture of the subject being studied, carried out carefully and repeatedly.
3. Focus Group Discussion invites religious leaders, youth leaders, and community leaders to discuss implementing policies related to preserving harmonisation villages in Sibadoar village.
4. Literature studies were to obtain relevant secondary data to explain the condition of the research object. The secondary data sources include official documents from government agencies such as the South Tapanuli Regent's Office, Sapiro District Sub-district Office, Sibadoar Village Office and Sapiro District Statistics Office.

The data analysis was carried out through three steps, namely data reduction (data reduction), data display (data display), and conclusion/verification.

RESULTS AND DISCUSSION

Sibadoar Village is one of the villages in Sapiro District, South Tapanuli Regency. Transportation

access to Sibadoar Village is classified as very good because it is a crossroad between Sipirok District-Saipar Dolok Hole District. Its role is vital as a connecting flow of land transportation between villages in Sipirok District and other sub-districts in Arse, Saipar Dolok Hole Districts and Aek Bilah sub-district being a liaison with the surrounding villages.

Sibadoar village has an area of approximately 4 km², with most of the population as farmers. For details, see the Table 1.

Table 1 – Sibadoar Village Residents Broken Down By Livelihood

| No | Livelihood | Number of people |
|-------|-------------------------|------------------|
| 1 | Farmer/field farmer | 147 |
| 2 | ASN | 3 |
| 3 | TNI/Polri | 1 |
| 4 | Trade | 3 |
| 5 | Private sector employee | 0 |
| Total | | 154 |

The people of Sibadoar adhere to Islam and Christianity. At the same time, Hindus and Buddhists do not exist in this village of 585 populations, and there are 368 adherents of Islam (Table 2).

Table 2 – Sibadoar Village Residents Broken Down By Religion

| No | Believer | Number of people |
|-------|-------------|------------------|
| 1 | Islam | 368 |
| 2 | Christian | 217 |
| 3 | Hindu | 0 |
| 4 | Buddha | 0 |
| 5 | Kong Hu Chu | 0 |
| Total | | 585 |

The majority of the population of Sibadoar village consists of farmers, with followers of Islam and Christianity.

For adherents of different religions and clans, harmony is always created between proponents. According [6], harmonisation is harmonisation, the search for balance. The creation of harmonisation between religious adherents and clans in Sibadoar Village is especially encouraged by the awareness of parents to instil speech (calling

someone) and pods (advice or message) in their children from an early age [7].

Related to speech (calling to someone), there are several designations such as in-law (call to sister or brother from husband's brother), lae (call to brother or brother from wife's side), bone (call to brother from wife's side or a man from the mother can also be a father from the wife), nantulang (call to a daughter-in-law and can also be a sister or brother from our mother) amangboru (call to a father from a husband or it can be a brother from a father's sister), namboru (call to a mother from a husband or It can also be our father's younger sister), uda (call father's younger brother or an equivalent relative), ompung (call to father of our mother and father).

According to an interview with the Head of Sipirok Sub-district, Sardin Hasibuan SH, the community kinship system in Sibadoar Village is still well maintained even though the residents follow different religions and clans. This village has become one of the examples of harmonious life between religious adherents in the Sipirok District (S. Hasibuan, personal communication, March 26, 2021).

According to [8] Sipirok is one of the South Tapanuli Regency areas with relatively good religious harmony. In this area, there are almost no internal conflicts between religious communities. In some instances, cooperation in the social sector and even in the spiritual field is well established. This seems to be supported by the norms and traditional values developed in this area.

Regarding the Poda (advice or message) from parents or people who are told to young people in Sibadoar village, it is still well preserved. From an early age, parents have instilled pods (advice or messages) for their offspring to maintain etiquette by the Dalihan Na Tolu concept regardless of religious background, respect for elders or those who are blessed.

According to [9], through Dalihan Na Tolu in the framework mora (wife's family), kahanggi (sister's family in patrilineal clan relations) and anak boru (husband's family) each has rights and obligations both in social life, day-to-day activities and daily social ties. Each element of the wife's family has a different role in traditional activities that the community has embraced for generations.

In the context of holding the Dalihan Na Tolu custom there are two main activities, namely, siriaon (joy) and siluluton (misfortune). The siriaon ac-

tivities include marrying children, giving birth to children, and entering a new house. While siluluton in the form of, among others, the death of a family member, the party moved the cemetery.

Organising parties in siraon and siluluton are always based on local wisdom, which may not be fully implemented in villages in Sipirok District. Handle the problem of consumption food at a party spontaneously without a command will be directly handled by Muslims even though those who have a party celebration are Christians.

Mutual understanding among residents in organising traditional parties in traditional activities such as siraon (joy) and siluluton (sadness) is excellent. When the traditional procession is related to the makkobar (delivery of words of advice) of kahanggi, mora and anak boru, all residents will mingle in one customary unit without seeing and distinguishing the religion adhered to by the residents. Furthermore, if the event is related to a religious procession, for example, the reading of prayers in Islam, Christians will stay in place or look for other activities. On the other hand, if the action is related to delivering worship messages to followers of the Christian religion, Muslims will not participate involved.

According to interviews with Christian religious leaders and community leaders in the village Sibadoar, Daud Togarma Pulungan said, "In the implementation of traditional parties, both in the form of siraon (joy) and siluluton (sadness), the consumption problem at the event will be directly handled by Muslim residents. This is so that the followers of Islam do not doubt the halalness of processed food by Islamic sharia. Likewise, the equipment used for cooking is already available, which is under the management of the PKK women's group in Sibadoar Village" (D. T. Pulungan, personal communication, November 27, 2020).

A similar statement was conveyed by Mrs Nauli Pohan, a former SMP Negeri 1 Sipirok teacher who adheres to the Christian religion: "When we want to slaughter chickens, we deliberately ask for help from Muslim residents so that Muslim family or friends can eat them. To slaughter the buffalo, ask for help from Muslim residents who are used to slaughtering buffalo. The buffalo meat will be distributed to all Muslim and Christian residents. The integrity of the social system depends on good relations and harmonious cooperation between the three elements" (N. Pohan, personal communication, November 27, 2020).



a)



b)

Figure 1 - Country meetings

a) Residents at a Wedding Party; b) Meeting at the Village Office

Based on the author's observation, in the fencing environment of the GPKA Church yard in Figure 2, there are ten houses, and two of these houses are adherents of the Islamic religion. According [10], culture grows and develops by the values adopted by the local community. In living their daily lives, there are no problems. If it is Friday and at the time of prayer, the adherents of Islam will go to the mosque; in the month of Ramadhan Fasting, they will fast as adherents of other Islamic religions. Meanwhile, on Sundays, members of the Christian faith will come to the church to carry out their worship activities. It is said that if there are residents who do not carry out religious worship according to their beliefs, they often remind each other.



a)



b)

Figure 2 – Personal communication:
a) with Mr Daud Togarma Pulungan;
2) with Ms. Nauli Pohan

The harmonisation between religious adherents in Sibadoar Village is increasingly evident when all residents cooperate to clean houses of worship. They unite in joy to maintain the existence of the place of worship. This is usually done before the Holy Month of Ramadan and before Christmas and New Year.



a)



b)

Figure 3 – The joint work of the villagers
a) Residents of different religions working together to clean the grounds of the Sibadoar GKPA Church;
b) Residents working together to clean the yard of the Sibadoar Village Mosque in 2019

Figure 3a) shows that some Muslims and Christians are carrying out gotong royong activities to clean the grounds of the GKPA church, and picture 3b) describes members of the Muslim and Christian religions cooperating mutually in cleaning the courtyard of the Sibadoar Village Mosque.

Based on an interview with Mr Muhammad Yamin Pane, one of the Islamic religious leaders who also serves as the Chair of the Sibadoar Village Community Empowerment Institute stated,

"In association or friendship between residents in Sibadoar village, it is very conducive. Even though they come from different religions, different clans do not show any discrimination or exclusion from certain people against other people who are considered minorities. Such living conditions have been established since the existence of Sibadoar village" (M. Y. Pane, personal communication, November 26, 2020).

According to an interview with the Head of Sibadoar Village, Rojali Pulungan, "if there is a cooperation activity, three days before that it has been conveyed to the residents. Usually, people are enthusiastic about the appeal. For example, to mobilise community participation in building a village, such as clearing grass on the shoulder of the road, making printed concrete to reduce standing water on the village road, and making ditches without obstacles" (R. Pulungan, personal communication, November 26, 2021).



a)



b)

Figure 4 – After personal communication:
a) with Mr Rojali Pulungan; b) with some Sibadoar village officials in 2020

On a separate occasion, the Sibadoar Village Head said, "In filling out the structure of the village apparatus, consider it based on religious adherents while still paying attention to their work abilities so that residents of different religions more easily accept the implementation of village policies" (R. Pulungan, personal communication, November 27, 2020).

Based on the results of the Focus Group Discussion at the Sibadoar Village Office, which eight participants attended, the maintenance of harmonisation between religious adherents in Sibadoar Village was mainly due to the people's obedience to the traditional order the Dalihan Na Tolu. Residents who do not adhere to Dalihan Na Tolu will usually be ostracised and feel alienated. Because they are afraid of this, they have no choice but to follow the rules of the Dalihan Na Tolu standard order.

Developments in technology, transportation, and telecommunications information cause rapid social change. According [11], at the beginning of the last two decades of the twentieth century, we find ourselves in a severe social crisis, namely a complex and multidimensional crisis whose aspects touch aspects of life, health, livelihoods, and environmental quality, social, economic, technological and political relations. This has been experienced by Sibadoar Village, especially in the last ten years. Television sets, a previously rare item in this village, are now almost equally owned by every house. Various shows that are watched through television media cause changes in the attitudes and behaviour of the younger generation.

Land transportation to and from Sibadoar village has become more dynamic because it is a connecting route between Pasar Sapirok Village as the capital of South Tapanuli Regency with Arse, Saipar Dolok Hole, Aek Bilah Districts and the surrounding villages. With the smooth flow of transportation, the population dynamics are getting higher. It affects the local people a lot in terms of how to dress, how to socialise and in terms of language use.

To anticipate the influence of migrants who do not understand the customs and customs that apply in Sibadoar Village, village officials set a rule. For example, every visitor time 24 hours, they are required to report to the Village Head or his competent apparatus. This is so that they do not make the people of Sibadoar Village anxious.

According to an interview with the Head of Sibadoar Village, Rojali Pulungan said, "We are very open to the arrival of guests. However, these guests must be able to adapt to the situation and conditions that have developed in Sibadoar village. For example, once a Christian from North Tapanuli wanted to live in Sibadoar village but had a habit in his native area of raising pigs and seemed to have the initiative to divide harmonisation, so we suggest leaving Sibadoar village. Likewise, the Tabliq group who wanted to stay at the Sibadoar Mosque were forced to refuse because their arrival was not pleasing to the public. This does not mean they are not permitted to pray, only to stay and visit people's homes so that they come to listen to their lectures that are not allowed" (R. Pulungan, personal communication, November 27, 2020).

With the firm attitude of the Sibadoar village apparatus towards the arrival of guests who are allegedly able to affect the life of the Sibadoar Vil-

lage community, which has been well developed so far, these threats can be minimised. The Sibadoar village apparatus is very open to the arrival of guests, both for research purposes, trading businesses and friendship. However, if there are indications to damage the harmonisation of life between religious adherents that have been built before, then they will strictly prevent its arrival.

CONCLUSIONS

The obedience of the people of Sibadoar Village to preserve the status of the Harmonized Village is mainly due to the fabric of a sense of kinship through the Dalihan Na Tolu custom. The traditional concept of Dalihan Na Tolu still strongly influences the community in daily activities, including implementing conventional exercises in the form of siriaon (joy) and siluluton (sadness).

REFERENCES

1. Bastian, M. A. (2010). *Jiwa kerukunan masyarakat Sipirok* [The harmonious spirit of the Sipirok community]. Yogyakarta: Lembaga Studi Agama (in Indonesian).
2. Subanindyo, H. (2010). *Konflik Etnis di Indonesia* [Ethnic Conflict in Indonesia]. Medan: USU Press.
3. Muda, I., & Dewi, R. (2013). *Model Kerukunan Hidup Antar Umat Beragama Di Kecamatan Sipirok Tapanuli Selatan* [Inter-Religious Harmony Model in Sipirok South Tapanuli District]. Retrieved from <http://repository.uma.ac.id/handle/123456789/12838> (in Indonesian).
4. Suyanto, B. (2005). *Metode Penelitian Sosial* [Social Research Methods]. Yogyakarta: Kencana Prenada Media Group (in Indonesian).
5. Burhan, B. (2003). *Analisis Data Penelitian Kualitatif* [Qualitative Research Data Analysis]. Yogyakarta: Raja Grafindo Persada (in Indonesian).
6. Daryanto. (2007). *Kamus Lengkap Bahasa Indonesia* [Complete Indonesian Dictionary]. Surabaya: Apollo (in Indonesian).
7. Bagir, Z. A., Rahayu, M., & Tahun, M. (2011). *Laporan Tahunan Kehidupan Beragama di Indonesia 2011* [Annual Report on Religious Life in Indonesia 2011]. Yogyakarta: CRCS UGM (in Indonesian).
8. Lubis, Z. P., & Lubis, Z. B. (1998). *Sipirok na soli: bianglala kebudayaan masyarakat sipirok* [Socio-culture of Batak Sipirok ethnic group in Sipirok, Tapanuli Selatan]. Medan: Badan Pengkajian Pembangunan Sipirok, Penerbit Universitas Sumatera Utara (in Indonesian).
9. Muda, I., & Suharyanto, A. (2020). Analysis of life's inter-religious harmony based on the philosophy of *Dalihan Na Tolu* in Sipirok Sub-district, South Tapanuli Regency, North Sumatera Province. *Journal of Human Behavior in the Social Environment*, 30(5), 533-540. doi: [10.1080/10911359.2019.1708526](https://doi.org/10.1080/10911359.2019.1708526)
10. Atang, A. (2018). *Gerakan Sosial dan Kebudayaan* [Social and Cultural Movements]. Malang: Intrans Publishing (in Indonesian).
11. Capra, F. (2004). *The Turning Point: Science, Society, and the Rising Culture*. New York: Bantam Books.

Multidimensional Science Education: Overview Of Philosophy Foundations (Ontology, Epistemology, Axiology)

Hamidi ¹, Muhammad Sarjan ¹, Iswari Fauzi ¹, Rindu Rahmatiah ¹, Muhammad Yamin ¹, Sudirman ¹, Asrorul Azizi ¹, Agus Muliadi ¹, Yusran Khery ¹, Muh. Zaini Hasanul Muttaqin ¹, Mulia Rasyidi ¹, Bakhtiar Ardiansyah ¹

¹ *University of Mataram*

Jl. Majapahit No 62 Mataram, Nusa Tenggara Barat, Indonesia

DOI: [10.22178/pos.86-6](https://doi.org/10.22178/pos.86-6)

LCC Subject Category: L7-991

Received 21.09.2022

Accepted 25.10.2022

Published online 31.10.2022

Corresponding Author:

Hamidi

hamidi@unram.ac.id

© 2022 The Authors. This article is licensed under a Creative Commons Attribution 4.0

License 

Abstract. Science is a part of human life that has existed since the beginning of human existence, knowing himself and the natural surroundings. This study aimed to examine Dimensional Science Education based on three philosophical foundations: ontology, epistemology, and axiology. The method used in this article is the literature review method. The library sources used are books and articles that are by this article. The analysis used is content analysis. The study results show that, in essence, science is a science of natural phenomena that is poured into facts, concepts, principles, and laws that are tested for truth through a series of activities in the scientific method. The essence of products and processes cannot be distinguished or separated because they have a bound relationship with one another in conducting scientific observations so that they can form a scientific attitude. Dimensional Science Education is divided into three dimensions, namely Product Dimension (ontology), Process Dimension (epistemology), and Scientific Attitude Dimension (Axiology). These three dimensions are interrelated. It can be interpreted that science learning must include these three dimensions. Therefore, Science education contains not only formulas and theories but a process and scientific attitude to obtain scientific concepts about the universe.

Keywords: science education; multidimensional; philosophy.

INTRODUCTION

Science is a part of human life that has existed since the beginning of human existence, knowing himself and the natural surroundings [1]. Humans act as subjects and objects in science [2]. Science includes humans and their environment, both living and non-living [3]. Humans who have reason and mind will always try to study and carry out activities to discover the phenomena of life around them so that the truth is clear [4, 5, 6]; in line with the times, human life experiences high-speed dynamics, so science also develops. There are many discoveries in various branches of science that we currently encounter and feel, for example, animal husbandry, fisheries, agriculture, clothing, medicine, and many more, so life is now changing from the last time. This will continue as long as there is human life.

Science is defined as the science of the phenomena of the universe [7, 8]. Also, science is the result of human activities in the form of organized knowledge, ideas, and concepts about the natural

surroundings, obtained from experience through a series of scientific processes, including investigation, compilation, and testing of views [9, 10]. Science is a systematic way of discovering the universe; it is a form of effort that makes various experiences into a system of specific logical thinking patterns known as scientific thinking patterns [7]. Science is a natural learning concept and extensively relates to human life [11].

Science education plays a vital role in the educational process and technology development.

Science has the effort to arouse human interest and the ability to develop science and technology and an understanding of the universe, which has many facts that have not been revealed and are still secret. So that the results of their discoveries can be developed into natural science that is new and can be applied in everyday life [12]. Science education has a strategic role in improving the quality of human resources, among others, through providing scientific thinking skills and habits, higher-order thinking skills, and problem-analysis skills in multidimensional life [11, 13].

Because of the role of science education in the educational process, it is essential to examine science education from a philosophical perspective because philosophy is the basic foundation of education, and philosophy is a thought process. Various philosophical thoughts need to be considered. Thus, this literature review research was conducted to examine dimensional science education based on three philosophical foundations: ontology, epistemology, and axiology.

METHOD

The method used in this article is the literature review method. The library sources used are books and articles that are by this article. The analysis used in this article is content analysis: 1) to identify various relevant sources; 2) to find standard semantic units from these sources.

RESULTS AND DISCUSSION

The Nature of Science Education. The term Natural Sciences or IPA is also known as science. The word science comes from the Latin *Scientia*, which means "I know". In English, the word science comes from the word "knowledge". Science then developed into natural science, which in Indonesian is known as natural science (IPA). Science is a science that studies the environment and its contents [14]. So in terms of the term, science is objective knowledge.

1. The nature of science as a collection of knowledge. Science as a collection of learning refers to a broad array of various concepts. Science is considered the accumulation of diverse expertise that has been discovered since ancient times until the discovery of very new knowledge. This knowledge is from facts, theories, and generalizations that explain nature [15, 16].

The nature of science provides an understanding that science does not only include science about nature but includes understanding the process of investigation and acquisition of that knowledge. The essence of Natural Science is as a product, process, and attitude [14]. Science as a product is an accumulation of the efforts of previous science pioneers and generally has been entirely and systematically arranged in the form of a textbook. Science is compiled and obtained through the scientific method. Teaching science is limited to the meaning of "scientific attitude towards the natural surroundings". Through science educa-

tion, it is hoped that students will develop logical, rational, analytical, and critical thinking skills to support the development of science and technology.

2. The Nature of Science as a Search Process. Science as a search process is generally a view that connects the description of science closely related to laboratory activities and equipment [11, 17]. In this category, science is seen as something that has strict discipline, is objective, and is a value-free process.

3. The Nature of Science Education as Value. IPA as a collection of values is closely related to the emphasis on IPA as a process [7]. However, this view emphasizes aspects of the scientific value inherent in science. This includes the importance of honesty, curiosity, and openness.

4. The Nature of Science as a Way to Know the World. The scientific process is influenced by how people understand life and the world around them. Science is considered a way in which humans understand and give meaning to the world around them and a way to know the world and its contents with all its limitations [4].

5. The Nature of Science as Part of Daily Life. People realize that what is used and used to meet the needs of life is strongly influenced by science [18]. The scientific approach strongly influences the use of various technology products due to investigation and knowledge and how people think about everyday situations [19].

Dimensions of Science Education. Based on the nature of science, the dimensions of science education are divided into three dimensions, namely the product dimension (ontology), the process dimension (epistemology), and the scientific attitude dimension (axiology). These three dimensions are interrelated. It can be interpreted that science learning must include these three dimensions.

1. Dimensional Science Education as a Product. The dimension of science as a product is an accumulation of scientific findings from previous researchers, which are compiled and then made into a book that is used as a reference where the science is used [20]. The book was produced through unified scientific discoveries. Science textbooks are also called the body of knowledge or the body from which the ability originates. The book contains knowledge sources that can be applied to new scientific discoveries.

The product dimension includes concepts, principles, laws, and theories in science, which are the result of human inventions to understand and explain nature and the various phenomena that occur in it [21]. Science products (concepts, principles, laws, and theories) are not obtained based on facts alone but on data tested through experiments and investigations. Facts are natural phenomena that have been successfully observed but still allow for differences in perception among observers (observers). Facts that are perceived equally by each observer are called data.

We rely on valid data in which a natural phenomenon is abstracted into a concept. In simple terms, there are three ideas: visual images, defined pictures, and relational concepts [22]. Chairs and classrooms are examples of visual concepts. We can understand it simply by seeing its concrete form and not defining it. Energy, field, and temperature are examples of defined images. At the same time, mathematical formulas and sentences are examples of concepts expressing relationships. There are three criteria for an actual natural science product: 1) able to explain phenomena that have been observed or have occurred; 2) able to predict events that will occur; 3) able to be tested with similar experiments.

2. Dimensional Science Education as a Process. The dimension of natural science as a process can be interpreted that how the natural science process is obtained. More clearly, science is a science that requires experimentation to get an answer to the problems at hand. That's where the process takes place. By using the scientific method, natural science is obtained. The scientific method is developed gradually and continuously with the hope that the problems studied in learning can be solved and receive scientific answers (based on science) and evidence that explains that it shows a fact.

The process dimension, the method of acquiring knowledge, is called the scientific method. This method in science is now a combination of the induction and deduction methods. This combined method is a relay activity between deduction and induction, where a researcher initially uses the induction method in connecting observations with hypotheses. Then, this hypothesis is deductively combined with existing knowledge to see its suitability and implications after going through various necessary changes. This hypothesis was then tested through a series of empirically collected data. The scientific method in the

scientific process has a basic framework of procedures that can be described in six steps: 1) being aware of the problem and formulating the problem; 2) observation and collection of relevant data; 3) data classification; 4) the formulation of the hypothesis; 5) hypothesis testing, and 6) generalize. At these stages, some activities are generally carried out by researchers, known as process skills: observing, measuring, predicting, classifying, comparing, concluding, formulating hypotheses, conducting experiments, analyzing data, and communicating research results.

In teaching science, this aspect of the process appears in the form of teaching and learning activities. The presence or absence of this aspect of the process is highly dependent on the teacher. The dimensions of scientific attitude are various beliefs, opinions and values that must be defended by a scientist, particularly when looking for or developing new knowledge. Philosophy can be classified into two major groups. First, a set of attitudes which, when followed, will help the process solution to the problem. And second, a particular set of perspectives is a way of looking at the world and is helpful for future career development.

Learning materials require evidence and authentic experience for students to learn them. Proof and authentic experience in learning are less effective when done with an expository approach, as is often done by teachers. For this reason, an appropriate method is needed to obtain real experience. One method that can be used to acquire a real learning experience for students is the experimental method. It will be able to stimulate students' scientific attitudes through simple experiments themselves and prove the truth of words that they have known but have not understood their meanings. Therefore, the experimental method is one method that is suitable to be carried out in the form of a simple experiment.

3. Dimensional Science Education as Scientific Attitude. The dimension of attitude development is the role of science, which forms students' scientific attitudes. This attitude is undoubtedly expected to be embedded in students. The IPA attitude is meant as a scientific attitude [23]. Scientific perspectives are closely attached to science subjects because science requires a scientific method where the scientific method is used as a medium or tool for inculcating attitudes in science [24].

Scientific attitudes included in science education are a) curiosity about the physical/natural world and how it works; b) recognition that science can help solve individual and global problems; c) an enthusiasm for mastering knowledge and scientific method; d) recognition of the importance of scientific understanding in the present; e) recognizing that IPA is the result and human activity needs.

Author [24] explains the nine attitudes to scientific knowledge that must be developed early on in school students base. The development of this scientific attitude is not through lectures but rather by bringing it up when students are involved in problem-solving activities.

From the overall description of the nature of IPA above, It is clear that science education does not just contain formulas and theories but rather a process and scientific attitude to get scientific concepts about the universe. Science learning as a development medium potential of junior high school students should be based on the characteristics of child psychology. It should provide fun playing and intellectual satisfaction for them in unravelling mysteries, the intricacies and riddles of natural phenomena around them. It should develop the scientific potential contained within him and correct their misconceptions about natural wonders. At the same time, equip-

ping the skills and develop new concepts that must be mastered. In addition, assessment in science teaching must be carried out using a fair assessment system that is proportional, transparent, and comprehensive in every aspect process and student learning outcomes.

CONCLUSIONS

In essence, science is the science of natural phenomena as outlined in the form of facts, concepts, principles, and laws tested for truth and through a series of activities in the scientific method. The essence as products and processes cannot be distinguished or separated because they have a bound relationship with one another in conducting scientific observations so that they can form a scientific attitude. Dimensional Science Education is divided into three dimensions, namely Product Dimension (ontology), Process Dimension (epistemology), and Scientific Attitude Dimension (Axiology). These three dimensions are interrelated. It can be interpreted that science learning must include these three dimensions. Therefore, Science education contains not only formulas and theories but a process and scientific attitude to obtain scientific concepts about the universe.

REFERENCES

1. Mubhar, M. Z. (2015). Metode Memperoleh Ilmu Pengetahuan Alam [Methods of Acquiring Natural Science]. *AL-QALAM, Jurnal Kajian Islam & Pendidikan*, 7(1), 131–145 (in Indonesian).
2. Bambang, E. P. (2018). Manusia Sebagai Subjek Dalam Pendidikan Kebhinekaan [Human as Subject in Diversity Education]. *Jurnal Edukasi*, 5(1), 32. doi: [10.19184/jukasi.v5i1.8015](https://doi.org/10.19184/jukasi.v5i1.8015) (in Indonesian).
3. Paparang, S. T., & Sinaulan, R. L. (2022). Telaah Lingkungan Hidup, Pembangunan Berkelanjutan dan Pencemaran. *Aksara: Jurnal Ilmu Pendidikan Nonformal*, 8(3), 1681. doi: [10.37905/aksara.8.3.1681-1694.2022](https://doi.org/10.37905/aksara.8.3.1681-1694.2022) (in Indonesian).
4. Imro'atun Istikhomah, R., & Wachid, A. (2021). Filsafat Sebagai Landasan Ilmu dalam Pengembangan Sains [Philosophy as the Foundation of Science in Science Development]. *Jurnal Filsafat Indonesia*, 4, 59–64 (in Indonesian).
5. Umar, U. (2018). Filsafat ilmu: suatu tinjauan pengertian dan objek dalam filsafat pengetahuan [Philosophy of science: a review of definitions and objects in the philosophy of knowledge]. *EL-Muhbib: Jurnal Pemikiran Dan Penelitian Pendidikan Dasar*, 2(2), 160–170. doi: [10.52266/el-muhbib.v2i2.392](https://doi.org/10.52266/el-muhbib.v2i2.392) (in Indonesian).
6. Wardani. (2019). Integrasi ilmu keislaman dan filsafat: perspektif filsafat ilmu [Integration of Islamic science and philosophy: a philosophy of science perspective]. *Jurnal Ilmiah Ilmu Ushuluddin*, 18(1), 1. doi: [10.18592/jiiu.v18i1.3014](https://doi.org/10.18592/jiiu.v18i1.3014) (in Indonesian).

7. Atika, N., & Salminawati. (2022). Filsafat dan sains islam tentang fenomena alam [Islamic philosophy and science on natural phenomena]. *Journal Of Social Research*, 1(5), 334–340. doi: [10.55324/josr.v1i5.73](https://doi.org/10.55324/josr.v1i5.73)
8. Muslih, M. (2020). Filsafat Ilmu Imre Lakatos dan Metodologi Pengembangan Sains Islam [Imre Lakatos' Philosophy of Science and Islamic Science Development Methodology]. *Tasfiah*, 4(1), 46. doi: [10.21111/tasfiah.v4i1.3962](https://doi.org/10.21111/tasfiah.v4i1.3962) (in Indonesian).
9. Pratiwi, S. N., Cari, C., & Aminah, N. S. (2019). Pembelajaran IPA Abad 21 dengan Literasi Sains Siswa [21st Century Science Learning with Student Science Literacy]. *Jurnal Materi Dan Pembelajaran Fisika (JMPF)*, 9(1), 34–42 (in Indonesian).
10. Zarman, W. (2020). *Pendidikan IPA Berlandaskan Nilai Keimanan: Konsep dan Model Penerapannya* [Science Education Based on the Value of Faith: Concepts and Implementation Models]. N. d.: Deepublish (in Indonesian).
11. Fadli, M. R. (2021). Hubungan Filsafat dengan Ilmu Pengetahuan dan Relevansinya Di Era Revolusi Industri 4.0 (Society 5.0) [The Relationship between Philosophy and Science and Its Relevance in the Era of Industrial Revolution 4.0 (Society 5.0)]. *Jurnal Filsafat*, 31(1), 130. doi: [10.22146/jf.42521](https://doi.org/10.22146/jf.42521) (in Indonesian).
12. Irsan, I. (2021). Implementasi Literasi Sains dalam Pembelajaran IPA di Sekolah Dasar [Implementation of Science Literacy in Science Learning in Primary Schools]. *Jurnal Basicedu*, 5(6), 5631–5639. doi: [10.31004/basicedu.v5i6.1682](https://doi.org/10.31004/basicedu.v5i6.1682) (in Indonesian).
13. Roviati, E., & Widodo, A. (2019). Kontribusi Argumentasi Ilmiah dalam Pengembangan Keterampilan Berpikir Kritis [Contribution of Scientific Argumentation in the Development of Critical Thinking Skills]. *Titian Ilmu: Jurnal Ilmiah Multi Sciences*, 11(2), 56–66. doi: [10.30599/jti.v11i2.454](https://doi.org/10.30599/jti.v11i2.454) (in Indonesian).
14. Syarifuddin, S. (2018). Pancasila sebagai filsafat ilmu dan implikasi terhadap pengembangan ilmu pengetahuan dan teknologi [Pancasila as a philosophy of science and implications for the development of science and technology]. *EL-Muhbib: Jurnal Pemikiran Dan Penelitian Pendidikan Dasar*, 2(2), 115–127. doi: [10.52266/el-muhbib.v2i2.356](https://doi.org/10.52266/el-muhbib.v2i2.356) (in Indonesian).
15. Mesiono, M. (2018). *Esensi Pendidikan Presfektif Analisis Filsafat Pendidikan* [Essence of Education from the Perspective of Philosophy of Education Analysis]. *ITTIHAD*, 2(2), 207–217 (in Indonesian).
16. Ruth, I., & Situmeang, V. O. (2021). Hakikat Filsafat Ilmu dan Pendidikan dalam Kajian Filsafat Ilmu Pengetahuan [The Nature of Philosophy of Science and Education in the Study of Philosophy of Science]. *Jurnal IKRA-ITH Humaniora*, 5(1) (in Indonesian).
17. Daniah, D. (2020). Pentingnya inkuiri ilmiah pada praktikum dalam pembelajaran ipa untuk peningkatan literasi sains mahasiswa [The importance of scientific inquiry in practicum in science learning to improve students' science literacy]. *PIONIR: Jurnal Pendidikan*, 9(1). doi: [10.22373/pjp.v9i1.7178](https://doi.org/10.22373/pjp.v9i1.7178) (in Indonesian).
18. Wathoni, L. M. (2018). *Integrasi Pendidikan Islam dan Sains: Rekonstruksi Paradigma Pendidikan Islam* [Integration of Islamic Education and Science: Reconstructing the Paradigm of Islamic Education]. N. d.: Uwais Inspirasi Indonesia (in Indonesian).
19. Noperman, F. (2020). *Pendidikan Sains dan Teknologi: Transformasi sepanjang masa untuk kemajuan peradaban* [Science and Technology Education: Timeless transformation for the advancement of civilisation]. N. d.: Unib Press (in Indonesian).
20. Zeng, A., Shen, Z., Zhou, J., Wu, J., Fan, Y., Wang, Y., & Stanley, H. E. (2017). The science of science: From the perspective of complex systems. *Physics Reports*, 714–715, 1–73. doi: [10.1016/j.physrep.2017.10.001](https://doi.org/10.1016/j.physrep.2017.10.001)

21. Evagorou, M., Erduran, S., & Mäntylä, T. (2015). The role of visual representations in scientific practices: from conceptual understanding and knowledge generation to 'seeing' how science works. *International Journal of STEM Education*, 2(1). doi: [10.1186/s40594-015-0024-x](https://doi.org/10.1186/s40594-015-0024-x)
22. Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2016). Recommendations for Creating Better Concept Definitions in the Organizational, Behavioral, and Social Sciences. *Organizational Research Methods*, 19(2), 159–203. doi: [10.1177/1094428115624965](https://doi.org/10.1177/1094428115624965)
23. Agus Pujawan, I. K. A., & Astawan, I. G. (2021). Assessment Instrument of Social Attitude and Science Learning Outcomes of Grade IV Elementary School. *Jurnal Ilmiah Sekolah Dasar*, 4(4), 604–613.
24. Hodson, D. (1998). Science fiction: the continuing misrepresentation of science in the school curriculum. *Curriculum Studies*, 6(2), 191–216. doi: [10.1080/14681369800200033](https://doi.org/10.1080/14681369800200033)

Domination Analysis of Influence between Educational and Professional Competency on the Performance of Prospective Mathematics Teachers in the School Field Introduction Program

Nyoman Sridana¹, Harry Soeprianto¹, Amrullah¹, Muhammad Turmuzi¹

¹ *University of Mataram*

Jl. Majapahit No 62 Mataram, Nusa Tenggara Barat, Indonesia

DOI: [10.22178/pos.86-10](https://doi.org/10.22178/pos.86-10)

LCC Subject Category: L7-991

Received 21.09.2022

Accepted 25.10.2022

Published online 31.10.2022

Corresponding Author:

Nyoman Sridana

sridana60@unram.ac.id

© 2022 The Authors. This article is licensed under a Creative Commons Attribution 4.0

License 

Abstract. This study aims to determine the dominance of the influence between educational and professional competencies on the performance of prospective teachers in the school field introduction program for students majoring in Mathematics, Faculty of Teacher Training and Education, University of Mataram. This type of research is associative research by taking quantitative data from the average value of student courses containing pedagogic competence, professional competence and the school field introduction program (PLP) value. The population in this study were students majoring in Mathematics, at the University of Mataram, with a purposeful sampling technique, namely student teacher candidates who had taken the School Field Introduction Program in the period 2019-2022 with a total of 15 students. Process and testing using Software Statistical Product and Service Solution (SPSS) version 25. The analysis tool uses multiple linear regression. The results showed that the absence of independent variables that had a dominating influence on the results of the performance scores of prospective teachers in the School Field Introduction Program (PPL) was marked by the results of the significance level of each independent variable being more than 5 %.

Keywords: pedagogic competence; professional competence; teacher candidate performance.

INTRODUCTION

The role of an educator in learning activities is intended to assist and facilitate students to obtain quality learning [1, 2]. This certainly shows that the learning process is the core of the activities in the school [3, 4]. The interaction between teachers and students in delivering each lesson is to take place optimally and can achieve learning objectives.

The learning objectives can be achieved optimally and are greatly influenced by a teacher's ability to create teaching and learning situations [5]. For this reason, every teacher must have high professional competence in carrying out their duties [6, 7, 8]. Teachers must have academic qualifications, competence, physical and mental health, and the ability to implement national education. Competence is a combination of knowledge, skills, values and attitudes reflected in the habits of thinking and acting [9, 10]. The competence of teachers as learning agents in primary and secondary education and early childhood education includes pedagogic competence, personality competence, social competence, and professional

competence obtained through professional education.

Pedagogic competence (by the Law of the Republic of Indonesia No 14 of 2005 and Government Regulation No 19 of 2005) is the ability related to student understanding and managing educational and dialogical learning. Permendiknas No 16 of 2007, concerning Academic Qualification Standards and Teacher Competencies, explains that pedagogic competence includes several indicators:

- 1) mastering student characteristics from physical, moral, spiritual, social, cultural, emotional, and intellectual aspects;
- 2) mastering learning theory and teaching principles of learning;
- 3) develop a curriculum related to the subjects taught;
- 4) organize educational learning;
- 5) utilizing information and communication technology for learning purposes;
- 6) facilitating the development of students' potential to actualize their various potentials;

- 7) communicate effectively, empathically, and politely with students;
- 8) conducting assessments and evaluations of learning processes and outcomes;
- 9) utilize the results of the assessment and evaluation for the benefit of learning;
- 10) take reflective action to improve the quality of learning.

These ten indicators are translated into a grid which will then be described as statements or questions.

In addition to educational competence, mastery of teacher professional competence is thought to influence teacher quality in learning management [11].

Teacher professional competencies are related to expertise in education and teacher training [12]. Professional competence is a teacher's essential ability in learning and human behaviour, the field of study he guides, the right attitude about the teaching and learning environment, and special skills in teaching [13]. In the National Education Standards, the explanation of Article 28, paragraph 3 point c states that what is meant by professional competence is the ability to master learning materials broadly and sincerely, which allows guiding students to meet the competency standards set out in the National Education Standards. Permendiknas No 16 of 2007, concerning Academic Qualification Standards and Teacher Competencies, explains that professional competence includes indicators:

- 1) mastering the material, structure, concept, and scientific mindset that supports the subjects taught;
- 2) mastering competency standards and essential competencies of the subjects taught;
- 3) developing creatively guided learning materials;
- 4) sustainably develop professionalism by taking reflective actions;
- 5) utilizing information technology.

Various problems related to the condition of teachers include the following:

- 1) there is a diversity of teacher abilities in the learning process and mastery of knowledge;
- 2) there is no accurate measuring tool to determine the ability of teachers;
- 3) the guidance carried out does not reflect the needs;

- 4) inadequate teacher welfare.

If this is not addressed immediately, it will have an impact on the low quality of education, including:

- 1) the ability of students to absorb subjects is not optimal;
- 2) the character formation is less than perfect, reflected in each student's attitudes and life skills.

Because of these problems, it is necessary to have extensive preparation, especially preparing prospective teachers since the lecture period. Future teachers must be more creative and innovative in learning. Prospective teachers must also be trained in developing subjects from the competencies students must achieve when participating in the School Field Introduction Program. Also, prospective teachers must be prepared to integrate various skills (soft and hard skills) in each lesson. The competencies possessed by each future teacher will show their quality in teaching. All prospective teachers must keep these competencies, in this case, students who study majoring in education.

METHODS

This type of research is associative research by taking quantitative data from the average value of student learning courses containing pedagogic competence, professional competence and the value of the school field introduction program (PLP). The respondents in this study were students majoring in Mathematics at the University of Mataram, with a purpose-sampling sampling technique, namely prospective teacher students who have taken the School Field Introduction Program in the 2019-2022 period are 15 students. The data analysis technique used in this study is the multiple regression technique using the SPSS 21 application.

This study analyses the dominance of the influence between educational and professional competencies on the performance of prospective teachers in PLP in partner schools. The data analyzed came from the value of student courses containing Pedagogic Competence and Professional Competence, and PLP Assessment data consisting of the importance of PPL 1 (Micro-teaching on campus) courses and PPL 2 courses as the value of field experience practice in partner schools involving 15 prospective teachers as the research sample.

RESULTS AND DISCUSSION

The following tables summarizes the cumulative mean of the data for each variable to be analysed.

Table 1 – Average Cumulative Value of Pedagogic Competence (X1), Professional Competence (X2) and PLP Teacher Candidate Performance (Y)

| NIM | Cumulative Mean X1 | Category | Cumulative Mean X2 | Category | Cumulative Mean Y | Category |
|---------------|--------------------|-----------|--------------------|-------------|-------------------|-----------|
| E1R117021 | 2.69 | Well | 2.28 | Pretty good | 3.67 | Very good |
| E1R018039 | 3.72 | Very good | 3.07 | Well | 4.00 | Very good |
| E1R118027 | 3.04 | Well | 2.18 | Pretty good | 3.83 | Very good |
| E1R018014 | 3.43 | Very good | 2.96 | Well | 3.83 | Very good |
| E1R018029 | 3.35 | Very good | 2.69 | Well | 3.83 | Very good |
| E1R018071 | 3.69 | Very good | 3.26 | Very good | 4.00 | Very good |
| E1R018007 | 3.44 | Very good | 3.41 | Very good | 3.83 | Very good |
| E1R018016 | 3.52 | Very good | 2.99 | Well | 4.00 | Very good |
| E1R018043 | 3.80 | Very good | 3.54 | Very good | 3.67 | Very good |
| E1R018053 | 3.67 | Very good | 3.46 | Very good | 4.00 | Very good |
| E1R118010 | 3.22 | Very good | 1.93 | Pretty good | 3.83 | Very good |
| E1R118014 | 3.37 | Very good | 2.25 | Pretty good | 3.83 | Very good |
| E1R018012 | 3.76 | Very good | 3.75 | Very good | 4.00 | Very good |
| E1R018058 | 3.59 | Very good | 3.38 | Very good | 3.67 | Very good |
| E1R018059 | 3.22 | Very good | 2.27 | Well | 3.83 | Very good |
| Average Value | 3.43 | Very good | 2.89 | Well | 3.85 | Very good |

Notes: Category Likert Scale Student Cumulative Score: 0.8 < Cumulative Value < 1.6 – Not good; 1.6 < Cumulative Value < 2.4 – Pretty good; 2.4 < Cumulative Value < 3.2 – Well; 3.2 < Cumulative Value < 4 – Very good

The following are the results of the classical assumption test. The data consists of a normality test whose information is usually distributed. The multicollinearity test is in which the results of each variable do not mean any correlation between independent variables. The heteroscedasticity test shows that the independent variables of Pedagogic Competence and Professional Competence are not statistically significant, affecting the dependent variable.

Table 2 – Data on Normality Test Results of Student Values (One-Sample Kolmogorov-Smirnov Test)

| | | Unstandardized Residual |
|--------------------------|----------------|-------------------------|
| N | | 15 |
| Normal Parameters, b | Mean | 0.0000000 |
| | Std. Deviation | 0.10739164 |
| Most Extreme Differences | Absolute | 0.207 |
| | Positive | 0.119 |
| | Negative | -0.207 |
| Test Statistics | | 0.207 |
| Asymp. Sig. (2-tailed) | | 0.084 |

Table 3 – Data of Multicollinearity Test Results of Student Values

| Model | Unstandardized Coefficients | | Standardized Coefficients |
|--------------|-----------------------------|------------|---------------------------|
| | B | Std. Error | β |
| Constant | 2,353 | 2,528 | |
| Pedagogic | 1,735 | 1.056 | 0.708 |
| Professional | 0.407 | 0.546 | 0.321 |

Table 4 – Data on Student Scores of Heteroscedasticity Test Results

| Model | Unstandardized Coefficients | | Standardized Coefficients |
|--------------|-----------------------------|------------|---------------------------|
| | B | Std. Error | β |
| Constant | 2,353 | 2,528 | |
| Pedagogic | 1,735 | 1.056 | 0.708 |
| Professional | 0.407 | 0.546 | 0.321 |

Multiple linear regression analysis was used to test the hypothesis of the effect of the independent variables (academic competence, professional competence) on the dependent variable (teacher candidate performance).

Table 5 – Multiple Regression Result Data

| Model | Unstandardized Coefficients | | Standardized Coefficients |
|--------------|-----------------------------|------------|---------------------------|
| | B | Std. Error | β |
| Constant | 2,353 | 2,528 | |
| Pedagogic | 1,735 | 1.056 | 0.708 |
| Professional | 0.407 | 0.546 | 0.321 |

Based on Table 5, the resulting multiple linear regression equation for the model can be made the following equation (1):

$$PLP = 2,353 + 1,735 \text{ Pedagogic Competence} + 0,407 \text{ Professional Competence} + e \quad (1)$$

The meaning of the constant of 2.353 can explain the regression equation above. This means that if all independent variables (Pedagogic and Professional Competence) are worth 0, then the dependent variable (PLP) value is 2,353. The regression coefficient figure of 1.735 means that if Pedagogic Competence increases by 1 unit, then the PLP increases by 1.735 units assuming other independent variables are constant. The regression coefficient figure of 0.407 means that if Professional Competence increases by 1 unit, the PLP increases by 1.735 units assuming other independent variables are constant.

Table 6 – Simultaneous Test (f-test)

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|----|-------------|-------|-------|
| 1 Regression | 0.051 | 2 | 0.025 | 1,884 | 0.194 |
| Residual | 0.161 | 12 | 0.013 | | |
| Total | 0.212 | 14 | | | |

Based on Table 6 shows that the f-count is greater than the f-table ($1.884 < 3.81$) or a significance level of 0.194 is more significant than 0.05. It can be concluded that pedagogic and professional competences have no effect simultaneously on the performance of prospective teachers, which is proxied by the PLP.

The coefficient of determination test (R^2) is used to measure how far the model's competence is to explain the variation of the dependent variable. The greater the coefficient of determination, the greater the interpretation of the independent variable in defining the dependent variable. The

results of testing the coefficient of the decision can be seen in Table 6.

Table 7 – Coefficient of Determination Test Results

| Model | R | R ² | Adjusted R ² | Std. Error of the Estimate |
|-------|-------|----------------|-------------------------|----------------------------|
| 1 | 0.489 | 0.239 | 0.112 | 0.11600 |

Based on Table 7, it can be seen that the value of the coefficient of determination in the Adjusted R² column is 0.239, meaning that 23.9% of the performance of prospective teachers as proxied by the PLP is explained by the independent variable. The remaining 76.1% is explained by other variables not included in the regression model. The t-test aims to test Pedagogic Competence and Professional Competence partially affects teacher candidate performance which is reflected in the PLP Program Value or not.

Table 8 – t-test results

| Model | Unstandardized Coefficients | | Stand. Coef. | T | Sig. |
|--------------|-----------------------------|------------|--------------|-------|-------|
| | B | Std. Error | β | | |
| Constant | 2,353 | 2,528 | | 0.931 | 0.370 |
| Pedagogic | 1,735 | 1.056 | 0.708 | 1,643 | 0.126 |
| Professional | 0.407 | 0.546 | 0.321 | 0.745 | 0.471 |

The partial test results in table 8 regarding Pedagogic Competence are obtained from t-count 1,643 with β of 1.735 and a significance level of 0.126.

The value of the t-count is smaller than the t-table, $1.643 < 2.179$, and the significance value is more significant than 0.05. So pedagogic competence does not partially affect the formation of teacher candidate performance assessments proxied by the PLP.

In Professional Competence, obtained t-count 0.745 with β of 0.407 and a significance level of 0.471.

The value of the t-count is smaller than the t-table, which is $0.745 < 2.179$, and the significance value is more significant than 0.05. So professional competence does not partially affect the formation of teacher candidate performance scores proxied by the value of the School Environment Introduction Program (PLP) student.

This study aimed to determine which variables were the most dominant between academic competence and professional competence in shaping the performance value of prospective teachers in the School Field Introduction (PLP) program. As is known, the most dominant variable is the most influencing variable in a model. Finding the results of the most dominant variables in this study can be seen by looking at the β -value in the regression model and from the most considerable t-count value by considering the significance level. The magnitude of the influence of the independent variable on the dependent variable is denoted by β and can be positive or negative. In addition, significant or insignificant also affects the choice of which variable is the most dominant.

Based on the results of the descriptive analysis in Table 1, the value of academic competence with an average value of 3.43 is in the excellent category, which is greater than the average value of professional competence, which is 2.89 (the suitable type). It is identified that academic competence with an average of the excellent category influences the performance results of prospective teachers in the value of the School Field Introduction Program (PLP). Their scores are included in the average type of very good. Likewise, Professional Competence with an average value of "a good" category where the value is lower than pedagogic competence. But is identified as likely to affect the performance assessment of prospective teachers in the school field introduction program (PLP).

$$PLP = 2,353 + 1,735 \text{ Pedagogic Competence} + 0.407 \text{ Professional Competence} + e \quad (2)$$

In this equation (2), the β of Pedagogic Competence is 1.735, which is greater than the β of Professional Competence, which is 0.407. However, the table also shows that the two variables have a significance level of $P\text{-value} > 5\%$, where pedagogic competence has a significance value of 0.708 and professional competence has a significance value of 0.321. It indicates that neither of the two variables can be said to be more dominant in influencing the performance of prospective teachers in the program. Introduction to the school

field (PLP), likewise, in the t-test in table 7. It can be seen that the variables of academic competence and professional competence cannot be said to be more dominant in influencing the performance of prospective teachers due to the significance level of $p\text{-value} > 5\%$, even though the t-count value of the pedagogical competence variable is 1.643, which is greater than the t-count of professional competence of 0.745. Likewise, the data analysis found the results of the model's feasibility test of the coefficient of determination (R^2) of 23.9%. This shows that the contribution of the variables in this study is relatively small and insignificant in forming the value of the School Field Introduction Program (PLP) and indicates that there are contributions from other factors that affect the performance assessment of prospective teachers outside the variables tested.

CONCLUSIONS

Based on the results of testing and analysis in this study, several conclusions can be drawn, including.

1. The absence of a more dominant variable between the variables of academic competence and professional competence affects the results of the performance scores of prospective teachers in the School Field Introduction Program (PPL), marked by the results of the significance level of each independent variable being more than 5%.
2. It was found that the coefficient of determination (R^2) of 23.9%. This shows that the contribution of the variables in this study is relatively small in consideration of the formation of the performance value of prospective teachers in the field introduction program (PPL) and shows that there are contributions from other factors that affect the performance assessment of future teachers outside the variables tested.
3. The value of the influence of the independent variables (pedagogic competence and professional competence) does not significantly affect the performance assessment of prospective teachers in the School Field Introduction Program (PLP). This could be due to the School Field Introduction Program (PLP) evaluation during the COVID-19 pandemic.

REFERENCES

1. Gifari, A. (2019). *Optimalisasi hasil belajar peserta didik dengan menggunakan metode pembelajaran kooperatif Numbered Heads Together (NHT) pada mata pelajaran ipa di mi baeturridlwan Bandung* [Optimizing student learning outcomes using the numbered heads together (NHT) cooperative learning method in science subjects at Mi Baeturridlwan Bandung]. doi: [10.13140/RG.2.2.3493711369](https://doi.org/10.13140/RG.2.2.3493711369) (in Indonesian).
2. Suhirman, S. (2018). Pengelolaan sumber belajar dalam meningkatkan pemahaman peserta didik [Learning resource management in improving learners' understanding]. *Al Fitrah: Journal Of Early Childhood Islamic Education*, 2(1), 159. doi: [10.29300/alfitrah.v2i1.1513](https://doi.org/10.29300/alfitrah.v2i1.1513) (in Indonesian).
3. Hadi, H. (2020). Peranan Ingatan Serta Implikasinya Dalam Proses Pembelajaran [The Role of Memory and Its Implication in the Learning Process]. *Journal of Education Informatic Technology and Science*, 2(3), 45–54. doi: [10.37859/jeits.v2i3.1687](https://doi.org/10.37859/jeits.v2i3.1687) (in Indonesian).
4. Supriadi, S. (2017). Pemanfaatan sumber belajar dalam proses pembelajaran [Utilisation of learning resources in the learning process]. *Lantanida Journal*, 3(2), 127. doi: [10.22373/lj.v3i2.1654](https://doi.org/10.22373/lj.v3i2.1654) (in Indonesian).
5. Effendi, V. K. (2020). *Upaya meningkatkan Kemampuan Guru dalam Proses Kegiatan Belajar Mengajar di SMAN 3 Batam Melalui Supervisi Akademik Tahun Pelajaran 2017/2018* [Efforts to Improve Teachers' Ability in the Process of Teaching and Learning Activities at SMAN 3 Batam through Academic Supervision in the 2017/2018 Academic Year]. Retrieved from <https://independent.academia.edu/ViviEffendi> (in Indonesian).
6. Anif, S. (2018). *Pengembangan Kompetensi Profesional Guru Mapel Biologi* [Professional Competency Development of Biology Subject Teachers]. Surakarta: Muhammadiyah University Pres (in Indonesian).
7. Nurhaidah, & Musa, M. I. (2016). *Pengembangan kompetensi guru terhadap pelaksanaan tugas dalam mewujudkan tenaga guru yang profesional* [Development of Teacher Competence on the Implementation of Tasks in Realizing Professional Teachers]. *Jurnal Pesona Dasar*, 2(4), 8–27 (in Indonesian).
8. Sulfemi, W. B. (2019). *Kompetensi Profesionalisme Guru Indonesia Dalam Menghadapi Mea* [Professionalism Competence of Indonesian Teachers in Facing Mea]. doi: [10.31227/osf.io/czxus](https://doi.org/10.31227/osf.io/czxus) (in Indonesian).
9. Al Fathoni, Abd. A. M. (2021). Model Fasilitasi Peningkatan Kompetensi Guru (Sebuah Gagasan Penelitian & Pengembangan Diri) [Teacher Competency Improvement Facilitation Model (A Research & Self-Development Idea)]. *Jurnal Literasiologi*, 5(1). doi: [10.47783/literasiologi.v5i1.172](https://doi.org/10.47783/literasiologi.v5i1.172) (in Indonesian).
10. Matori, H. (2016). *Kontribusi Kompetensi Profesional, Kepuasan Kerja, Dan Motivasi Terhadap Kinerja Guru* [Contribution of Professional Competence, Job Satisfaction, and Motivation to Teacher Performance]. Retrieve from <https://journal.walisongo.ac.id/index.php/wahana/article/download/354/323> (in Indonesian).
11. Helmi, J. (2015). *Kompetensi profesionalisme guru* [Teacher Professionalism Competence]. *Al-Islah*, 7(2), 319–336 (in Indonesian).
12. Jumiatun. (2018). *Pengaruh Supervisi Akademik Pengawas Pai Dan Kegiatan Kelompok Kerja Guru (KKG) Terhadap Kompetensi Profesional Guru Pai Sd Di Wilayah I Kabupaten Rejang Lebong* [The Effect of Academic Supervision of Islamic Education Supervisors and Teacher Working Group Activities (KKG) on the Professional Competence of Elementary Islamic Education Teachers in Region I]. *An-Nizom*, 119–127 (in Indonesian).
13. Idawati, K. (2019). *Peningkatan Kinerja Guru Melalui Kompetensi Profesional Dan Kelompok Kerja Guru (KKG) Sekolah Dasar Negeri Gugus III Kecamatan Gunung Agung Tulang Bawang Barat* [Improving Teacher Performance Through Professional Competence and Teacher Working Group (KKG) at State Elementary School Gugus III Gunung Agung Sub-district, West Tulang Bawang]. *Jurnal Lentera Pendidikan Pusat Penelitian LPPM UM METRO*, 4(2), 46–57 (in Indonesian).

Planning of Academic Supervision by Primary School Supervisors in West Lombok District, Indonesia

Masban¹, Sudirman¹, Fahrudin¹

¹ *University of Mataram*

Jl. Majapahit No 62 Mataram, Nusa Tenggara Barat, Indonesia

DOI: [10.22178/pos.86-15](https://doi.org/10.22178/pos.86-15)

LCC Subject Category: L7-991

Received 28.09.2022

Accepted 26.10.2022

Published online 31.10.2022

Corresponding Author:

Sudirman

sudirman_fkip@unram.ac.id

© 2022 The Authors. This article is licensed under a Creative Commons Attribution 4.0 License 

Abstract. This study aims to describe the planning and implementation of Academic Supervision by elementary school supervisors in West Lombok Regency.

This type of research is qualitative research. Data were taken from interviews, observations and documentation. Credibility, transferability, dependability and comparability tests were conducted to test the data's validity.

The results of this study reveal that supervisors have an essential role in planning academic supervision, namely, from planning and implementation control's schedule to discussing with the teacher the contents of the instrument to be used during academic supervision so that teachers can carry out their duties without feeling supervised.

Keywords: planning; supervisor; academic control.

INTRODUCTION

Education is a conscious effort deliberately designed to achieve a predetermined goal. Education aims to improve the quality of human resources [1] as outlined through the Law on the National Education System No 20 of 2003, which aims to develop the potential of students to become human beings who believe and fear God Almighty, have a noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens.

Efforts to improve the quality of human resources (HR) are through the learning process [2]. Coaching for teachers must be continuously developed to improve the quality of educational resources. For teachers to carry out the tasks that are their responsibility, teachers must receive refreshments in the form of technical assistance [3]. This technical assistance is provided to teachers to increase capacity continuously. School supervisors, through academic supervision, carry out technical assistance. That is, school supervisors carry out educational leadership to assist in fostering and improving teacher performance to achieve national education goals.

School supervisors are academic staff with the task, responsibility and authority to supervise

academic units in both the educational and managerial fields [4]. Supervisors are functional staff because they are directly related to the occurrence of the learning process and provide guidance to teachers and school principals so that the educational process will run according to its function [5].

One of the essential tasks of school supervisors is to supervise. Supervision is a coaching activity planned to assist teachers and other school staff in effectively carry out their work [6].

The fast-paced changes in all lines encourage teachers to continuously learn to adapt to the development of science and technology and community mobility.

The main activity of school supervisors in carrying out academic supervision is to foster school personnel, especially teachers so that the quality of learning can improve. It is expected to have an impact on student achievement and indirectly improve the quality and quality of schools [7].

Currently, school supervisors in West Lombok Regency have a work capacity exceeding the limit. Based on data from the Education Office of West Lombok Regency in 2022, the current number of supervisors is 26. Each supervisor has an average of 15 fostered schools with an aver-

age number of groups for each supervisor of 90 groups. This, of course, implements supervision of teachers not optimal because, with a bit of time, supervisors will undoubtedly find it difficult to provide maximum guidance to teachers.

Permendiknas No 12 of 2007 states that the scope of school supervisors is to carry out academic supervision and managerial supervision with a workload of 37.5 hours per week. Face-to-face activities are set 24 hours per week using the number of schools and teachers being fostered. The number of schools that each elementary school supervisor must foster is at least 10-15, and the number of teachers that each elementary school supervisor must encourage is at least 40-60 people. Thus, the number of elementary school teachers who school supervisors assist in West Lombok Regency is not by the Permendiknas. This undoubtedly impacts the implementation of school supervisors' academic supervision of elementary school teachers in West Lombok Regency.

Academic supervision is a planned activity aimed at improving the school's qualitative aspects by helping teachers through support and evaluation of the learning and learning process [8]. It helps teachers develop their ability to manage the learning process to achieve learning objectives [9].

From the description above, the authors are interested in researching the implementation of academic supervision by primary school supervisors in West Lombok Regency regarding planning aspects. This research aims to know how to prepare for the performance of Academic Supervision by Elementary School supervisors in West Lombok Regency.

METHOD

The research method used in this research is using qualitative research methods. The Education Office of West Lombok Regency has elementary school supervisors with groups IVa-IVc. The data source in this study is elementary school supervisors with middle supervisory positions throughout West Lombok Regency.

The data collection techniques in this study were: 1) unstructured interviews, 2) participant observation and 3) document study.

Data analysis consists of three co-occurring activities: data reduction, data presentation, and

drawing conclusions or verification. Checking data validity in qualitative research includes four techniques: credibility, transferability, dependability, and confirmability.

RESULTS AND DISCUSSION

Activities in the planning stage include the preparation of programs and the preparation of instruments needed in the implementation of supervision activities. Writing the supervision program is the first step in a series of supervision activities. This document will guide the implementation of academic supervision. As stated by one of the Supervisors of Elementary Schools in West Lombok Regency that:

"To maintain the stability and quality of learning in the classroom, teachers need to be accompanied and controlled through supervision activities. Therefore I always supervise teachers so that the implementation is not messy. I first prepare a supervision program at the beginning of the school year, which is translated into semester programs. This supervision program is the basis for when I have to supervise each teacher unless there is an incidental case that I do not supervise according to the schedule stated in the supervision program" (personal interview, HW.Ps-Sur., May 28, 2022).

Planning is required for every organisation to carry out individual and group activities. Planning in this study is about designing an academic supervision program carried out by the West Lombok Regency Elementary School supervisor regarding the goals, objectives, steps, and time set.

The planning program used in managing the academic supervision of the West Lombok Elementary School supervisors is carried out by determining the basis for preparing supervision plans, compiling an academic supervision plan schedule, and understanding the purpose of the supervision carried out later. The present activities are designing educational supervision programs, implementation of learning and evaluation and follow-up plans. The mechanism is through teacher meetings to socialise the academic supervision program that the supervisor will carry out.

The preparation of the academic supervision planning program is carried out at the beginning of each academic year. The educational supervision planning is carried out by the West Lombok Regency Elementary School supervisor wholly

and carefully. As stated by one of the elementary school supervisors in West Lombok Regency, as follows:

"Here, I have an academic supervision program according to the schedule. The main stages are: 1) analysing the results of last year's supervision; 2) developing programs, schedules and instruments, 3) conduct socialisation with teachers, 4) carry out managerial and academic supervision, 5) coaching and preparation of reports.

In preparing the supervision program, we have goals, objectives and time for preparation. Then in compiling the instrument in planning for academic supervision, of course, it is based on the syllabus and lesson plans and supported by teaching aids in the KBM process later" (personal interview, HW.Ps. H. Suk., May 30, 2022).

Similar in the words of one elementary school teacher in West Lombok Regency, he said the following:

"What the supervisor did before the supervision was carried out was that he made a plan. In planning this academic supervision, among others, are: 1) supervisors usually evaluate last year's supervision results, 2) communicate with us as teachers, 3) develop academic supervision programs, and 4) disseminate information to teachers. The supervisor communicates all of that to us as teachers" (personal interview, HW.Gr. Zah., May 23, 2022).

Based on the statement above, it can be concluded that the supervisors of the West Lombok Elementary School in planning academic supervision include 1) Analysing the results of last year's supervision, 2) Developing programs, schedules and instruments, 3) conducting socialisation to teachers, 4) carrying out managerial supervision and academics, 5) carry out follow-up (reflection, coaching and preparation of reports).

Planning for academic supervision must be done at the right time. The following is what one supervisor for the West Lombok Elementary School stated:

"I made an academic supervision plan at the beginning of the new school year. I started planning this academic supervision, among others, by 1) analysing the results of last year's implementation and 2) holding meetings with teachers to discuss (personal interview, HW.Gr. H., May 31, 2022).

One of the elementary teachers in West Lombok Regency confirmed the statement made by the supervisor. The teacher stated that:

"Supervisors are carried out academic supervision at the beginning of the new school year because the planning program will be used as a reference for the implementation of supervision and implementation of PKG in standard form and control of employee performance targets. In starting to plan for academic supervision, this supervisor looked for the lack of supervision from last year to be corrected in the preparation of program planning current year. The planning of this program is also based on the results of communication with teachers" (personal interview, HW.Gr.Sur., May 28, 2022).

Based on the statement above and the results of observations made by researchers. In making this academic supervision plan, the West Lombok Elementary School supervisor at the beginning of the new school year is intended because the beginning of the semester in the second month of academic supervision will or has to be used. In addition, supervisors starting to plan for this supervision include 1) analysing the results of last year's implementation and 2) holding meetings with teachers to discuss.

Planning for academic supervision at the West Lombok Regency Elementary School is carried out with structured steps. This academic supervision has aspects or materials that supervisors and teachers must know so they can be supervised. As stated by one of the elementary school supervisors in West Lombok Regency:

"The steps I took in planning for academic supervision at the West Lombok Elementary School were as follows: 1) analysing the results of last year's supervision and 2) developing a program. Then I asked the teacher, among others: 1) managerial aspects, namely classroom administration and learning, and 2) academic aspects, namely planning, implementation and assessment of learning" (personal interview, HW.Ps.H.HER, June 02, 2022).

The primary school supervisor in West Lombok Regency expressed similar words. The following was expressed by one of the third-grade teachers at the West Lombok Regency Elementary School:

"The steps taken by the supervisor in planning academic supervision at the West Lombok Regency Elementary School include: 1) identifying academic supervision problems, 2) holding meetings with

teachers to determine supervision techniques and methods, 3) developing programs and implementation schedules. Then the aspects that the supervisor asked the teacher in planning academic supervision at the West Lombok Elementary School included: 1) managerial problems related to classroom administration and learning, 2) planning, implementation and follow-up learning. Apart from that, other planning used in the management of academic supervision by the West Lombok Regency Elementary School supervisor is managerial and academic supervision planning, including programs, schedules, instruments and follow-up programs" (personal interview, HW. Gr. Sri, May 28, 2022).

Based on the descriptions above, it can be concluded that the academic supervision planning carried out by the West Lombok Elementary School supervisors is as follows:

- 1) supervisors analyse the results of last year's supervision;
- 2) develop programs, schedules and instruments;
- 3) conduct socialisation with teachers,
- 4) carry out managerial and academic supervision,
- 5) carry out follow-up (reflection, coaching and report preparation),
- 6) carry out preparation at the beginning of the new school year. This is intended because at the beginning of the semester in the second month, the academic supervision will or must be used,
- 7) analyse the results of last year's implementation,
- 8) hold meetings with teachers to discuss,
- 9) develop programs or plans,
- 10) the supervisor asks the teacher about aspects or materials that need academic supervision, including managerial aspects (classroom administration and learning) and educational aspects (planning, implementation and assessment of education).

Academic supervision planning is determining the direction and objectives of the Academic supervision implementation program by referring to problem identification activities - identifying aspects that need to be supervised. Identification is carried out by analysing the advantages, disadvantages, opportunities and threats of learning activities carried out by teachers so that supervision is more effective and on target.

The steps taken in planning supervision are:

- 1) collecting data through class visits, personal meetings, and staff meetings;

- 2) processing data by correcting the data collected;
- 3) classifying data according to the field problems;
- 4) making conclusions about the target problem according to the actual situation;
- 5) determine the correct technique to improve or enhance teacher professionalism.

With the conditions expected by the teacher can carry out the learning process comfortably without feeling supervised. From the planning aspect, there are several stages of academic supervision planning. It is known that supervisors have an important role in planning academic supervision, namely, planning, implementing schedules, and discussing with the teacher regarding the contents of the instrument to be used during the carrying out of academic supervision so that teachers can carry out their duties without feeling supervised during supervision is in progress.

Planning is an activation process that systematically prepares activities to be carried out to achieve specific goals. At the same time, other experts define planning as 1) the selection or determination of organisational goals; 2) the determination of strategies, policies, program projects, procedures, methods, systems, budgets and standards needed to achieve goals [10]. Authors [10] define planning as anticipating and balancing change. While author [11] describes a) planning as a process of preparing various decisions that will be implemented in the future to achieve the goals that have been set, b) the process of making a set of policies to control the future; c) planning is an effort to combine national goals and existing resources.

According to [12], planning is the process of making various decisions that will be made in the future to achieve the goals that have been determined [10]. Planning is the process of preparing things that will be done in the future to achieve the goals that have been set.

From some of the definitions of planning above, it can be concluded that planning is an essential thing and a decision-making process carried out systematically and that planning is related to the future and achieving the desired goals. Meanwhile, according to [11], education planning is a rational application of the systematic analysis of the educational development process to ensure that education is more effective and efficient and to the needs and goals of students and society [10]. Meanwhile, according to [4], educational

planning is selecting or determining programs/strategies/steps to implement the specified educational goals. Educational planning is a process of activity that each person defines differently, namely as an effort to achieve the allocation of educational resources in the education system in an efficient, fair and rational manner. Educational planning is related to education, namely starting, undergoing and achieving academic goals.

Educational planning is a process of preparing future activities in the field of academic development as a task of educational planning. Meanwhile, the author [10] explained that planning, including educational planning, is not only a basic pattern but also a guide in making decisions about achieving specific goals. From all the explanations presented, it can be concluded that educational planning is an orderly process to prepare and think about future activities within the scope of education to achieve the goals or goals set by the educational institution.

Planning is a process of rational and systemic activity in determining decisions, activities, or steps to be carried out in the future in the context of efforts to achieve goals effectively and efficiently. This planning implies: first, managers think carefully in advance of goals and actions based on some method, plan or logic and not based on feelings. Second, the program directs the goals of the organisation. Third, in addition, the project is a guideline for a) The organisation obtains and uses the resources needed to achieve its goals, b) Members of the organisation carry out activities that are consistent with the goals and procedures that have been set, and c) Monitor and measure progress towards achieving the goals, so that corrective action can be taken if progress is not satisfactory.

Planning for academic supervision at this West Lombok Regency Elementary School needs to develop a supervision program based on goals, schedules, targets and time. In preparing this supervision program, the aim is to implement the academic program and the managerial supervision of the principal. The target of the West Lombok Elementary School's educational supervision program is as a PBM planning supervision program, PBM implementation, improvement and enrichment, guidance and coaching. Meanwhile, the preparation time for the supervision program is usually carried out at the beginning of

new teaching before the teaching and learning process takes place.

In addition to planning for academic supervision at the West Lombok Regency Elementary School, it is necessary to develop a supervision program. Of course, creating a helpful supervision instrument is essential to see the teacher's readiness to implement the supervision that will be carried out later. The instrument is usually a checklist instrument that will be made by the supervisor himself, namely the principal, to see whether all teacher preparation in learning is appropriate or not, such as the preparation of the syllabus, lesson plans, teaching aids, learning media and so on.

The supervisor's role in fostering teachers, better known as the supervision of education/teaching, has a very strategic position to improve teachers' professionalism, especially in learning activities. In this case, supervisors are expected to be able to guide, foster, and encourage teachers in solving the problems of teaching and learning activities faced by teachers. This is as explained by [], namely that supervision activities pay attention to assistance that can improve the professional abilities of teachers. This skill is reflected in teachers' ability to provide learning assistance to their students, resulting in changes in the academic behaviour of their students.

Therefore, the academic supervision plan prepared by the West Lombok Regency Elementary School supervisor would be very appropriate because the access to improving teachers' learning ability is open and gets attention. An excellent academic supervision plan if it contains and contains the steps and time for the implementation of supervision. The West Lombok Elementary School's supervisor in preparing the academic supervision plan based on the research results is stated to have included procedures, techniques, and implementation schedules.

Academic supervision procedures are a series of supervision activities to provide assistance and guidance to teachers so that they are motivated to make the necessary improvements in the educational field by choosing the appropriate supervision approaches, methods, and techniques for achieving the objectives. The procedure for implementing academic supervision consists of the following:

1. The preparation stage includes: a) preparing the instrument and b) preparing a joint schedule.

2. The Implementation Stage, namely the implementation of direct and indirect supervision observations.

3. The Reporting Stage, including a) identifying the results of observations at the time of observation, b) analysing the results of supervision, c) evaluation jointly between supervisors and principals and teachers, and d) making notes on the results of supervision that are documented as reports.

4. Follow-up Stage.

Planning for academic supervision is one of the absolute requirements for every organisation or institution and its activities, both in the form of individuals and groups. Below are the steps that need to be taken at the academic supervision planning stage, namely:

- 1) the principal makes a plan for the academic supervision program;
- 2) the principal makes a schedule for the implementation of academic supervision;
- 3) the principal must have an academic supervision instrument;
- 4) the principal, it would be better if you make your academic supervision instrument tailored to the needs of the teacher;
- 5) the principal provides an academic supervision instrument to the teacher;
- 6) the principal explains the contents of the academic supervision instrument to the teacher;
- 7) the principal agrees with the teacher about the instrument which will be used;
- 8) the principal holds a meeting with the teacher to equalise perceptions;
- 9) the principal informs the teacher to prepare;
- 10) the principal agrees about the focus to be observed.

In addition, the principal must create an intimate atmosphere with the teacher to create a collegial atmosphere. With the expected conditions, the teacher can carry out the learning process comfortably without feeling supervised. From the planning aspect, there are several stages of planning for academic supervision. It can be seen that the principal has an essential role in planning ed-

ucational management, namely, from planning, implementation schedule,

Based on the above description, it can be explained that the West Lombok Regency Elementary School supervisor is planning academic supervision by determining the components and steps of educational management that will be taken, accompanied by an appropriate implementation schedule so that teacher coaching services can later run well.

CONCLUSIONS

Planning for primary school academic supervision in West Lombok Regency with several stages:

1. Supervisor schools make plans for academic supervision programs.
2. School supervisors make a schedule for the implementation of academic supervision
3. School supervisors determine the instrument of academic supervision, which is self-made and adapted to the needs of teachers.
4. School supervisors provide academic supervision instruments to teachers
5. The school supervisor explains the contents of the supervision instrument academics to teachers.
6. School supervisors make an agreement with the teacher about the instrument that will be used.
7. The school superintendent holds a meeting to equalise perception.
8. Supervisor tells the teacher to prepare.
9. Supervisors agree on the focus that will be observed.

Thus it can be concluded that supervisors have an important role in planning academic supervision, in this case, academic supervision, namely, from planning, implementation schedule, and discussing with the teacher regarding the contents of the instrument to be used during the carrying out academic supervision so that teachers can carry out their duties without feeling supervised during supervision is in progress.

REFERENCES

1. Adi Wibowo, S., Agus Pranoto, Y., Ardi Widodo, K., & Miftakhur Rokhman, Moh. (2019). Evaluasi Website Sekolah Menengah Atas Di Propinsi Jawa Timur Dengan Pendekatan Evaluasi Berbasis Konten [Evaluation of High School Websites in East Java Province with a Content-Based

- Evaluation Approach]. *Jurnal Mnemonic*, 2(2), 5–8. doi: [10.36040/mnemonic.v2i2.83](https://doi.org/10.36040/mnemonic.v2i2.83) (in Indonesian).
2. Herlianto, J. I., Suwatno, S., & Herlina, H. (2018). Pengaruh Kompetensi Profesional Guru Dan Motivasi Belajar Siswa Terhadap Prestasi Belajar Siswa Pada Mata Pelajaran Kearsipan Smk Administrasi Perkantoran Di Smk Negeri 1 Ciamis [The Effect of Teacher Professional Competence and Student Learning Motivation on Student Learning Achievement in Office Administration Smk Archives Subjects at Smk Negeri 1 Ciamis]. *Jurnal MANAJERIAL*, 17(1), 70. doi: [10.17509/manajerial.v17i1.9762](https://doi.org/10.17509/manajerial.v17i1.9762) (in Indonesian).
 3. Asdiqoh, S. (2019). Upaya Meningkatkan Kemampuan Mengajar Mahasiswa Jurusan Pendidikan Islam Anak Usia Dini (Piaud) Iain Salatiga [Efforts to Improve Teaching Skills of Students in the Department of Early Childhood Islamic Education (Piaud) Iain Salatiga]. *MITRA ASH-SHIBYAN: Jurnal Pendidikan Dan Konseling*, 2(1), 18–37. doi: [10.46963/mash.v2i1.23](https://doi.org/10.46963/mash.v2i1.23) (in Indonesian).
 4. Syamsuddin, S. (2018). Peran Komite Sekolah Terhadap Penerapan Kurikulum [The Role of the School Committee in Curriculum Implementation]. *Idaarah: Jurnal Manajemen Pendidikan*, 2(1). doi: [10.24252/idaarah.v2i1.5151](https://doi.org/10.24252/idaarah.v2i1.5151) (in Indonesian).
 5. Waziroh, I. (2019). Pengembangan Kompetensi Supervisi Manajerial Dan Akademik Pengawas Pendidikan Agama Islam Di Sekolah Menengah Atas [Development of Managerial and Academic Supervision Competence of Islamic Religious Education Supervisors in Senior High Schools]. *Edukais: Jurnal Pemikiran Keislaman*, 3(2), 166–172. doi: [10.36835/edukais.2019.3.2.166-172](https://doi.org/10.36835/edukais.2019.3.2.166-172) (in Indonesian).
 6. Asyari, S. (2020). Supervisi Kepala Madrasah Berbasis Penilaian Kinerja sebagai Upaya Peningkatan Profesionalitas Guru [Performance Appraisal-Based Madrasah Principal Supervision as an Effort to Improve Teacher Professionalism]. *JIEMAN: Journal of Islamic Educational Management*, 2(1), 27–40. doi: [10.35719/jieman.v2i1.14](https://doi.org/10.35719/jieman.v2i1.14) (in Indonesian).
 7. Khairuddin, E. (2017). Supervisi akademik, motivation, willingness, commitment dan kinerja guru [Academic supervision, motivation, willingness, commitment and teacher performance]. *Lentera: Jurnal Pendidikan*, 12(1). doi: [10.33654/jpl.v12i1.396](https://doi.org/10.33654/jpl.v12i1.396) (in Indonesian).
 8. Tasnim, T., Muntari, M., & Sukardi, S. (2021). Supervisi Akademik oleh Kepala Madrasah dalam Meningkatkan Profesionalisme Guru [Academic Supervision by Madrasah Heads in Improving Teacher Professionalism]. *Jurnal Ilmiah Profesi Pendidikan*, 6(1), 159–166. doi: [10.29303/jipp.v6i1.181](https://doi.org/10.29303/jipp.v6i1.181) (in Indonesian).
 9. Mudjianingsih, M. (2017). Meningkatkan Prestasi Belajar Siswa Kelas VIII.F SMP Negeri 33 Surabaya Pada Mata Pelajaran IPS Materi Pranata Sosial Dengan Model Pembelajaran Snowball Throwing [Improving the Learning Achievement of Students in Class VIII.F SMP Negeri 33 Surabaya in Social Studies Subjects with Snowball Throwing Learning Model]. *Jurnal Pendidikan (Teori Dan Praktik)*, 1(2), 152. [10.26740/jp.v1n2.p152-165](https://doi.org/10.26740/jp.v1n2.p152-165) (in Indonesian).
 10. Machali, I. (2012). *Pengelolaan Pendidikan, Konsep, Prinsip, Dan Aplikasi Dalam Mengelola Sekolah Dan Madrasah* [Education management, concepts, principles and applications in managing schools and madrasahs]. Yogyakarta: Penerbit Kaukaba (in Indonesian).
 11. Makmun, A. (2007). *Psikologi Kependidikan* [Educational Psychology]. Bandung: Remaja Rosdakarya (in Indonesian).
 12. Fakry, G. (1987). *Perencanaan Pendidikan Teori dan Metodologi* [Education Planning Theory and Methodology]. Jakarta: Kemendikbud (in Indonesian).

Managerial Performance of Principals in an Integrated Education System on Character Building of Students

Kiki Fajariani¹, Khairuddin¹, Yusrizal¹

¹ *Syiah Kuala Universit*

Jln. Teuku Nyak Arief, Darussalam, Banda Aceh, Aceh, 23111, Indonesia

DOI: [10.22178/pos.86-1](https://doi.org/10.22178/pos.86-1)

LCC Subject Category: L7-991

Received 13.09.2022

Accepted 26.10.2022

Published online 31.10.2022

Corresponding Author:

Kiki Fajariani

fajariani.kiki@gmail.com

© 2022 The Authors. This article is licensed under a Creative Commons Attribution 4.0

License 

Abstract. This study aimed to determine the principal's managerial performance, the Integrated Education System results, and the constraints in implementing the program. The method used is qualitative, with data collection techniques through observation, interviews and documentation studies. The research subjects were the principal and the Integrated Education System teacher for tahfizh and diniyah. The results showed that the principal's managerial performance in implementing the Integrated Education System is related to implementing the learning schedule, ensuring the availability of teachers, supervising the program, and evaluating the program. Another managerial form by the principal is holding regular meetings with Integrated Education System teachers to discuss the process, achievement of results, and obstacles teachers face. From the results of the Integrated Education System, it can be concluded that it is true that students at SMP Negeri 1 Peukan Bada have increased character, as shown by changes in politeness, mutual respect, and tolerance. However, character development is still in the stage of the development process, considering that the Integrated Education System is still relatively new in schools.

Keywords: Managerial Performance; Integrated Education System; Character Building.

INTRODUCTION

The spread of moral issues among students indicates moral degradation, which has become an educational problem. The author [1] argues that "The consequences that arise are no longer considered as simple problems because their actions will carry over until they finish school (adults)". Ideally, education in schools can produce students who not only have cognitive abilities but are also accompanied by noble moral abilities. This can be a provision for children when they grow up and have a strong and beneficial character for the homeland and nation. This is confirmed in Law No 20 of 2003 concerning the National Education System, which states that: The achievement of student learning outcomes is not only seen from the cognitive and psychomotor domains but must also be seen from the effective results.

Some research results show that the effectiveness of achieving cognitive outcomes occurs in line with the point of attaining affective domains. The success of the educational mission is highly

dependent on the basic concepts of knowledge, skills, and attitudes.

Nowadays, integrated learning has become necessary because most of their problems and experiences are interdisciplinary. Therefore, the solution is that students are given multi-skill education that collaborates with the interdisciplinary.

The Aceh Besar district government made a big step by issuing an Integrated Education System policy, which also supports the golden generation formation program launched by the Ministry of Education and Culture. The Integrated Education System is one solution to produce the current generation so that they are ready to become religious, honest and responsible leaders of the nation.

Applying the curriculum concept in Aceh Besar is one of the alternative solutions initiated by the Education and Culture Office, Dayah Education Office, Islamic Sharia Service and MPD as a response to the gaps in education, especially in religious education and general education. Factors include rapid technological development, vio-

lence, and drug abuse among students. The Regent of Aceh Besar and all his staff designed an education system called the Integrated Education System or integrated learning.

SMP Negeri 1 Peukan Bada is one of the junior high schools in the Aceh Besar district that entered the Integrated Education System in schools. The application of integrated education is contained in religious subjects and local content. However, problems were found, such as many students still needing to be maximal in carrying out the character education being taught.

Character education is not a process of memorising exam question material and the techniques for answering them. Character education requires habituation, namely the habit of doing good, being honest, courteous, ashamed to cheat, embarrassed to be lazy, and sorry to let the environment dirty. Character is not formed instantly but must be trained seriously and proportionally to achieve the ideal shape and strength.

The Aceh Besar district government has contributed to better Aceh Besar education by combining national education and religious education. Religious education is critical in the formation of student character. This means that the Aceh Besar district government has laid the first stone to build an education system that is expected to form students who are more characterised, resilient, have good morals and memorise the Qur'an in the future.

The Ministry of Education and Culture launched a regulation on Strengthening Character Education (PPK) in schools. KDP is one of the government's priority programs implemented based on Presidential Regulation 87 of 2017. This program is an alternative solution to prepare the golden generation in Indonesia in 2045 [2].

The Education and Culture Office of the Aceh Besar government seeks to implement Islamic character education by implementing an Integrated Education System in the Aceh Besar district and making Islamic values part of the graduation standard. In the Strategic Plan (Renstra) of the Aceh Besar District Education and Culture Office for 2017-2022, the performance indicator is the implementation of an Integrated Education System for elementary and junior high schools in Aceh Besar with a performance target of 43 schools in 23 sub-districts. Currently, 33 schools in Aceh Besar implement an integrated learning system, including 23 elementary schools (SD)

and ten junior high schools (SMP). The executor assigned to carry out one of these strategic plans is the Aceh Besar Education and Culture Office.

METHOD

This study uses a qualitative method to present a specific picture of a situation, social setting, or relationship. The research model is descriptive, with the aim of the researcher wanting to describe the conditions that occurred at the time the research was conducted and then trying to examine the causes of the problems under study. In this approach, the researcher will describe how teachers prepare to manage to learn and how school policies support the implementation of learning that is compatible with the minimum competency assessment model.

The sample or informant in this research must know both those who are directly involved and those who are not directly involved but have knowledge related to the object under study, namely the Principal and Integrated Education System teacher consisting of 2 diniyah teachers and two tahfizh teachers. The teachers selected as informants will be determined using the proportional sampling method, which is selected based on the researcher's criteria.

The instruments used in this study consisted of interview sheets and general and open observation guidelines. The researchers used the two instruments as the primary data source in this study.

The data analysis technique was carried out by observing at the research site, conducting FGD with relevant stakeholders, then interviewing informants and conducting a documentation study by searching for literature and documents related to this research.

Data collection aims to determine the Managerial Performance of Principals in the Integrated Education System on the Character Building of Students at SMP Negeri 1 Peukan Bada.

Making the Principal of SMP Negeri 1 Peukan Bada an informant and making Diniyah and Tahfizh study teachers informants is an effort for researchers to obtain accurate data and understand the essence of the problem.

RESULTS AND DISCUSSION

How is the managerial performance of the principal in implementing the Integrated Education System at SMP Negeri 1 Peukan Bada?

From the study results, the researchers concluded that the managerial performance of the principal in implementing the Integrated Education System program and the principal's ability to manage the program had gone well, and the principal managed to oversee the program so that the implementation went well. About managerial, it must be connected to planning, implementation and evaluation.

The planning carried out by the principal is an extension of the results of the education office planning, which has completed planning the Integrated Education System program, both curriculum and implementation strategies. However, the principal's planning is related to the results or achievements of the program at SMP Negeri 1 Peukan Bada.

The program implemented by the principal for this program is to ensure the availability of teachers, the availability of time, and the availability of places for the learning process of the Integrated Education System program. And the principal also plays a role in overseeing the program's implementation by monitoring and conducting monthly meetings with Integrated Education System teachers.

The principal evaluates by looking at the learning outcomes of the Integrated Education System program in the form of material achievement reports and student learning outcomes in the form of report cards. The results of the analysis, the researchers continued with the opinions of experts regarding managerial principles. Principal Managerial Program is a cognitive, affective, and psychomotor ability. Principals related to education, the main thing to do is manage management by utilising all available resources in the school, including humans and other resources, to achieve quality educational goals. According to [3], the principal's managerial program is the ability of the principal to run as a manager who carries out management functions, namely:

a) the ability to plan with indicators, namely being able to formulate and implement strategies, and be able to make planning effective, b) the ability to organise with indicators capable of departmentalising, dividing responsibilities and being able to manage personnel, c) ability in im-

plementation with indicators, namely being able to make decisions, and being able to establish communication, d) the ability to conduct supervision with indicators capable of managing, and able to control operations and able to carry out its role as a manager to achieve the organisational goals that have been set.

According to [4], "school principals in managing educational units are required to master certain skills and competencies that can support the implementation of their duties". Managerial functions can be classified into two main types: organic and supporting roles. Which belongs to the kind of organic functions are all the main functions that need to be carried out by managers to achieve goals and various goals and must be used as a basis for action.

The principal's managerial competence can be seen in his ability to prepare school plans for various levels of planning;

- development of school organisation according to need;
- school leadership in the context of optimal utilisation of school resources;
- managing school change and growth towards an effective learning organisation;
- create a conducive and innovative school culture and climate for student learning;
- oversee teachers and staff in the context of optimal utilisation of human resources;
- manage school facilities and infrastructure in the context of optimal utilisation;
- manage public relations to seek support for ideas, learning resources, and school financing;
- placement and capacity building of students;
- manage curriculum development and learning activities by the direction and objectives of National education;
- manage school finances by the principles of accountable, transparent, and efficient management;
- managing school administration in supporting the achievement of school goals;
- manage special school service units in supporting learning activities and student activities at school;
- manage school information systems in support of programming and decision-making;
- take advantage of advances in information technology to improve learning and school management;

- monitoring, evaluation, and reporting on implementation.

According to [5], a school principal must be able to: 1) ability to plan the school; 2) able to develop school organisation as needed; 3) able to lead teachers and staff in the context of optimal utilisation of human resources; 4) able to manage teachers and staff in the context of optimal utilisation of human resources; 5) able to manage school facilities and infrastructure.

Furthermore, the author [6] states that in terms of the principal intelligence of the principal, managerial abilities must be carefully considered and thought out as the first step in carrying out administrative tasks, such as:

- 1) The ability to create, the knowledge in question is that the principal can provide input on a problem, innovate through policies made, and be able to use imaginative thinking skills (lateral thinking) to connect things with others that do not arise from empirical analysis and thoughts;
- 2) Ability to make plans;
- 3) Ability to organise;
- 4) The ability to communicate, able to understand other people, be willing to listen to others, be proficient in spoken and written language, and encourage others to move forward;
- 5) The ability to motivate, and help others to achieve the targets that have been set, can inspire those around them, and help others to assess their contributions and achievements;
- 6) Evaluation Ability.

Therefore, the principal's managerial ability is characterised by the ability to take decisions (decision making) and take appropriate, accurate, and relevant actions related to the above.

This approach explains the role of managers in carrying out work through various functions. According to [7], five critical tasks for management effectiveness are:

- 1) Planning: designing the workflow of his subordinates;
- 2) Organising: designing a structure with clearly defined powers or tasks;
- 3) Ordering: directing the actions of those under him;
- 4) Coordinate: drawing organisational elements towards a shared vision;
- 5) Controlling: Ensuring that the plans that have been made can be carried out as they should.

In this case, planning; organising; reigning; coordinating, and controlling are the main things that can ensure the effectiveness of management. In

addition to these requirements, the principal, as a manager in an educational institution, must have three essential bits of intelligence, namely professional intelligence, emotional intelligence, and managerial intelligence, to work together and do things with other people.

The principal's role significantly influences the school system's running. The principal is said to be the leader of the education unit whose task is to manage the education unit he leads. The principal acts as a central force that is the driving force of school life. Etymologically according to [8] explained as follows:

The principal is the equivalent of the school principal in charge of running the principalship or principalship. Principal principalship means everything related to the main tasks and functions of principals. In addition to the designation of the principal, there are also other designations such as school administration (school administration), school leadership (school leader), school manager (school manager), and so on.

From all the explanations above, the researcher concludes that the managerial competence of school principals is an absolute thing that must be mastered to implement a school organisational environment that is by standards so that the educational process in schools can run well. Another benefit of the principal's managerial competence is to makes it easier for teachers to carry out their duties.

How is the students' character after implementing the Integrated Education System in SMP Negeri 1 Peukan Bada?

From the results of the researcher's analysis of students' character after the application of the integrated education system program, the feeling of students at SMP Negeri 1 Peukan Bada experienced a change in nature in terms of being polite, appreciating and caring for each other. This is the result of a diniyah education program that prioritises Islamic values and tahfiz lessons related to memorising verses of the Qur'an.

Statements from experts support the researcher's analysis of the student's character. Character is psychological, moral, and character traits that distinguish one person from another. Character is unique values that are engraved in oneself and behaviour. The author [9] argues that "character coherently emanates from the results

of the mindset, heart, feeling and intention and the sport of a person or group of people". Character in English: "character" in Indonesian "character". It is derived from the Greek character Charissa, which means to make sharp and profound.

The [10] states that "character is defined as character, character, psychological traits, morals or character that distinguishes a person from others". Meanwhile, [11] explains "the total number of personal characteristics which include behaviour, habits, likes, dislikes, abilities, potential, values, and thought patterns". Character means mental or moral quality, moral strength, name or reputation. The psychological dictionary [12] states that "character is a personality that is viewed from an ethical or moral starting point, for example, someone's honesty which usually has a relationship with relatively fixed traits."

Furthermore, the author [13] explains that "character is a basic value that builds a person's personality, formed both due to the influence of heredity and environmental influences, which distinguishes him from others, and is manifested in his attitudes and behaviour in everyday life".

Character is the characteristics that distinguish a person's unique features, ethical aspects and mental complexity. According to [14] explains that "the term character has two meanings. First, it shows how bad behaviour is. Conversely, if someone behaves honestly and likes to help, that person manifests a noble character. Second, the term character is closely related to personality.

The understanding described above, it can be concluded that character is the universal value of human behaviour, which includes all activities of life, whether related to God, oneself, fellow human beings or with the environment that is manifested in thoughts, attitudes, feelings, words, and actions based on religious norms, laws, manners, culture, and customs.

Character education aims to shape and build students' mindsets, attitudes, and behaviour to become favourable, good-natured, noble, and responsible individuals. According to [15], "character education is a conscious effort made to shape students into positive and virtuous individuals by Graduate Competency Standards so that they can be implemented in everyday life". According to the Ministry of Education and Culture [2], the objectives of character education include:

1. They are developing the potential of the heart/conscience of students as human beings and citizens who have the culture and character of the nation.
2. Develop the habits and behaviour of commendable students in line with the nation's universal values and religious and cultural traditions.
3. Instilling the spirit of leadership and responsibility of students as the nation's next generation.
4. We are developing the ability of students to become independent, creative, and national-minded human beings.
5. Develop a school life environment as a learning environment that is safe, honest, full of creativity and friendship, as well as with a high sense of nationality and full of strength (dignity).

Further regarding the goals of character education according to [16], character education has the following objectives:

1. Develop the potential of students towards self-actualisation.
2. Develop attitudes and awareness of self-worth.
3. Developing all students' potential is a manifestation of potential development that will build a self-concept that supports mental health.
4. Develop problem-solving.
5. Develop students' motivation and interest in small group discussions to help improve critical and creative thinking.
6. Develop various forms of metaphor to open intelligence and develop creativity.

From the experts' understanding, the researcher concludes that character education aims to improve the morale of the nation's generation, where the strength of the character of the age becomes the capital of the state's power in the future. Character formation will be a benchmark for a developed country. This is because a developed country must have a strong character and, of course, the characters described by experts.

What are the obstacles in the Integrated Education System at SMP Negeri 1 Peukan Bada?

From the results of the researcher's analysis that the obstacle faced by the principal and Integrated Education System teachers - the concern of parents who are still very low on the program. This obstacle is homework for all parties involved in this program, so it becomes material in evaluat-

ing the Integrated Education System program at the school level and evaluation material at the education office level.

According to [17], learning components include "objectives, study subjects subject matter, subject matter, strategies, media, evaluation and support". The subject of learning is the main component of the learning system because it acts as a subject and an object. Students are subjects because they carry out the teaching and learning process. In contrast, as objects because of learning activities, they are expected to achieve behavioural changes in learning. This requires the active participation of students in learning activities.

The active participation of learning subjects in the learning process is influenced by the ability factor related to the material to be studied. Therefore, teacher knowledge is needed regarding the problems of students' memorisation difficulties for the benefit of effective learning planning. Factors inhibiting students in learning arise due to issues experienced by students that interfere with the learning process, and learning outcomes are less than optimal.

Furthermore, [17] explains internal and external factors strongly influence learning. Internal factors are factors that arise from within students, including psychological factors. Internal factors that affect student learning processes are psychological. The psychological factor is a condition related to the mental state of students. Psychological factors can be viewed from talent, interest, intelligence, and motivation. Talent can be defined as a child's potential ability to succeed. Every child has different talents. Talent can affect the level of learning achievement in specific fields. Similarly, the results of the researcher's analysis of the obstacles in running the Integrated Education System program at SMP Negeri 1 Peukan Bada.

REFERENCES

1. Anwar, K. (2019). *Implementasi Pendidikan Karakter di SMP Negeri I Rejang Lebong* [Implementation of Character Education at SMP Negeri I Rejang Lebong]. Retrieved from <http://e-theses.iaincurup.ac.id/487/1/IMPLEMENTASI%20%20PENDIDIKAN%20KARAKTER%20DI%20SMP%20NEGERI%20I%20REJANG%20LEBONG.pdf> (in Indonesian).
2. Muchtar, D., & Suryani, A. (2019). Pendidikan Karakter Menurut Kemendikbud [Character Education According to the Ministry of Education and Culture]. *Edumaspul: Jurnal Pendidikan*, 3(2), 50–57. doi: 10.33487/edumaspul.v3i2.142 (in Indonesian).

CONCLUSIONS

Based on the results and discussion of the research, the following conclusions can be drawn:

1. The results showed that the principal's managerial performance in implementing the Integrated Education System program is related to implementing the learning schedule, ensuring the availability of teachers, supervising the program, and evaluating the program. Another managerial form by the principal is holding regular meetings with Integrated Education System teachers to discuss the process, achievement of results and obstacles teachers face.
2. From the results of the Integrated Education System program, it can be concluded that it is true that students at SMP Negeri 1 Peukan Bada have increased character, as shown by changes in politeness, mutual respect, and tolerance. However, character development is still in the stage of the development process, considering that the Integrated Education System program is still relatively new in schools.
3. Obstacles principals and teachers face are commonly felt and faced by every teacher. The care and attention of parents are the main problems in this program, considering that to make students have character by the objectives of the Integrated Education System program. It is essential to support parents by paying attention to aspects of worship and interest in student learning at home.

Acknowledgements

Thank you to the leadership, teaching staff, and teachers of diniyah and tahfizh studies at SMP Negeri 1 Peukan Bada Aceh Besar. They have provided opportunities and service facilities while conducting research. Thank you to the supervisor who has guided me in completing this article.

3. Virgo, E., & Slameto, S. (2018). Evaluasi Program Manajerial Kepala Sekolah [Evaluation of the Principal's Managerial Programme]. *Kelola: Jurnal Manajemen Pendidikan*, 5(2), 217–229. doi: 10.24246/j.jk.2018.v5.i2.p217-229 (in Indonesian).
4. Ismuha, Khairudin, Djailani, A. (2016). *Kompetensi Manajerial Kepala Sekolah dalam Meningkatkan Kinerja Guru pada SD Negeri Lamklat Kecamatan Darussalam Kabupaten Aceh Besar* [Principal's Managerial Competence in Improving Teacher Performance at Lamklat State Elementary School, Darussalam District, Aceh Besar Regency]. *Jurnal Administrasi Pendidikan*, 4(1), 46–55 (in Indonesian).
5. Marsela, A. (2020). *Kompetensi Manajerial Kepala SD IT Muhammadiyah Gunung Terang Bandar Lampung* [Managerial Competence of the Head of SD IT Muhammadiyah Gunung Terang Bandar Lampung]. Retrieved from <http://repository.radenintan.ac.id/16090/1/PERPUS%20PUSAT%20BAB%201%20DAN%202.pdf> (in Indonesian).
6. Rahmi, S. (2019). Kompetensi Manajerial Kepala Sekolah dalam Meningkatkan Etos Kerja Tenaga Kependidikan di SMA N 2 Lhoknga Aceh Besar [Principal's Managerial Competence in Improving the Work Ethic of Education Personnel at SMA N 2 Lhoknga Aceh Besar]. *MANAGERIA: Jurnal Manajemen Pendidikan Islam*, 4(2), 183–197. doi: 10.14421/manageria.2019.42-01 (in Indonesian).
7. Maliling. (2016). *Kemampuan Manajerial Kepala Sekolah dalam Manajemen Sekolah Di SMP Negeri Kecamatan Arung keke Kabupaten Jeneponto* [Principal's Managerial Ability in School Management at State Junior High School in Arung keke District, Jeneponto Regency]. *Jurnal ELEKTIKA*, 4(1), 85–101 (in Indonesian).
8. Julaiha, S. (2019). *Konsep Kepemimpinan Kepala Sekolah* [Principal Leadership Concept]. *Jurnal Penelitian Pendidikan dan Pembelajaran*, 6(3), 51–62 (in Indonesian).
9. Widodo, R., & Mansur, M. (2021). *Konsep Dasar Penguatan Pendidikan Karakter Sebagai Upaya Menyiapkan Generasi Emas* [Basic Concepts of Strengthening Character Education as an Effort to Prepare the Golden Generation]. *Jurnal Civic Hukum*, 6(1), 105–114 (in Indonesian).
10. Mokola, F., Walandouw, A., & Londa, J. W. (2015). *Optimalisasi Tugas Dan Fungsi Bidang Pemasaran Dalam Mempromosikan Pariwisata Di Kabupaten Halmahera Utara* [Optimising the Tasks and Functions of the Marketing Division in Promoting Tourism in North Halmahera Regency]. *Acta Diurna Komunikasi*, 4(3), 1–10 (in Indonesian).
11. Hafid, U. D. (2018). Konsep Pendidikan Karakter Perspektif Islam [The Concept of Character Education from an Islamic Perspective]. *Ta'dib: Jurnal Pendidikan Islam*, 7(1), 93–98. doi: 10.29313/tjpi.v7i1.3428 (in Indonesian).
12. Agustina, F., & Kurnia, A. (2019). *Penanaman Pendidikan Karakter dan Metode Story Telling* [Character Education and Story Telling Method]. *Jurnal Penelitian Medan Agama*, 10(2), 257–280 (in Indonesian).
13. Budi, A. S. (2017). Implementasi pendidikan karakter melalui pemanfaatan budayasekolah di sd negeri kyai mojo yogyakarta tahun ajaran 2016/2017 [Implementation of character education through the utilisation of school culture in kyai mojo yogyakarta elementary school 2016/2017 academic year]. *Trihayu: Jurnal Pendidikan Ke-SD-an*, 4(1), 248–252 (in Indonesian).
14. Kosasih, A. (2017). *Edukasi Spiritual Dalam Upaya Membangun Karakter Bangsa Di Desa Kertayasa Kecamatan Cijulang Kabupaten Pangandaran* [Spiritual Education in an Effort to Build National Character in Kertayasa Village, Cijulang Subdistrict, Pangandaran Regency]. *Jurnal Pengabdian Kepada Masyarakat*, 1(3), 150–153 (in Indonesian).
15. Abdurrahman, A. (2018). Implementasi Manajemen Kurikulum Pesantren Berbasis Pendidikan Karakter. *AT-TURAS: Jurnal Studi Keislaman*, 4(2), 279–297. doi: 10.33650/at-turas.v4i2.336 (in Indonesian).

16. Hasanah, U. (2016). *Model-Model Pendidikan Karakter di Sekolah* [Models of Character Education in Schools]. *Al-Tadzkiyyah: Jurnal Pendidikan Islam*, 7(1), 18–34 (in Indonesian).
17. Rohman, D., Hariyono, Sudarmiatin. (2017). *Pengembangan Buku Ajar IPS SD Berbasis Kontekstual* [Development of Contextual Based Elementary Social Studies Textbooks]. *Jurnal Pendidikan Dasar*, 2(5), 719–723 (in Indonesian).

Management of School Operational Assistance Funds at SMKN 2 Kuripan, Lombok Regency, Indonesia: Reviewing From Planning Aspects

Suwardi ¹, Sudirman ¹, Fahrudin ¹

¹ *University of Mataram*

Jl. Majapahit No 62 Mataram, Nusa Tenggara Barat, Indonesia

DOI: [10.22178/pos.86-14](https://doi.org/10.22178/pos.86-14)

LCC Subject Category: L7-991

Received 28.09.2022

Accepted 26.10.2022

Published online 31.10.2022

Corresponding Author:

Sudirman

sudirman_fkip@unram.ac.id

© 2022 The Authors. This article is licensed under a Creative Commons Attribution 4.0 License



Abstract. This study aims to determine budget planning in fund management School operational assistance at SMKN 2 Kuripan, Lombok Regency, Indonesia. This research is qualitative research with a elements descriptive method. Data collection was carried out through document analysis, observation and interviews. The results of the study found that the planning was carried out with a meeting to determine program funding which was attended by the school team.

It was prepared by making an activity plan and budget adjusted to the School Work Plan and referring to National Education Standards. The conclusion is that management in planning aspects of School Operational Assistance funds is carried out procedurally, but those organization and reporting could be more optimal.

Keywords: Planning; School Operational Assistance; SMK.

INTRODUCTION

Program fund School Operational Assistance (known as BOS) aims to improve the quality of learning, speed up the achievement of standard service minimum on unit education and for making it happen achievement of Standard National Education (known as SNP) on unit education [1]. School funding is sourced from BOS, Education Implementation Fees, Special Allocation Funds and other government assistance [2].

Fund Schools are needed to support existing activities at the school. These activities include learning evaluation, extracurricular activities, fulfilment of facilities and infrastructure, teaching and learning activities, training, industrial work practices and other actions that support the school's progress. It can be said that the goals of education will be achieved, one of which is if the school or educational institution can manage the education budget effectively and efficiently [3]. So to achieve this, good financial management is needed.

Fund BOS is a government program launched in 2005, intended for all levels of elementary, junior high school, and vocational schools orga-

nized by the government and the private sector by referring to the data in the dapodik [4]. The government carries out the mechanism for distributing BOS funds by direct transfer to school accounts. In addition, it is also carried out through transfers to the regional treasury and then to the respective school treasuries [4]. For the disbursement of funds made by schools to the bank, it is recommended that it be carried out on a quarterly and phased system. The different mechanisms for distributing BOS funds impact the financial management of BOS funds in recipient schools. For example, implementation, reporting and accountability must be more timely.

Program BOS funds can provide equal opportunities for all students and educational institutions to improve cheap, affordable, quality education services [5]. Besides that, it can also prevent dropping out of school for poor students due to reasons not being able to pay school fees and school extracurricular activities costs. Most importantly, the BOS program can encourage and motivate local governments and communities that can provide operational assistance for schools [6].

In general, the management of BOS funds needs to consider several principles. Permendikbud No 6 of 2021 explains that the management of education funds is based on accountability, transparency, flexibility, effectiveness and efficiency. The emphasis made by researchers in this study is on the aspects of accountability, transparency and flexibility. Transparency in the financial sector means openness in managing funds in a school or educational institution, both in the number of funds and accountability. Accountability in management means that predetermined plans can account for school fees, and parents, the community and the government carry out the responsibility. Flexibility means that funds can be used according to each school's needs [7].

Interviews with related respondents and initial observations made by researchers on the management of SMK Negeri 2 Kuripan revealed that the management process for BOS funds had been carried out procedurally. The allocation of funds proves this in Activity Plan and Budget School based on a priority scale. It's described in the summary school activity plan and budget in 2021 with 1475 students and a total budget of Rp. 2,374,750,000.

Distribution of fund planning BOS based on the SNP is the standard of school activities and financing. Financing, process, and facilities and infrastructure standards are three educational standards that must be financed in more significant numbers and prioritized.

Based on the description of the conditions described above, the authors are interested in research to find out how is it going planning for BOS funds at SMK Negeri 2 Kuripan.

METHOD

The research was conducted at SMKN 2 Kuripan, Kuripan sub-district, West Lombok regency, West Nusa Tenggara. The research method used is qualitative, with a case study. The data in this study are primary and secondary. Primary data is the result of discussions regarding the management of BOS funds, from before receiving the funds to the process of spending and reporting on the use of these funds.

Respondents in this study include the principal, Head of Subdivision of Administration, Treasurer, Teachers, and the School Committee. The secondary data include teaching staff data, student

data, school infrastructure data, School Activity Plans and Budgets and brief reports on using BOS. Secondary data also were obtained from internet site data, official documentation and mass media.

RESULTS AND DISCUSSION

Knowing the budgeting was done, the researchers conducted questions to 5 respondents: the school principal, the head of subdivision of administration, the BOS treasurer, teachers, and the School Committee. Each respondent answered the questions asked by the researcher to complete and perfect the research data. The Principal, Head of Subdivision of TU and Treasurer were conducted to obtain information regarding the planning of BOS funds, and teachers and school committees gave information about the activities of teachers and committees in budget planning.

According to the School Committee, the school in carrying out the preparation and planning of the School Activity Plan and Budget, a coordination meeting is held between all components in the school to seek the final planning decision at the beginning of the budget year, as well as the timing of budget changes. Sources of funds are the operational assistance fund, the Education Implementation Fee (BPP) fund and the Special Allocation Fund. The Fund (BOS) is used to meet school needs in the context stated in the applicable BOS technical guidelines. For funds, the education implementation fee is used to finance school activities outside the BOS fund. It is affiliated with the technical implementation cost of education issued by the NTB Provincial Education and Culture Office, for example, honorarium for activity committees, additional duty fees and transportation costs.

According to the school's principal, at the beginning of the year Budgeting for, the Deputy Principal, Head of the Study Program, and all units within the school are asked to coordinate to deliver the work program and budget for their activities. Furthermore, there is a budget allocation based on a priority scale in preparing the School Activity Plan and Budget. The main priority is to learn from the implementation of the main activities: planning, implementation, evaluation, improvement, and improvement. The rest is used to develop extracurricular activities and strengthen personality formation. The regular budget prepa-

ration is carried out from January to March of the current year, while changes are made in September to December of the current year by previously looking at the number of students at the last cut-off, which is August 31 of the current year.

Similar to the principal, the treasurer also believes that in planning the BOS budget, identification of general needs is carried out by looking at the quality report cards, school strategic plans and school activity plans and determining the priority scale, which is then included in the School Activity Plan and Budget. In pouring these plans into an Excel application and the School Activity Plan and Budget Application, the treasurer is assisted by the Application operator and dapodik operators.

From the results of an interview with a teacher, information was obtained that before the preparation of the budget and the disbursement of school BOS, the management, together with the school committee, carried out dissemination to all parties in the school. Schools held outreach activities through meetings with the committee and parents/guardians of students. The manager of the BOS fund management at the school also makes a budget plan that outlines the objectives in a measurable operational view. Entering the nominal budget in the School Activity Plan and Budget always refers to the price standards applicable in the Province. It pays attention to the prices that occur in the field. Before preparing the School Activity Plan and Budget in one year, complete coordination between schools and school committees is carried out to create transparency and accountability.

The obstacle in planning the use of BOS funds, among others, is the percentage of the proposed budget for activities of vice principals, department heads, and teachers exceeds the existing budget limit.

From the findings through an interview process in the field with the Principal, Head of Subdivision of Administration, Treasurer of BOS, Teachers and School Committees that the financial planning of the school is made by:

- 1) Making a School Budget Work Plan adapted to The Medium Term Work Plan and the short-term plan is then recorded in the School Work Plan;
- 2) Preparation of planning the budget begins with a discussion meeting and budget preparation. The stakeholders in the school are allowed to propose their program of activities. This pro-

posal is adapted to School Work Plan schools that represent the identification of goals based on the vision and mission of the school by taking into account the applicable technical guidelines for the BOS fund;

- 3) The school take an inventory of the activities proposed by all stakeholders in the school, then sort out which are priorities and which are not, which will be included and set in the Activity Plan and School Budget, then inputted into the Plan Application School Activities and Budgets. An operator appointed by the principal carries out this process.

Thus, the planning process went well based on transparency, accountability and flexibility principles. The school planning process involved components in the school, holding meetings and discussions. Responsibility relates to the finished School Activities and Budgets that school residents can see. For flexibility, the programs in the School Activities and Budgets file are priority programs tailored to the needs stated in the School Activities and school work programs. To minimize the problems faced in the planning process, the school pumps out stakeholder activity in providing input to the principal's budget program, first calling the stakeholders alternately in the principal's room.

As a reference in the planning process, it is seen based on Permendikbud No 6 of 2021. The planning process for the use of Regular BOS Funds is carried out by [1, 8]:

- 1) Adjusting the actual conditions in schools up to the time limit set each year;
- 2) Planning refers to the results of the school's self-evaluation;
- 3) Schools have the authority to determine the use of the Regular BOS Fund by the priority needs of the school;
- 4) Observing the principles of Regular BOS Fund management;
- 5) Done by deliberation and consensus.

This describes the objectives in a measurable operational view [9]. The practical idea is the School Activity Plan and Budget, which contains various programs to be run daily, monthly, or long-term in the future. Likewise, entering the nominal budget in the School Activity Plan and Budget always refers to the price standards applicable in the Province. It pays attention to the prices that occur in the field. In pouring these

plans into an excel application and the School Activity Plan and Budget Application, the treasurer is assisted by the School Activity Plan and Budget Application operator and goods administrators and dapodik operators.

Planning in the school combined using the principles of transparency, accountability and flexibility with the following stages:

1. Start with the socialization of the BOS fund, then a discussion and preparation meeting School Activity Plan and Budget. This is done to create transparency in financial management.
2. The stakeholders in the school are allowed to propose their program of activities. This proposal is adjusted to the school RKS which represents the identification of goals based on the vision and mission of the school by taking into account the applicable technical guidelines for the BOS fund. The school will take an inventory of the activities proposed by all stakeholders. This is done to maximize the accuracy of the use of funds.
3. Sorting out priority activities and assigning them to become one of the School Activity Plans and Budgets. This means that the selected activities must be by the budget pattern and the development needs of the school.
4. After everything is neatly arranged in the School Activity Plan and Budget document, the next thing to do is input the School Activity Plan and Budget into the School Activity Plan and Budget application. An operator appointed by the principal carries out this process. The School Ac-

tivity Plan and Budget application is a management information system created to handle school financial management problems starting from the planning, organizing, directing, coordinating, monitoring or controlling processes.

The financial management team of the school in budget planning, among others, faces several obstacles:

1. The number of proposed activity budgets by school units often exceeds the existing budget limit. Meanwhile, they demand that all activities continue. This happened because everyone wanted their actions to be accommodated and feared they would not be implemented.
2. There are often delays in school work units submitting the budget to the manager of the BOS fund, while the School Activity Plan and Budget must be immediately sent to the Office. This is due to the late proposal from each work unit.

In this case, the school management, especially the principal, makes a strategy, namely choosing a priority scale program and then budgeting it regularly. To pump up the activity of stakeholders in providing input to the principal's budget program, first, call the stakeholders alternately in the principal's room, dictated one by one.

Suppose a common thread is drawn between the existing planning pattern in Permendikbud and the planning pattern at the school. In that case, the planning process at SMKN 2 Kuripan is classified as procedural, although there are still obstacles.

REFERENCES

1. Hidayat, R., Burhan, M. R., & Al Ma'ruf, A. M. (2019). Efektivitas Pengelolaan Dana Bantuan Operasional Sekolah (BOS) Dalam Meningkatkan Sarana Dan Prasarana Pendidikan (Studi di SDN 44 Mande Kota Bima) [The Effectiveness of School Operational Assistance (BOS) Fund Management in Improving Educational Facilities and Infrastructure (Study at SDN 44 Mande, Bima City)]. *Jurnal Ilmu Administrasi Publik*, 7(2), 93. doi: [10.31764/jiap.v7i2.1269](https://doi.org/10.31764/jiap.v7i2.1269) (in Indonesian).
2. Gunawan, I. G. H., Sumada, I. M. ., & Suargita, I. N. (2021). Implementasi Program Bantuan Operasional Sekolah (BOS) Pada Sekolah Dasar No 1 Blahkiuh Kecamatan Abiansemal Kabupaten Badung [Implementation of the School Operational Assistance (BOS) Programme at Primary School No 1 Blahkiuh, Abiansemal District, Badung Regency]. *Widyanata*, 18(1), 21–29. doi: [10.54836/widyanata.v18i1.601](https://doi.org/10.54836/widyanata.v18i1.601) (in Indonesian).
3. Idris, I. (2020). Perencanaan pendidikan dalam konteks desentralisasi pendidikan [Education planning in the context of education decentralisation]. *Scolae: Journal of Pedagogy*, 3(2). doi: [10.56488/scolae.v3i2.83](https://doi.org/10.56488/scolae.v3i2.83) (in Indonesian).

4. Hidayat, F., & Tolla, I. (2022). Transparansi Dan Akuntabilitas Penggunaan Dana Bantuan Operasional Sekolah (BOS) [Transparency and Accountability in the Use of School Operational Assistance Funds (BOS)]. *Jurnal Administrasi, Kebijakan, Dan Kepemimpinan Pendidikan (JAK2P)*, 3(1), 66. doi: [10.26858/jak2p.v3i1.16167](https://doi.org/10.26858/jak2p.v3i1.16167) (in Indonesian).
5. Rasminto, H., Kuncoro, A. A., & Santoso, B. (2018). Perancangan Sistem Informasi Penggunaan Dana Bantuan Operasional Sekolah Terpadu Dengan Metode Berorientasi Objek [Designing an Information System for the Use of Integrated School Operational Assistance Funds with Object-Oriented Methods]. *Simetris: Jurnal Teknik Mesin, Elektro Dan Ilmu Komputer*, 9(1), 327–334. doi: [10.24176/simet.v9i1.1925](https://doi.org/10.24176/simet.v9i1.1925) (in Indonesian).
6. Lopulalan, J. E. (2020). Analisis Pengawasan Penggunaan Dana Bantuan Operasional Sekolah Di Sd Ypk Ebenhaezer Limalas Kabupaten Raja Ampat [Analysis of the Supervision of the Use of School Operational Assistance Funds at Ypk Ebenhaezer Limalas Elementary School, Raja Ampat Regency]. *Jurnal Jendela Ilmu*, 1(1), 23–28. doi: [10.34124/ji.v1i1.51](https://doi.org/10.34124/ji.v1i1.51) (in Indonesian).
7. Alumudy, W. G. (2018). Analisis Pencatatan Akuntansi Pada Dana Bantuan Operasional Sekolah (BOS) (Studi Kasus Di Smk Negeri 1 Lunyuk) [Analysis of Accounting Records on School Operational Assistance Funds (BOS) (Case Study at Smk Negeri 1 Lunyuk)]. *Jurnal Ekonomi Dan Bisnis Indonesia*, 3(2). doi: [10.37673/jebi.v3i2.30](https://doi.org/10.37673/jebi.v3i2.30) (in Indonesian).
8. Irawan, P., Sokibi, P., & Susanto, I. (2020). Penerapan Metode Simple Additive Weighting Untuk Menentukan Penggunaan Dana Bantuan Operasional Sekolah [Application of Simple Additive Weighting Method to Determine the Use of School Operational Assistance Funds]. *Jurnal Ilmiah Ilmu Komputer*, 6(2), 35–41. doi: [10.35329/jiik.v6i2.149](https://doi.org/10.35329/jiik.v6i2.149) (in Indonesian).
9. Fadhli, M. (2020). Implementasi Manajemen Strategik Dalam Lembaga Pendidikan [Implementation of Strategic Management in Educational Institutions]. *Continuous Education: Journal of Science and Research*, 1(1), 11–23. doi: [10.51178/ce.v1i1.7](https://doi.org/10.51178/ce.v1i1.7) (in Indonesian).

Physiological Response and Tolerance of Genotypes of Shallots (*Allium ascalonicum* L.) under Shade Stress

Ni Ketut Sukasni¹, Taufik Fauzi¹, Farid Hemon¹

¹ *University of Mataram*

Jl. Majapahit No 62 Mataram, Nusa Tenggara Barat, Indonesia

DOI: 10.22178/pos.86-13

LCC Subject Category: S1-(972)

Received 28.09.2022

Accepted 26.10.2022

Published online 31.10.2022

Corresponding Author:

Ni Ketut Sukasni

sukasmi@unram.ac.id

© 2022 The Authors. This article is licensed under a Creative Commons Attribution 4.0

License 

Abstract. This study aims to determine several shallot genotypes' physiological responses and tolerance to shade stress. The experimental design used was a completely randomised design (CRD) consisting of 6 genotypes, namely: G1 (Keta Monca), G2 (Ampenan), G3 (Super Philip), G4 (Thailand Nganjuk), G5 (Bali Karet), G6 (Lokananta). Each treatment was repeated five times. Planting was done using polybags measuring 35x35 cm; each polybag planted two bulbs, 2-3 cm deep, with a spacing of 20x20 cm. Shade treatment used 65.00% parent with a shade height of 2 m, a width of 1.5 m, and a shade length of 3 m. The results of the physiological response research showed that the parameters of N-Total, protein, carbohydrates, and carotenoids showed significant differences in the genotype of shallots and indicated an interaction between treatments. The parameters of chlorophyll a, chlorophyll b, and proline showed no significant difference and no interaction between treatments. The genotypes of shallots sensitive to shade resistance were genotype Super Philip, Thailand Nganjuk, and Bali Karet. The moderate tolerant genotype was Ampenan, and the susceptible genotype was Keta Monca.

Keywords: shade; proline; chlorofill.

INTRODUCTION

Shallot (*Allium ascalonicum* L.) is one of the horticultural commodities that have been developed nationally. The prospect of onion cultivation is excellent because it can improve farmers' living standards. It has a high economic and industrial value and export potential [1].

Indonesia's centre of shallot production is Java Island, with a total output of 956,652 tons or about 77.53% of the total national shallot production. Central Java province is the largest shallot producer, producing 519,356 tons or 42.09% of the total national shallot production, followed by East Java and West Java. West Nusa Tenggara is the largest shallot-producing province outside Java, with a show of 117,513 tons or about 9.52% of the total national shallot production, followed by West Sumatra [2].

The productivity influences the productivity of NTB shallots from Bima Regency, designated by the government as a shallot development area. The planted area from 2014 is growing. From 2014 to 2016, they were 8,207, 10,491, and 13,674 ha, respectively, and the production was 91,709, 125,057 and 153,297 tons [2].

Shallots are mostly planted on marginal lands such as dry land, rainfed land, and under tree stands. The ground under tree stands usually has dry land conditions, so the plants get drought stress. Planting plants under tree stands causes plants to get shade stress, where plants experience a lack of sunlight. An understanding of shade stress is essential in onion planting. Shade stress affects all aspects of plant growth, including anatomical, morphological, physiological and biochemical plants. The yield of bulbs in shallots has been reported to be directly related to the amount of water supply and shade.

The primary constraint on the land under the stand is the low light intensity due to the shading factor. Therefore, efforts are needed to obtain adaptive and high-producing plant varieties with low light intensity (shade) conditions. Light has a significant role in physiological processes, such as photosynthesis, respiration, growth and development, closing and opening of stomata, various plant movements and germination [3].

The growth and morphology of shallots cannot be separated from environmental factors that influence them, one of which is shade. The presence of dye causes the intensity of sunlight plants

to receive to decrease. Plants will adapt, namely through changes in plant morphological characters. Changes in the morphology of these plants, such as the increase in plant height [4], decreased number of leaves and tillers [5], decreased leaf thickness [6] and increased leaf area [7, 8]. Environmental shade or low light intensity conditions also affect plant physiological conditions [9] and production [10, 11]. Authors [12] stated that physiological conditions include chlorophyll, carbohydrates, nitrogen levels, proteins, etc.

Plant tolerance determines the plants' response to the shaded environment to reduced light intensity. One of the effects of shade on plant morphology is that the plant stems become taller because the plant stems are etiolated [13]. This morphological condition causes the plant to fall, so it can quickly reduce tuber yields. According to [14, 15], shade changed the shallot bulb weight yield and influenced the growth process. Shade by 50 % during growth resulted in a decrease in soybean yield between 37 and 74 % [16, 17], and rice decreased yield productivity by more than 55 % [18].

Based on the description above, this study aimed to determine the physiological response and tolerance of several shallot genotypes to shade stress.

METHOD

The experimental design used was a completely randomised design (CRD) consisting of 6 genotypes, namely: G1 (Keta Monca), G2 (Ampenan), G3 (Super Philip), G4 (Thailand Nganjuk), G5 (Bali Karet), G6 (Lokananta). Each treatment was repeated five times. Planting was done using polybags measuring 35×35 cm; each polybag planted two bulbs, 2-3 cm deep, with a spacing of 20×20 cm. Shade treatment using 65.00% parent with a shade height of 2 m, a width of 1.5 m and a shade length of 3 m.

The implementation of the research includes providing seeds, preparing planting media, planting, maintaining, irrigating, fertilising, sampling, harvesting, post-harvesting and observing. There are seven parameters for keeping physiological responses: N-Total, protein, carbohydrates, carotenoids, chlorophyll a, chlorophyll b, and proline. N-Total analysis using the formula (1).

$$\text{Nitrogen content, \%} = \frac{(V_c - V_b) \times N \times 14}{\text{Sample weight}} \times 100, \quad (1)$$

Protein analysis using the formula (2).

$$\text{protein content, \%} = N \times F_k$$

$$N = \frac{(\text{HCl} - \text{blank}) \times \text{NHCL} \times Fk \times 14}{\text{Sample weight}} \times 100, \quad (2)$$

where V_c V_b – sample and blank titar, ml; N – normality of standard H_2SO_4 solution; 14 – equivalent weight of nitrogen; Fk = water content correction factor = $100 / (100 - \% \text{ moisture content})$.

Carotenoid analysis using the formula (3).

$$\begin{aligned} \text{Carotenoids} &= \\ &= \frac{(A480 + 0.14A663 - 0.63A645) \times V \times Fp \times 10^3}{112.5W} \quad (3) \end{aligned}$$

where $A480$ – Absorbance at a wavelength of 480 nm; $A645$ – Absorbance at a wavelength of 645 nm; $A663$ – Absorbance at a wavelength of 663 nm; V – Extract volume, ml; W – Sample weight (g); Fp – Dilution factor.

Carbohydrate analysis using the formula (4).

$$\text{Carbohydrate, \%} = \frac{GT \times Fp}{\text{Sample weight}} \times 100, \quad (4)$$

where GT – Table Sugar.

Chlorophyll analysis used the calculation formula (5, 6):

$$\text{Chlorophyll A} = 13.7A665 - 5.76A649 \quad (5)$$

$$\text{Chlorophyll B} = 25.8A649 - 7.60A665 \quad (6)$$

Proline analysis using the formula (7).

$$Y = 0.0336X + 0.0002 \quad (7)$$

where Y – absorbance ; X – concentration.

Calculate the value of sensitivity (S) of shade stress based on the formula (8).

$$S = \frac{1 - \frac{Y}{Y_p}}{1 - \frac{X}{X_p}}, \quad (8)$$

where Y – score the mean of certain variables (e.g. several branches, plant height, and others) on one genotype under shade stress;

Y_p – score the average of these variables in an optimum environmental genotype;

X – score the average of these variables in all genotypes that experienced shade stress;

X_p – score the mean of these variables in all optimum environmental genotypes.

Score or Value: A – Shade stress tolerant genotype, $S < 0.5$; B – Somewhat tolerant, if $0.5 < S < 1$; C – Sensitive, if $S > 1$.

RESULTS AND DISCUSSION

Physiological Response of Several Genotypes of Shallots to Shade Stress. In Table 1, the analysis results show that the parameters of N-Total, protein, carbohydrates and carotenoids show significant differences in the genotype of shallots and indicate an interaction between treatments.

Table 1 – Physiological responses of several shallot genotypes on seven parameters of treatment

| Parameter | Treatment | | |
|---------------|-----------|----|------|
| | G | JN | G*JN |
| N-Total | S | S | S |
| Protein | S | S | S |
| Carbohydrate | S | S | S |
| Carotenoids | S | S | S |
| Chlorophyll a | NS | NS | NS |
| Chlorophyll b | NS | NS | NS |
| Proline | NS | NS | NS |

Notes: G – Genotype; JN – Shade Type; G*JN – Combination of Genotype with Shade and No Shade Treatment; S – Significant; NS – Non-significant.

The parameters of chlorophyll a, chlorophyll b and proline showed no significant difference, and

there was no interaction between these treatments.

Each plant genotype has a different tolerance to shade stress. Plants adaptive to low radiation experience an increase in leaf area ratio, leaf stem ratio, and stem length and a decrease in leaf thickness [19]. Authors [20] reported that the interaction of the soybean genotype with the environment influenced the growth and yield of soybean plants. Research on the response of plant genotypes to shade is mostly carried out using modified shade environments such as a parent or black cloth. Artificial colouring is also widely used to analyse the growth and morphology of soybean plants [21, 22, 23].

In plants experiencing shade stress, plant height, according to [24], is more influenced by environmental factors, including light and water. Plant height showed etiolation symptoms characterised by excessive plant height growth. Authors [25] stated that plants with 50 % shade had higher growth but were etiolated. The hormone auxin influences this etiolation. In low light, auxin will spur higher stem growth, but the plant becomes weak, the stem is not sturdy, the leaves are small, and the plant looks pale. Symptoms of etiolation occur due to the absence or lack of sunlight. This is to the study's results, which showed an interaction between the shading treatment and the genotype of shallot plants on the parameters of N-Total, protein.

The results showed no interaction between the provision of shade and the genotype of shallot on the proline observation parameter. Proline compounds function to regulate cell osmotic pressure (osmotic adjustment). Accumulating proline can reduce the osmotic potential, reducing the water potential in cells without limiting enzyme function and maintaining cell turgor [26]. Authors [27] stated that there would be an increase in the proline content in the plant crown when the plant is under stress.

One of the critical external factors that can affect the growth and production of a plant is light intensity. Sunlight is one of the essential factors that can affect the photosynthesis rate in plants with chlorophyll. According to [28], sunlight has various effects on plant growth and provides a source of energy for photosynthesis. The absence of light will affect the physiological status of plant tissue so that the carbohydrate content will be reduced at low light intensity or dark. Changes in the level of endogenous hormones or other phys-

iological components can be affected by light intensity, duration, or quality of light. Light intensity is one of the critical factors for plant growth. Shade treatment can affect the chlorophyll content because the amount of light absorbed by plants is lower. The results showed that the chlorophyll observation parameter did not experience any interaction between the shading treatment and the onion genotype.

Table 2 – Average Value of Advanced Test Results (BNJ 5%) combination of shade and no shade treatments on the parameters of N-total, Protein, Carbohydrates and Carotenoids

| Shade | Parameter | | | |
|----------------|--------------------|-------------------|-------------------|---------------------|
| | N-Total | Protein | Carbohydrate | Carotenoids |
| N ₀ | 0.22 ^a | 1.35 ^a | 4.63 ^b | 104.59 ^b |
| N ₁ | 0.16 ^b | 1.02 ^b | 5.09 ^a | 112.42 ^a |
| BNJ 5% | 0.01 | 0.07 | 0.10 | 2.45 |
| G1 | 0.17 ^{bc} | 1.02 ^c | 5.33 ^a | 103.91 ^c |
| G2 | 0.23 ^a | 1.43 ^a | 4.32 ^d | 114.36 ^a |
| G3 | 0.15 ^c | 0.93 ^c | 4.41 ^d | 104.68 ^c |
| G4 | 0.22 ^a | 1.37 ^a | 4.78 ^c | 101.65 ^c |
| G5 | 0.19 ^b | 1.18 ^b | 5.06 ^b | 109.67 ^b |
| G6 | 0.19 ^b | 1.17 ^b | 5.29 ^a | 116.76 ^a |
| BNJ 5% | 0.02 | 0.12 | 0.18 | 4.25 |

Notes: Number-numbers followed by the same letter in the same column show no significant difference based on the BNJ test at a 5% significance level. G1= keta monca; G2= ampenan ; G3= super philip ; G4= tailland sulking; G5= rubber back; G6= lokananta.

The study's results (Table 1) showed that the effect of N-Total, protein, carbohydrates and carotenoids was significantly different on the genotype of shallot plants and indicated an interaction between the genotype treatment of shallot and the shade treatment. Shallots treated with no shade showed a better effect on N-Total and protein parameters than carbohydrates and carotenoids. The results showed that shading increased stem height, accelerated flowering time and reduced dry stover weight per plant. The increase in stem height is an attempt by plants to increase light absorption because plants cannot raise their leaves above the canopy. The research of [29] reported that shading caused an increase in stem height and leaf number of soybean plants.

The earlier flowering process occurs due to protein and carbohydrates (Table 1), which are readily soluble (phytochromes). Shaded environmental conditions can change the pigments

(phytochromes) in shaded soybean plants into forms that initiate flowering induction [30]. The decrease in the dry weight of plants due to shading is due to shady conditions where plants experience a limited amount of solar energy that can be absorbed for the optimal photosynthesis process, resulting in a decrease in the dry weight of the plants produced. As stated by [31], the dry weight is the net accumulation of carbon dioxide during plant growth.

The sunlight captured by chlorophyll raises the energy level of the electrons resulting from the oxidation of water in the process of photosynthesis. Plant energy can be used for biological purposes, macromolecular synthesis, and cell division. For example, division in the ontogenetic stomata system is based on how the guard stem cell divides, which is related to the direction of the cell wall that cuts that part of the meristemoid [32].

Plants that grow in low light-intensity environments have smaller roots, are few and are composed of thin-walled cells. This occurs due to inhibiting the translocation of photosynthetic products from the roots. Longer plant stems are composed of thin-walled cells, larger intercellular spaces, and less transport and reinforcement tissue. The leaves are more significant and thinner, and the size of the stomata is more critical; the epidermal cells are light, but the number of leaves is less, and the space between cells is more. Experiments with iris leave grown at different intensities showed that the number of stomata decreased with decreasing light intensity. Responses to increased light intensity differ between plants suitable for shaded conditions (shade plants; indoor plants); with plants that can grow in unshaded conditions. Shade-suitable plants show meagre photosynthetic rates at high light intensities [33]. The photosynthetic rate of shaded plants reaches saturation point at lower light intensities, higher photosynthetic rates at very low light intensities, and lower light compensation points than open-fit plants. From the above description, plants suitable for shade can survive in shaded conditions (low light intensity), while plants suitable for open cannot survive [33].

Tolerance of several Shallot Genotypes to Shade Stress. Tolerance is a mechanism for plant resistance in a state of shade stress and affects production, reducing crop yields or productivity. Based on the formula of [34], the genotype of

shallots tolerant of shade stress was obtained. Table 3 shows that the sensitive plant genotypes (P) to shade stress are G3, G4, and G5. The moderately tolerant genotype (AT) was G2, and the tolerant genotype (T) was G1.

Table 3 – Value of Sensitivity Index (S) of six Shallot Genotypes tested under Shade Stress and No Shade Stress

| Genotype | Sensitivity Value (S) | | Average | Phenotype |
|----------|-----------------------|------|---------|-----------|
| | BKU | JU | | |
| G1 | 0.21 | 0.29 | 0.25 | T |
| G2 | 1.35 | 0.48 | 0.92 | AT |
| G3 | 0.15 | 3.31 | 1.73 | P |
| G4 | 1.40 | 0.60 | 1.00 | P |
| G5 | 2.33 | 0.34 | 1.34 | P |
| G6 | 0.61 | 1.04 | 0.83 | AT |

Notes :S=Sensitivity Index Value; T= Tolerant (< 0.5); AT= Somewhat Tolerant (>0.5 S< 1); P=Sensitive (S>1); BKU= Bulb Dry Weight; JU= Number of Bulbs.G1= keta monca; G2= ampenan ; G3= super philip ; G4= tailland sulking; G5= rubber back; G6=lokananta.

From Table 3, the G1 genotype (Keta Monca) shows a genotype that is tolerant to shade stress. Keta Monca is a local variety of shallots that develops mainly in the Bima Regency, West Nusa Tenggara Province. Production is relatively suitable for local types, has a distinctively spicy taste, and is highly flavourful and savoury. This shallot has a pretty good market, especially in big cities in Indonesia. The shallot cultivation business in Indonesia uses two sources of planting material: local and imported. Farmers prefer to use local varieties because the age of harvest is in line with expectations, and by the conditions of the agroecosystem, the ease of farmers in managing, and plant care that is by the habits of farmers.

In onion plants, shade is leaf protection from damage by exposure to rainwater. This Keta Monca genotype is also a plant resistant to Fusarium wilt disease [35]. When watering, it is adjusted to plant conditions (field capacity) and the weather at the planting time because shallot plants are susceptible to disease if the soil is too wet or too dry. The regulation of osmotic pressure in plants is the work of several compounds that act as osmo-regulators, one of which is proline. Proline Accumulation can reduce osmotic

potential, thereby reducing water potential in cells without limiting enzyme function and maintaining cell turgor [36].

Shallots require full light intensity with irradiation of more than 12 hours [37] and air temperatures between 20–30 °C with an optimal average temperature of 24 °C [38].

Sunlight is also thought to affect the growth of shallot plants. Shade conditions prevent sunlight from entering the research site. This results in a lack of sunlight received by plants, thereby inhibiting the process of photosynthesis for plant growth. According to [39], sunlight is an essential factor for the ongoing process of photosynthesis, while photosynthesis is very important for plant metabolism. Added to [40], the effect of sunlight on plants is focused on vegetative and generative growth. Plant response to light is determined by green leaf synthesis, stomata activity (respiration, transpiration), anthocyanin formation, temperature from surface organs, absorption of mineral nutrients, permeability, respiratory rate, and protoplasm flow. Theoretically, the greater the amount of available energy will increase photosynthesis. Lack of sunlight will interfere with photosynthesis and growth, although the need for light depends on the type of plant itself.

Authors [41] stated that the level of shading treatment had no significant effect on the production of fresh matter and dry matter production of forage. Authors [42] noted that the performance of mung bean yields in the 75 % shade reduced the output of mung bean to 65.21% when compared to no shade, but when compared to 50 % shade, the yield of mung bean only decreased by 34.01%.

The results of [43] also showed that shading stress applied from the beginning of the plant to harvest resulted in long stem segments of peanut plants. Authors [44] reported that the intensity of shading up to 75 % increased plant height and reduced the number of leaves on soybean plants.

In addition, lack of light during plant development will cause etiolation symptoms, where plant stems will grow faster but weaker, and the leaves are small, thin and pale (not green). A lack of light causes symptoms of etiolation, or the plant is in a dark and shaded place. Light can also act as an inhibitor in the growth process. This is because it can stimulate the diffusion of auxin to plants not exposed to sunlight. The light that is an inhibitor is caused by the absence of light so that

it can maximise the function of auxin to support plant cells.

On the contrary, plants that grow in bright places cause plants to grow more slowly with relatively short, more comprehensive, greener conditions, look fresher, and the plant stems are stronger because sunlight is essential and influences plant growth and development [45].

CONCLUSIONS

The results of the physiological response research showed that the parameters of N-Total, protein, carbohydrates and carotenoids showed significant differences in the genotype of shallots and indicated an interaction between treatments. The parameters of chlorophyll a, chlorophyll b and proline showed no significant difference and no interaction between treatments. The tolerant shallot genotypes (T) were G1 (Keta Monca), and the slightly tolerant genotypes (AT) were G2 (Ampanan) and G6 (Lokananta).

REFERENCES

1. Direktorat Bina Produksi Hortikultura Provinsi Sumatera Barat. (1999). *Laporan Tahunan Dinas Tanaman Pangan dan Hortikultura Sumatera Barat* [Annual Report of the Food Crops and Horticulture Service of West Sumatra]. Padang (in Indonesian).
2. Sekretaris Direktorat Jenderal Hortikultura. (2015). Statistik Produksi Hortikultura Tahun 2014 [Horticulture Production Statistics 2014]. Retrieved from <https://pdfslide.tips/documents/statistik-produksi-2014.html?page=1> (in Indonesian).
3. Taiz, L., & Zeiger, E. (2003). *Plant Physiology*. California: The Benjamin Pub.
4. Thakur, P. K., Nikam, B. R., Srivastav, S. K., Wint Khaing, T. W., Zaw, T., Garg, V., Dhote, P. R., Sharma, V., & Aggarwal, S. P. (2021). Groundwater modeling with inputs from geospatial technology for assessing the sustainability of water use in the Solani watershed, Ganga river basin (India). *Groundwater for Sustainable Development*, 12, 100511. doi: 10.1016/j.gsd.2020.100511
5. Buntoro, B. H., Rogomulyo, R., & Trisnowati, S. (2014). Pengaruh takaran pupuk kandang dan intensitas cahaya terhadap pertumbuhan dan hasil temu putih (*Curcuma zedoaria* L.) [Effect of manure dose and light intensity on growth and yield of white temu (*Curcuma zedoaria* L.)]. *Vegetalika*, 3(4), 29–39 (in Indonesian).
6. Fan, Y., Chen, J., Cheng, Y., Raza, M. A., Wu, X., Wang, Z., Liu, Q., Wang, R., Wang, X., Yong, T., Liu, W., Liu, J., Du, J., Shu, K., Yang, W., & Yang, F. (2018). Effect of shading and light recovery on the growth, leaf structure, and photosynthetic performance of soybean in a maize-soybean relay-strip intercropping system. *PLOS ONE*, 13(5), e0198159. doi: 10.1371/journal.pone.0198159
7. Umarie, I., Widarti, W., Wijaya, I., & Hasbi, H. (2018). Pengaruh warna naungan plastik dan dosis pupuk organik kompos terhadap pertumbuhan bawang merah (*Allium ascalonicum* L.) [Effect of plastic shade colour and compost organic fertiliser dosage on shallot growth (*Allium ascalonicum* L.)]. *Jurnal Agroqua*, 16(2), 129–137 (in Indonesian).
8. Ritonga, A. W., Chozin, M. A., Syukur, M., Maharijaya, A., & Sobir. (2019). Heritabilitas, Korelasi, dan Sidik Lintas Berbagai Karakter Tomat pada Kondisi Naungan dan Tanpa Naungan [Heritability, Correlation, and Cross-Sections of Various Tomato Characters under Shade and Shade-free Conditions]. *Jurnal Hortikultura Indonesia*, 10(2), 85–93. doi: 10.29244/jhi.10.2.85-93 (in Indonesian).
9. Wulandari, R., Suminarti, N., & Sebayang, H. (2016). Pengaruh jarak tanam dan frekuensi penyiangan gulma pada pertumbuhan dan hasil tanaman bawang merah (*Allium ascalonicum*) [Effect of spacing and frequency of weeding on the growth and yield of shallot (*Allium ascalonicum*) plants]. *Jurnal Produksi Tanaman*, 4(7), 547–553 (in Indonesian).
10. Baharuddin, R., Chozin, M., & Syukur, M. (2014). Toleransi 20 Genotipe tanaman tomat terhadap naungan [Toleransi 20 Genotipe Tanaman Tomat terhadap Naungan]. *Indonesian Journal of Agronomy*, 42(2) (in Indonesian).

11. Wakhid, R., Widodo, S., Pudjojono, M. (2012). Pengaruh pemberian naungan dan mulsa terhadap kadar air tanah dalam produksi tanaman bawang merah pada musim penghujan [Effect of shading and mulching on soil moisture content in shallot crop production in the rainy season]. *Jurnal Agroteknologi*, 6(1), 51–58 (in Indonesian).
12. Ulinuha, Z., Ahmad Chozin, M., & Santosa, E. (2019). Stabilitas Hasil dan Gangguan Penyakit pada Enam Genotipe Tomat di bawah Naungan [Yield Stability and Disease Disturbance in Six Tomato Genotypes under Shade]. *Jurnal Hortikultura Indonesia*, 10(1), 10–19. doi: 10.29244/jhi.10.1.10-19 (in Indonesian).
13. Uchimiya, H. (2001). *Genetic engineering for abiotic stress tolerance in plants*. Retrieved from <https://agris.fao.org/agris-search/search.do?recordID=XF2016018151>
14. Tambunan, W., Sipayung, R., Sitepu, F. (2014). Pertumbuhan Dan Produksi Bawang Merah (*Allium Ascalonicum* L.) Dengan Pemberian Pupuk Hayati Pada Berbagai Media Tanam [Growth and Production of Red Onion (*Allium Ascalonicum* L.) with Biofertilisation in Various Planting Media]. *Jurnal Online Agroekoteknologi*, 2(2), 825–836 (in Indonesian).
15. Sumarni, N., & Rosliani, R. (2010). Pengaruh Kerapatan Tanaman, Naungan, dan Mulsa Terhadap Pertumbuhan dan Produksi Umbi Bawang Merah Mini Asal Biji [Effect of Plant Density, Shade, and Mulch on Growth and Production of Seed-origin Mini Shallot Bulbs]. *Jurnal Hortikultura*, 12(1), 28–34 (in Indonesian).
16. Chotechuen, S. (1996). Breeding of mungbean for resistance to various environmental stresses. In C. Kitbamroong, S. Miyazaki (Eds.), *Mungbean Germplasm: Collection, Evaluation and Utilization for Breeding Program* (pp. 52–59). Bangkok: Proceedings of the Workshop on Mungbean Germplasm.
17. Steppuhn, H., van Genuchten, M. Th., & Grieve, C. M. (2005). Root-Zone Salinity. *Crop Science*, 45(1), doi: 10.2135/cropsci2005.0209
18. Sulistyono, E., Chozin, M., & Rezkianti, F. (2002). Uji potensi hasil beberapa galur padi gogo (*Oryza sativa* L.) pada beberapa tingkat naungan [Test of yield potential of some upland rice (*Oryza sativa* L.) strains in several shade levels]. *Jurnal Agronomi Indonesia*, 30, 1–5 (in Indonesian).
19. Haque, M. M., Hasanuzzaman, M., & Rahman, M. (2009). Effect of light intensity on the morpho-physiology and yield of bottle gourd (*Lagenaria vulgaris*). *Academic Journal of Plant Sciences*, 2(3), 158–161.
20. Sundari, T., Nugrahaeni, N., & Susanto, G. (2016). Interaksi genotipe x lingkungan dan stabilitas hasil biji kedelai toleran naungan [Genotype x Environment Interaction and Stability of Grain Yield of Shade Tolerant Soybean]. *Jurnal Agronomi Indonesia*, 44, 16–25 (in Indonesian).
21. Muhuria, L., Tyas, K., Khumaida, N., Trikoessoemaningtyas, & Sopandie, D. (2006). Adaptasi kedelai terhadap intensitas cahaya rendah: Karakter daun untuk efisiensi penangkapan cahaya [Soybean Adaptation to Low Light Intensity: Leaf Characters for the Light Capture Efficiency]. *Jurnal Agronomi Indonesia*, 34(3), 133–140 (in Indonesian).
22. Kisman, Khumaida, N., Trikoessoemaningtyas, Sopandie, D. (2007). Karakter morfo-fisiologi daun, penciri adaptasi kedelai terhadap intensitas cahaya rendah [Leaf morpho-physiological characters, characterising soybean adaptation to low light intensity]. *Jurnal Agronomi Indonesia*, 35(2), 96–102 (in Indonesian).
23. Chairudin, Efendi, & Sabaruddin. (2015). Dampak naungan terhadap perubahan karakter agronomi dan morfofisiologi daun pada tanaman kedelai (*Glycine max* (L.) Merrill) [Impact of Shade to Changes of Characters of Agronomy and Morpho-Physiology Leaves in Soybean (*Glycine Max* (L.) Merrill)]. *Jurnal Floratek*, 10, 26–35 (in Indonesian).
24. Sitompul, S. (2016). *Analisis Pertumbuhan Tanaman* [Plant Growth Analysis]. Malang: UB Press (in Indonesian).

25. Tanari, Y., & Vita, V. (2017). Pengaruh naungan dan berbagai media tanam terhadap pertumbuhan dan produksi tanaman selada (*Lactuca sativa* L.) [Effect of shade and various growing media on the growth and production of lettuce (*Lactuca sativa* L.) plants]. *Jurnal AgroPet*, 14(2) (in Indonesian).
26. Tuasamu, Y. (2009). *Toleransi hotong (Setaria italica l. Beauv) pada berbagai cekaman kekeringan: pendekatan anatomi dan fisiologi* [Tolerance of hotong (*Setaria italica* l. Beauv) to various drought stresses: anatomical and physiological approaches] (Master's thesis); Institut Pertanian Bogor. Retrieved from <https://repository.ipb.ac.id/handle/123456789/5960> (in Indonesian).
27. Maestri, M., Da Matta, F. M., Regazzi, A. J., & Barros, R. S. (1995). Accumulation of proline and quaternary ammonium compounds in mature leaves of water stressed coffee plants (*Coffea arabica* and *C. canephora*). *Journal of Horticultural Science*, 70(2), 229–233. doi: 10.1080/14620316.1995.11515292
28. Yuliarti, N. (2010). *Kultur Jaringan Skala Rumah Tangga* [Household Scale Tissue Culture]. Yogyakarta: Andi (in Indonesian).
29. Bakhshy, J., Golezani, K., Zehtab-Salmasi, S. & Moghaddam, M. (2013). Effects of water deficit and shading on morphology and grain yield of soybean (*Glycine max* L.). *Technical Journal of Engineering and Applied Sciences*, 3(1), 39–43.
30. Karamoy, L. (2009). Hubungan iklim dengan pertumbuhan kedelai (*Glycine max* (L.) Merrill) [Climate relationship with soybean (*Glycine max* (L.) Merrill) growth]. *Soil Environment*, 7, 65–68 (in Indonesian).
31. Gardner, F. (1991). *Fisiologi Tanamanan Budidaya* [Plant Physiology of Cultivation]. Jakarta: Universitas Indonesia Press (in Indonesian).
32. Fahn, A. (1992). *Anatomi Tumbuhan* [Plant Anatomy]. Jakarta: Gramedia (in Indonesian).
33. Lakitan. (1993). *Dasar-dasar Fisiologi Tumbuhan* [Fundamentals of Plant Physiology]. Jakarta: Raja Grafindo Persada (in Indonesian).
34. Fischer, R., & Maurer, R. (1978). Drought resistance in spring wheat cultivars. I. Grain yield responses. *Australian Journal of Agricultural Research*, 29(5), 897. doi: 10.1071/ar9780897
35. BALISTA. (2011). *Bawang merah varietas bima brebes* [Onion variety bima brebes]. Retrieved from <http://balitsa.litbang.pertanian.go.id/ind/index.php/berita-terbaru/1132-bawang-merah-varietas-bima-brebes> (in Indonesian).
36. Kurniawati, S., Khumaida, N., Ardie, S., Hartati, N., Sudarmonowati, E. (2014). Pola Akumulasi Prolin dan Poliamin Beberapa Aksesori Tanaman Terung pada Cekaman Kekeringan [Proline and Polyamines Accumulation Pattern of Some Eggplant Accessions under Drought Stress]. *Jurnal Agronomi Indonesia*, 34(3), 133–140 (in Indonesian).
37. Currah, L., Proctor, F. (1990). *Onion in Tropical Region*. *National Resources Institute Bulletin*, 35, 20–21.
38. Grubben, G. J. H. (1990). Timing of Vegetable Production In Indonesia. *Acta Horticulturae*, 267, 261–270. doi: 10.17660/actahortic.1990.267.33 (in Indonesian).
39. Kramer, P., Kozlowsky, L. (1979). *Physiology of Woods Plants*. Florida: Academic Press.
40. Jumin, H. (2008). *Dasar-Dasar Agronomi* [Fundamentals of Agronomy]. Jakarta: Rajagrafindo Persada (in Indonesian).
41. Hanafi, D., Umar, S., & Bachri, I. (2005). Pengaruh tingkat naungan pada berbagai pastura campuran terhadap produksi hijauan [Effect of shade levels in various mixed pastures on forage production]. *Jurnal Agibisnis Peternakan*, 1(3), 101–105 (in Indonesian).
42. Sundari, T., Soemartono, Tahari, Mangoendidjojo, W. (2005). Keragaan hasil dan toleransi genotipe kacang hijau terhadap penanungan [Yield performance and tolerance of mung bean genotypes to damping off]. *Jurnal ilmu pertanian*, 12(1), 12–19 (in Indonesian).

43. Hemon, F. (2020). Pengaruh intensitas cahaya rendah pada berbagai fase pertumbuhan terhadap karakter morfologi dan daya hasil kacang tanah [Effect of low light intensity at different growth stages on morphological characters and yield of groundnut]. Seminar Nasional Peragi (in Indonesian).
44. Sundari, T., & Anggoro Susanto, G. W. (2016). Pertumbuhan dan Hasil Biji Genotipe Kedelai di Berbagai Intensitas Naungan [Growth and Seed Yield of Soybean Genotypes at Different Shade Intensities]. *Jurnal Penelitian Pertanian Tanaman Pangan*, 34(3), 203. doi: [10.21082/jpntp.v34n3.2015.p203-217](https://doi.org/10.21082/jpntp.v34n3.2015.p203-217) (in Indonesian).
45. Fitter, A., Hay, R. (1991). *Fisiologi Lingkungan Tanaman* [Plant Environmental Physiology]. Yogyakarta: Gadjah Mada University Press (in Indonesian).

The Strategy of the Regional Human Resources Development Agency of West Nusa Tenggara Province to Support Corporate University at West Nusa Tenggara, Indonesia

Kidi¹

¹ *Regional Human Resources Development Agency of West Nusa Tenggara Province*

Jl. Pemuda No59, Kelurahan Dasan Agung Baru, Kecamatan Selaparang, Mataram, 83129, Indonesia

DOI: [10.22178/pos.86-16](https://doi.org/10.22178/pos.86-16)

LCC Subject Category:
HM(1)-1281

Received 21.09.2022
Accepted 25.10.2022
Published online 31.10.2022

Corresponding Author:
kidiabdillah@gmail.com

© 2022 The Author. This article is licensed under a Creative Commons Attribution 4.0 License 

Abstract. This research was conducted to determine the readiness and strategies that can be carried out before implementing the Corporate University (CorpU) at Human Resources Development Agency (known as BPSDMD) in West Nusa Tenggara. The methodologies used are interviews, direct observation, questionnaires, and tracing documents from BPSDMDs, including leadership commitments. The results of this study are: BPSDMD in terms of facilities and infrastructure are adequate but need adaptation in understanding and internalising five fundamental aspects and four basic frameworks within BPSDMD personnel of West Nusa Tenggara Province. Coordination with the BKD is essential so the West Nusa Tenggara CorpU can be appropriately implemented in terms of facilities and infrastructure. But it needs adaptation in understanding and internalising five fundamental aspects and four basic frameworks within BPSDMD personnel of West Nusa Tenggara Province.

Keywords: Readiness; Strategy; Corporate University.

INTRODUCTION

Increasing the capacity of human resources and knowledge management are the main elements in achieving organisational performance, including in local government agencies [1]. This is the key to realising the achievement of goals according to the local government's strategic plan determined through Regional Regulation [2]. It is an essential element of the organisation's management strategy that is currently developing; in several studies, one of them being Corporate University (CorpU, Kemenkeu CorpU, Kumham CorpU, Jateng CorpU, Jatim CorpU).

This concept can also inspire human resource development in other places, including how to implement West Nusa Tenggara CorpU, which is expected to contribute positively to the paradigm shift in human resource development of local government organisations.

Supporting the changes to the NTB Provincial Medium-Term Development Plan 2019-2023, 10 Strategic Programmes and 75 West Nusa Tenggara Flagship Programmes have been established: Ntb Tangguh dan Mantap, Ntb Bersih dan Meayani, Ntb Sehat dan Cerdas, Ntb Asri dan Les-

tari, NTB Sejahtera dan Mandiri, Ntb Aman dan Berkah.

Provincial Human Resources Development Agency (known as BPSDMD) is included in two missions, which include the transformation of a bureaucracy with integrity, high performance, free from dedicated to the Bureaucratic Reform Strategic Program including Electronic-Based Government System, NTB Plan, NTB SDGs Center, Research Based Policy, NTB Satu Map, NTB One Data, NTB Care, E-Data Collection, NTB WTP, SAKIP Level A, Change Agent and Talent Management.

Thus, BPSDMD is a very strategic task, so NTB CorpU is one of the most appropriate answers for NTB today and in the future, especially the Change Agent and Talent Management.

Let's look at Civil Servants as a resource, from now on abbreviated as PNS in government agencies. They are Indonesian citizens who meet specific requirements, appointed as permanent State Civil Servants by civil service officials to occupy government positions. The state's role in government duties is to carry out its responsibilities and functions as a public servant according to

work in the situation [6]. Public servants should be guided by the principles of providing services to the community as stipulated in Law Number 25 of 2009. The task of strengthening the integrity of the Unitary State of the Republic of Indonesia should strengthen the integrity of the nation and society in the concept of nationalism without discrimination in providing services for the sake of the unitary state of the Republic of Indonesia.

Article 1 of Law, No 25 of 2009, states that public service is an activity or series of activities to fulfil service needs by statutory regulations for every citizen and resident for goods, services, and/or administrative services provided by public service providers. By these provisions, the State Civil Apparatus requires managerial, technical, and socio-cultural competence in carrying out its duties and functions. These competencies need continuous development of the State Civil Apparatus in a planned manner by the policy direction and demands of their duties and career development by the development and needs of society in carrying out their social responsibilities.

Making West Nusa Tenggara a clean and serving society requires professionalism so that one can think critically and perform professionally. Given the development of community service needs that continue to change, it also changes in all aspects of the forms and types of services needed by the community.

The implementation of services in government agencies has not yet entirely changed, especially the mindset of the apparatus from being served to serving.

The Human Resources Development Agency must have the right strategy to increase the capacity of the apparatus to carry out its duties and functions.

As Permenpan Bureaucratic Reform No 28 of 2019, the scope of equalisation of positions in government agencies includes a) Administrator Position, b) Supervisory Position, and c) Executive Position (Echelon V). Position Equalisation is carried out with the following criteria: a) The duties and functions of the position are related to functional technical services; b) Functional officials can carry out the duties and functions of the position; c) Positions based on certain expertise/skills.

The West Nusa Tenggara Provincial Government has started to determine these strategic steps, as stated by the head of the West Nusa Tenggara

Provincial Human Resources Development Agency:

"Currently, the West Nusa Tenggara Provincial Government has succeeded in identifying the types of positions that will be equalised, totalling 711 administrator positions into functional positions and not including equalisation of positions at the city district level" [3].

Regulation of the Minister of Administrative Reform and Bureaucratic Reform of the Republic of Indonesia No 25 of 2020 concerning the 2020-2024 Bureaucratic Reform Road Map is a form of operationalisation of the Grand Design of Bureaucratic Reform and a detailed plan for Bureaucratic Reform for 2020-2024.

The Governor's Expert Staff in Government Apparatus, Law, Politics and Public Services, H. Abdul Aziz, who represented the Secretary, said [4]:

"There are eight areas of bureaucratic reform: Mental Apparatus, Organisation, Governance, Legislation, Human Resources, Supervision, Accountability and Public Service. The fifth area of Human Resources is closely related to supervision, accountability, and public services.

Previously, BPSDM was called the Education and Training Agency and only conducted training: Pre-service, Intermediate Training or Pim 4 activity, Pim III Training, Pim II Training. But the hope is that more than that, Functional Technical Training must be carried out more.

Another very important thing was conveyed. There was a question from a sub-district head, "Why are disputes in the community brought to the village head, to the sub-district head" even though this is a task that is the domain of the judiciary.

Such questions arise because they do not understand the duties of the general government and do not understand the institution of alternative dispute mediation or the institution of arbitration. Perhaps this is because they have never had technical government training.

This happens at the lowest level of bureaucracy, and what about the district and provincial government entities as public bodies, which require functional technical training such as planning and budgeting training, financial administration training, regional goods management training, supervisory training, and report preparation training. This is important because it closely relates to local government performance micro indicators.

Nowadays, we also often hear the term innovation. Innovation is impossible to run optimally when employees are not trained".

The province needs to be reformed immediately, including the mental apparatus is an essential part of carrying out the duties and functions of the Regional Apparatus Organisation. For Widyaiswara, understanding the ASN Mindset before and after going through the learning process is a significant concern in becoming an agent of change and making ASN have Talent with the hope of being able to carry out the mandate as.

Bureaucratic transformation with integrity, high performance, clean from KKN and high dedication, as regulated by the State Personnel Agency Regulation 8 of 2019, encourages ASN employees' competence, performance and discipline in carrying out their job duties.

PIKIR, as an acronym for Professional, Integrity, Commitment, Innovative and Responsiveness, is expected to be inherent in ASN so that it can realise the commitment of the West Nusa Tenggara Province Regional Human Resources Development Agency.

We are departing from bureaucratic procedural obstacles and mindset problems in accelerating the achievement of the vision and mission of the Regional Government through the Regional Human Resources Development Agency of West Nusa Tenggara Province.

It is currently necessary to transform the development of training for State Civil apparatuses. One of them is learning the concepts developed from training institutions that can improve the performance of individuals and institutions.

Recognising CorpU as a strategy and local government commitment in responding to bureaucratic reform issues, the Regional Human Resources Development Agency of West Nusa Tenggara Province as the centre of learning and the leading learning institution can implement CorpU as a concept and strategy change.

Understanding this is based on previous research conducted by [7], but continued with discussions with the prior head of the Agency.

This research was conducted to determine the institution's readiness to support the realisation of West Nusa Tenggara CorpU, completing the mission of cleaning and serving human resources.

METHOD

This study was conducted with a quantitative descriptive research method approach and did not provide modification of the variables studied but describes a condition as it is. The approach was made through observation, interviews, and documentation.

This research was conducted at the Regional Human Resources Development Agency of West Nusa Tenggara Province, an accredited Regional Apparatus Organization in the implementation of training activities and the only regional apparatus organisation that has carried out the concepts of the realisation of CorpU in government agencies in West Nusa Tenggara Province.

Primary data was the result of observations, interviews, or using the results of FGDs from previous research. Secondary data was obtained from various sources such as journals, reports, books, research results and so on, including the efforts of stakeholders in promoting the competence of BPSDMD NTB Province Supporting NTB CorpU.

RESULTS AND DISCUSSION

Goal Aspect

The existence of the Regional Human Resources Development Agency of West Nusa Tenggara Province is to carry out supporting functions for government affairs in the field of Education and Training. Technically, it dramatically affects the operation of other regional apparatus. Entry is on the mission of "NTB Bersih dan Melayani" with the role of conducting "Bureaucratic Reform" as an Agent of Change and Talent Management.

This task is challenging because it faces a paradigm shift in ASN in West Nusa Tenggara Province.

"NTB Clean and Serving" with Bureaucratic Transformation with Integrity, Performance, Clean from KKN and Dedicated". BPSDMD West Nusa Tenggara Province has strived to become a learning organisation to build a competent ASN. As a learning organisation, Widyaiswara is expected to know and understand the six foundations of thought in implementing CorpU to realise Good Governance for the BPSDMD institution of West Nusa Tenggara Province.

Questionnaire results related to Widyaiswara's understanding of the six essential aspects con-

sisting of the foundation of thought, CorpU conception, learning organisation, knowledge management, talent management and its implementation in supporting CorpU, obtained answers: 48.4% said they knew most of them, 29% know a small part, 19.4% know well, and the rest (3.2%) do not know about the six foundations of thought.

Furthermore, regarding the understanding that is easiest for them to understand to be implemented in the application of CorpU, 35% stated that CorpU is a learning organisation, 29% understood it as a basic framework in the application of CorpU, 22.6% understood it as the concept of CorpU, 9.7% stated as change management, and 3.7% understood from the implementation of CorpU. This means that the application of CorpU is essential as a learning organisation and basic framework.

If bureaucratic reform is a step to increase the ASN Professionalism Index, the acceleration of achieving the Vision and Mission is in accordance and line with the era of the Industrial revolution 4.0 and sociability 5.0 so that the ASN Professionalism Index (IP-ASN) in 2022 of 0.27 can be achieved.

Widyaiswara must change according to the demands of the era. How Widyaiswara understands the phenomenon of change and urgency so that they can overcome the changes, 45% stated that they were able to change due to urgency, 25% stated that it was very easy, 19.4% were rather difficult to change due to certain factors, and 9.7% stated that it was not easy to change even though it was forced. From these answers, researchers understand that those who answered 9.7% were not young to vary due to character factors. However, when CorpU is applied, it is passive in action but active in giving opinions because it feels senior in experience.

Program Aspect

As previously stated, since 2020, the West Nusa Tenggara Province BPSDMD has carried out development activities as a capacity-building program, especially in the Learning Process, such as:

1. Conducting a Zoom Meeting with the topic of Knowledge Sharing on the Application of CorpU and Acculturation of Knowledge Management in Government Agencies.

2. Acculturation of knowledge management through knowledge sharing of the application of the 10-20-70 model with the output of field profile videos and BPSDMD profiles of West Nusa Tenggara Province.

3. Knowledge sharing by inviting facilitators from the Ministry of Finance's Principal Expert, Widyaiswara.

4. Knowledge sharing by inviting facilitators from Ombudsman and BPSDMD Principal Experts.

5. Knowledge sharing by inviting facilitators from Widyaiswara LAN and BPSDMD Principal Experts;

6. Development of OJS (Open Journal System) based Bestari Journal.

7. Development of Learning Media creation Online (Sparing) with participants from Swidyaiswara and Management.

8. Sharing guidance on Mantra (Building Integrity and Antigratification Culture).

9. Widyaiswara as Anti-Corruption Instructor under the coordination of KPK.

10. Learning videos on Youtube and Instagram channels.

11. Update of West Nusa Tenggara Province BPSDMD Website.

12. E-learning of BPSDMD of West Nusa Tenggara Province as a Knowledge Management System (KMS).

13. Implementing social media such as FB and Instagram in the form of sharing related to BPSDMD activities of West Nusa Tenggara Province.

14. Providing Anjab/ABK assistance to seven OPDs within West Nusa Tenggara Province.

These activities are part of the institutional preparation programme to support West Nusa Tenggara CorpU. In addition to carrying out activities related to the readiness of the programme, other things directly related to the preparedness for strengthening are also carried out as a strategy to strengthen the institution.

Such as preparing facilities and infrastructure related to the implementation of CorpU.

- a) Has a building and study room with air conditioning that is comparable to a 3-star hotel;

b) Adjustment of the State Administration Institute standard LMS, and Wifi facilities in all rooms, both management and Widyaaiswara rooms, 24 hours.

BPSDMD NTB Province has become a TUK, and has a dining room, sports room, worship room, karaoke room, and nearby ATM facilities.

Readiness to implement PIKIR as a work culture and behaviour

As a result of the preparedness of Work Culture implementation at BPSDMD West Nusa Tenggara Province, the following effects can be explained:

Synergy and collaboration. Building synergy through knowledge sharing to equalise perceptions as a work culture approach for every BPSDMD person, the importance of togetherness in supporting CorpU.

Communication. The application of work culture through communication channels during morning apples and morning coffee and every opportunity is the method used by the West Nusa Tenggara Province BPSDMD the Head of the Agency always conveys any information that makes knowledge. In the organisation, it is necessary to have openness as a culture of transparency. It can change the old or traditional way of working that hinders progress into a new way of working that is more open and encourages Human Resources to work and learn as a culture in the CorpU organisation.

Employee discipline in the new standard era. Government Regulation 94 of 2021 is a technical approach for ASN in carrying out daily tasks. This Government Regulation approach expects every ASN to apply the PIKIR concept to continuously improve work entry discipline and improve the performance achievement of each ASN according to the implementation instructions, referring to the Head of BKN Regulation No. 6 of 2022. This BKN regulation aims to provide guidelines for Government Agencies, officials, and civil servants interested in implementing PP 94/2021 concerning Civil Servant Discipline. With the implementation of work culture, the discipline of ASN in the BPSDMD of West Nusa Tenggara Province has increased, and it is proven that there are no ASN who are subject to sanctions for disciplinary violations.

Motivation. With the implementation plan of CorpU to increase learning motivation for

BPSDMD personnel of West Nusa Tenggara Province. It can be seen during knowledge sharing that the learning culture of each individual affects enthusiasm, mindset, way of thinking and perspective. It is slowly realised that CorpU has been understood as a learning strategy. This can be seen from the enthusiasm of the Widyaaiswara and management participating in the Webinar held internally by the institution.

Intellectual Marwah. Intellectual Marwah of BPSDMD people has now felt an improvement due to the fast access to learning from various existing media so that they can encourage the achievement of the mission of cleaning and serving NTB, which is in line with the determination to create a CorpU and ASN with Morals.

Internalisation of values. According to the PIKIR jargon as BPSDMD slogans, it has given colour to BPSDMD people in West Nusa Tenggara Province. Because the Internalization of PIKIR Values (an acronym for Professional, Integrity, Commitment, Innovative and Responsive) has made BPSDMD people have won the trust of various regional organisational institutions, including city districts, trusting Widyaaiswara as a companion or coaching institution in improving institutional performance.

Welfare. The policy of functionalisation of positions has changed the view that interest can be understood through work morale and work results in the form of performance allowances by performance achievements correlated with income in salary.

Work distribution and shared vision. With the functionalisation of positions regulated by the Minister of Administrative Reform and Bureaucratic Reform 8 of 2021 concerning the Civil Service Performance Management System, every employee carries out work according to his duties and functions. This is proven by the achievement of IPA-ASN increasing since 2021; the achievement of IPA-ASN is 0.25%, in 2022, the achievement is 0.27%, and in 2023 the target is 0.28%. This achievement is by the 2021 BPSDMD LAKIP.

The results of previous research on the readiness of individuals in general to support the implementation of CorpU based on individual self-values, culture and behaviour of BPSDMD HR of NTB Province were obtained through a Google form questionnaire.

The implementation of CorpU, which is aligned with the concept of [5] about three activities based on perception, character, and culture inherent in the individual, both on the commitment of leaders and individual ASN within the BPSDMD of NTB Province that the concept of personal learning and self-commitment (self-recognition), organisational learning, and organisational performance.

Researchers found that implementing CorpU takes a certain amount of time and leadership commitment (80.6%). This can be influenced by the fact that from 2019 to 2022, BPSDMD experienced three changes in leadership with different styles. However, another opinion, 16.1%, stated that it was very applicable, and 3.7% was challenging to implement.

Although it is constrained from individual aspects due to differences in perceptions, leadership characters, and work culture, it is recognised that leadership commitment is very supportive when combined with the results of direct interviews with selected samples. There is togetherness, willingness, and pioneering. In terms of pioneering, there need to be examples that are continuously supported as the implementation of strategies to help NTB CorpU. It was also added that the performance of CorpU can be forced while preparing themselves as a commitment step so that regional leaders see it as a definite step and the seriousness of implementing CorpU as a strategy and readiness in improving institutional performance [1].

CorpU deployment based on four frameworks

From the research results of the previous analysis, it was described that it still needed to be optimally carried out, such as Training Need Analysis/Learning Need Analysis (TNA/LNA) as a pre-training step is carried out on managerial, technical, socio-cultural, and government training. The indicators of AKPK (Analysis of Competency Development needs) it has yet to be carried out correctly as a step of readiness for training activities as initial data for someone to be included in education and training. In developing the competence of training and education that prospective participants attend, it refers to the principle of competency development based on CorpU, starting from mapping so that future participants match their interests and essential competencies to be improved. Suppose someone attends train-

ing that is not based on TNA/LNA. In that case, the results will not be optimal, especially in positions that do not support placement according to the competence of the evaluation results of the training he is participating in. An essential indicator for education and training graduates is the motivation system that does not support the training results. There are many cases when the training is running. The training participant is transferred from the appointment agency as a participant in the activity they are currently participating in. Cases like this continue to occur when the government reforms the bureaucracy. This is what is acknowledged that until now, there is still a Competency Gap and is homework for policymakers or current leaders. If this condition continues, it will be challenging to implement CorpU [8].

Therefore internal and external support, especially the Organizational Bureau, BKD and PKMF parties, and related fields at BPSDMD initiate as a Botem upstep to make system improvements if CorpU continues to be implemented. The implementation of CorpU can be started with gap analysis, competency maps, and position competency standards juxtaposed with the competence of the executor of duties in the ASN position after that gaps are found. This gap is where BPSDMD issues a training certificate as evidence that ASN training participants have met the competencies from the competency test results.

Mapping based on TNA/LNA is a pre-training process. The application of 10-20-70 is an application concept expected to produce competent ASN but must be correlated with pre-training implementation. The implementation model of CorpU-based training is relevant to Talent Management; competency mapping is essential for the development of ASN in future because the action is carried out based on the results of the mapping as well as a strategy [9]. As the results of the questionnaire on mapping urgently need to be carried out even though it requires mutual awareness because 80.6% of Widyaiswara stated that mapping should be carried out immediately.

The preparations carried out so far are expected to have a public test internally and externally. At the same time, they are determining steps to propose regulations as reinforcement. However, it still needs to be completed because since 2020, implementing part of the CorpU concept has positively impacted the community. within the BPSDMD of West Nusa Tenggara Province. The

leadership's commitment is very positive by forming a team of 17 tasked with preparing a draft Governor's decision and guidelines on implementing CorpU.

People Process is the second framework, namely the arrangement of ASN according to competence, qualifications, performance and discipline. The leading sector of the People process is the Organisational Bureau and BKD of West Nusa Tenggara Province. Until now, link and match have not happened optimally. It needs to be continuously improved. The fields admit that there has been an innovation from the ASN, but it is too soon to be re-transferred. Related to the staff placed in the area as implementers, it feels like they still need to improve.

People's process has not been implemented, so what happens is Learning Disability, namely the inability to learn for ASN for their position. The basic principle of CorpU implementation is Learning Organization. The People Process is based on the following: 1) Human Resources Quantity and Quality; 2) Link and Match; 3) Internal Competence, Competency Certificate; 4) Learning Ability.

The results of this study are that since 2020, since the COVID-19 outbreak, BPSDMD, West Nusa Tenggara Province, education and training activities have been reduced in line with budget cuts.

But according to the direction or model of training, it is more efficient because since then, the use of digital and communication technology has played a significant role in the implementation process of training during COVID-19.

The implementation of education and training has changed from classical to blended learning.

This pattern provides many benefits from the service pattern. It is proven to save education and training costs from 9 million to 5 million per person.

Learning Organization as a strategy to face challenges in learning can be more participatory and practical because learning content is spread through knowledge-sharing activities from various agencies and institutions. That makes use of sharing situations more effective. Widyaishwara became more experienced in using learning content through YouTube and other media. Blended learning patterns are becoming more strategic in managing institutions such as BPSDMD. Howev-

er, it is realised that transformation takes time to adjust to prepare oneself as a CorpU person. The Knowledge System Process in implementing the NTB Province BPSDMD CorpU takes time to adapt and requires self-awareness.

There is still a lot of great potential that can be done to optimise the role of BPSDMD in the Province of NTB. Until now, Networking and partnerships, according to BPSDMD people have not been maximised and are still limited to the scope of local and district/city governments. In this regard, it is acknowledged that we still need to develop networks. The implementation of CorpU has realised that collaboration is an obstacle for CorpU. This is because the mindset in understanding CorpU is still not evenly distributed among ASN. In the future, participating in the implementation of CorpU will be a separate note supporting NTB CorpU. Building partnerships is felt that will continue to be carried out.

Furthermore, the purpose of bureaucratic reform is related to implementing Minister of Administrative and Bureaucratic Reform No 3 of 2020 concerning Talent Management. So for implementation, the Organizational Bureau, BKD and BPSDMD must synergise in this matter so that the achievement in 2024 is that ASN is the Casing for Talent Management.

Implementation of CorpU Based on Institutional Competency Analysis

Based on the potential and ability of institutions to implement CorpU, researchers use SOAR analysis. SOAR analysis plays an equal role in all components. Members and people of the institution are given the same opportunity to contribute according to their duties and functions, including providing input to the institution in determining the success of policies (including of CorpU).

Based on the potential and capability of the institution in implementing CorpU, the researcher uses SOAR analysis because with SOAR analysis, all components/members/personnel of the institution are given the same opportunity to participate in contributing according to their duties and functions, including providing input to institutions in determining the success of policies including in the implementation of CorpU.

The analysis results can be conveyed that, Strategies in preparing BPSDMD in implementing NTB CorpU are adequate in terms of institutions, re-

sources, work culture and infrastructure and policy support that has been regulated through strengthening the institution's mission. Opportunities contributed by the enthusiasm and aspirations of BPSDMD people in supporting CorpU have been proven since 2020 with the spirit of knowledge management sharing as an active institution.

It has been proven that BPSDMD, as an accredited institution, Widyaiswara has been able to collaborate as a resource person with resource persons from other institutions such as the Ministry of Finance, Ombudsman, LAN and BPSDM Kemendagri. This proves that BPSDMD NTB Province is trusted by other institutions outside West Nusa Tenggara, including NITB Province. Through Anjab / ABK assistance, it has also established relationships through PKS (Pattern of Cooperation) with Districts / Cities. It will be expanded to eight Districts and two cities that have the potential to become active parts in establishing relationships as partners in achieving NTB Gemilang through the CorpU strategy.

CONCLUSIONS

Based on the discussion and research results, it is concluded that.

1. The strategy of the Regional Human Resources Development Agency of West Nusa Tenggara Province in supporting West Nusa Tenggara CorpU has been by the needs of the institution, the leadership commitment has been by the ob-

jectives of implementing CorpU, knowledge sharing processes, knowledge management, involving Widyaiswara and collaborating with management and staff as learning citizens more often so that habituation occurs;

2. The readiness of the institution to support the realisation of the West Nusa Tenggara CorpU has been running according to the vision and mission of the Province of NTB. The management and Widyaiswara support the completion of the NTB CorpU, immediately carried out competency mapping, and socialisation testing in the context of equalising perceptions and coordination between institutions, especially BPSDMD, Bureau of NTB Province Organization and BKD, on five essential aspects and four basic frameworks for CorpU implementation;

- 3) Since Covid-19 until now, BPSDMD has carried out Knowledge Sharing activities to strengthen each other but must continue to prove that the strategy to prepare itself has worked well. These activities have proven to encourage the issuance of a Decree of the Head of the Agency in the form of a TEAM for the Preparation of Guidelines for CorpU-based ASN Competency Development according to Decree Number 70 dated 23 November 2021. This commitment also strengthens the implementation of the Minister of Administrative Reform and Bureaucratic Reform Regulation Number 3 of 2020 concerning Talent Management, in line with Permenpan RB Number 25 of 2020 concerning the Bureaucratic Reform Road Map 2020-2024 and the Society 5.0 era.

REFERENCES

1. Nurhikmah, N. (2020). Peran Widyaiswara dalam Strategi Pengembangan ASN "Corporate University" [The Role of Widyaiswara in ASN Development Strategy "Corporate University"]. *Jurnal Sosial Ekonomi Dan Humaniora*, 6(2), 122–128. doi: [10.29303/jseh.v6i2.86](https://doi.org/10.29303/jseh.v6i2.86) (in Indonesian).
2. Basalamah, A. S. (2022). Optimalisasi Peran Widyaiswara dalam Corporate University Kementerian Keuangan [Optimising the Role of Widyaiswara in the Ministry of Finance's Corporate University]. *Jurnal Good Governance*, 18(1). doi: [10.32834/gg.v18i1.459](https://doi.org/10.32834/gg.v18i1.459) (in Indonesian).
3. West Nusa Tenggara Provincial Government. (2021, September 29). *Knowledge Sharing on the implementation of Corporate University (CorpU) and Knowledge Management Acculturation (Knowledge Sharing) in government agencies*.
4. BPSDMD Pemerintah Provinsi NTB. (2021). *Knowledge Sharing Penerapan Corporate University (CorpU)*. Retrieved from <https://www.youtube.com/watch?v=h9eaZ03Ap4>
5. Fuadi, A. (2020). Analisis Strategi SOAR Balai Diklat Aparatur Kementerian Kelautan dan Perikanan Menuju Corporate University [SOAR Strategy Analysis of the Ministry of Maritime Affairs and Fisheries Apparatus Training Centre Towards Corporate University]. *Jurnal Pendidikan Kewarganegaraan*, 7(1), 35. doi: [10.32493/jpkn.v7i1.y2020.p35-46](https://doi.org/10.32493/jpkn.v7i1.y2020.p35-46) (in Indonesian).

6. Musta'an. (2019). The Chosen Village Head Leadership in Carrying Out Government Duties: Analysis Study of Sidoharjo Village Head, Susukan, Semarang. *International Journal of Seecology*, 1(1). doi: [10.29040/seecology.v1i01.5](https://doi.org/10.29040/seecology.v1i01.5)
7. Nurhikmah, (2021). *Hasil Patok Banding, Analisis Kesiapan BPSDMD Provinsi Nusa Tenggara Barat Mendukung penerapan CorpU*. Laporan penelitian Kewidyaiswaraan Berjenjang Tingkat Menengah Provinsi Jawa Tengah
8. Fitriasari, E. T. (2022). Reaksional Widyaiswara Menuju Kalimantan Barat Corporate University [Reactional Widyaiswara Towards West Kalimantan Corporate University]. *JiIP - Jurnal Ilmiah Ilmu Pendidikan*, 5(12), 5509–5515. doi: [10.54371/jiip.v5i12.1272](https://doi.org/10.54371/jiip.v5i12.1272) (in Indonesian).
9. Sultan, M. (2022). Kolaborasi Stakeholder's Dalam Penyelenggaraan Corporate University Pada Badan Pengembangan Sumber Daya Manusia Provinsi Sulawesi Selatan [Stakeholder Collaboration in the Implementation of Corporate University at the Human Resources Development Agency of South Sulawesi Province]. *Jurnal Widyaiswara Indonesia*, 3(2), 81–94. doi: [10.56259/jwi.v3i2.135](https://doi.org/10.56259/jwi.v3i2.135) (in Indonesian).

