Journal of the Social Sciences

E-ISSN: **0975-8935** P-ISSN: **0253-1097**
Cosmos Impact Factor: **6.120 (2019)**
Journal of the Social Sciences
www.apcjss.com

A Model of Farmers' Participation Improvement in the Use of Novel High-Yielding Variety of Lowland Rice in Sindangkasih Subdistrict Ciamis West Java, Indonesia

Dr. Lukman Effendy[1], Dr. Dayat[2], and Reza Oktaviansyah[3]
[1 – 3)] Study Program: Sustainable Agriculture Extension
Bogor Agricultural Development Polytechnic
Jl. Aria Surialaga – Cibalagung Bogor

Abstract

Rice is the staple food of Indonesian people. As the population grows, the community need for food will also increase, especially rice. Therefore, a program to increase the production of lowland rice (Oryza sativa L.) continues to be pursued by the government through the Ministry of Agriculture with various programs to increase rice production, one of which is the use of new high-yielding varieties (HYV) of lowland rice. However, farmers have not fully used HYV, thus it is necessary to conduct a study that was aimed to (1) describe the level of farmer participation in the use of HYV, (2) find the determinants of farmer participation in the use of HYV, and (3) find a model to increase farmer participation in the use HYV. The quantitative descriptive study was conducted for three months (April - June 2019) in three villages in the Sindangkasih Subdistrict of Ciamis District. Determination of the sample was performed using the Slovin formula with 80 respondents from a population of 468 farmers. Data were collected through interviews and direct observation of respondents using a closed questionnaire, which has been tested for its validity and reliability. The data collected were analyzed in two ways; Descriptive statistical analysis to explain the variability of research variables and multiple linear regression analysis to determine the factors that determine participation. The results showed that the level of participation of farmers in the use of HYV was still moderate, thus it needs to be increased, while the factors affecting participation (ά = 0.005) were environmental characteristics and government supports.

Keywords: *1.Participation, 2.Novel high-yielding variety (HYV), 3.Lowland rice, 4.Sindangkasih.*

Introduction

Rice is the staple food of Indonesian people. Along with the growing population, the need for food is also increasing, particularly rice, thus the program to increase rice production (*Oryza sativa* L.) continues to be pursued by the government through the Ministry of Agriculture. According to (Sapawi, 2014), rice is a staple food consumed by almost 98% of Indonesia's population. Besides being a staple food, rice is also a strategic product for the national economy. According to BPS data (2018), the total area of rice harvested in Indonesia this year was estimated to reach 10.9 million hectares with the production of unhusked rice (GKG) reaching 56.54 million tons. The production of unhusked rice was converted to rice by 32.42 million tons, and BPS data of 2018 reported that the total domestic rice consumption reached 29.57 million tons..

One of the efforts made by the government to guarantee and meet the community's need for rice is to use novel high-yielding varieties (HYV). Novel variety is one of technological components that contribute to increasing rice production. Farmer participation in using HYV is still low and not evenly distributed in each region. Most farmers still choose local seeds with the consideration that the price is cheaper than HYV. Therefore, efforts are needed to increase the role of the community in the use of HYV, one of which is by disseminating the use of HYV of lowland rice.

Agricultural program carried out by The Ministry of Agriculture in increasing food needs particularly rice is by implementing an integrated crop management field school program (SL-PTT). Through this program, farmers are expected to be directly involved so that they play an active role as actors in efforts to meet their needs, especially in the context of improving technical cultivation, especially rice. Also through SL-PTT, farmers are scheduled to carry out the learning process of all stages of the

cultivation of lowland rice fields that are guided by field extension agents so that farmers will get comprehensive knowledge and skills including the use of HYV.

Labeled rice seeds are seeds that have been certified by the seed provider (Agricultural Research and Development Agency) and private seed companies that are authorized to release labeled superior seeds, such as breeder seed (BS), foundation seeds (FS), stock seed (SS), and extension seed (ES). Superior seeds as the first link in the cultivation process have a very important role in supporting crop production. If the seeds used do not have high quality, the plants will not give high yields. In rice cultivation activities, seed is also one of the critical success factors so that the use of HYV is a choice that should be made by farmers.

The BPP program of Sidangkasih in 2018 reported that the use of HYV was still relatively low at around 47 percent, thus it was necessary to conduct an assessment entittled Model of Farmer Participation Improvement in the Use of New Superior Varieties (HYV) of lowland rice carried out in Sindangkasih Subdistrict, Ciamis District, West Java Province. The objective of this study was to: (1) describe the level of farmer participation in the use of HYV, (2) find the determinants of farmer participation in the use of HYV, and (3) find a model to increase farmer participation in the use of HYV.

Framework of thinking

The level of farmers' participation in a program can differ from one region to another. The difference may occur due to factors that determine a person's participation. These factors need to be known as a reference in preparing activity plans so that the implementation of activities does not encounter obstacles. In this study, these factors include; farmer characteristics, environmental characteristics, and government support. The characteristics of farmers consist of; age, level of education, farming experience, and land tenure. Environmental characteristics consist of: means of transportation, availability of seeds, and community perceptions, while government support consists of: the role of instructors, facilities and infrastructure assistance, and production improvement programs. The hypothetical framework of the research variables is presented in the following figure:

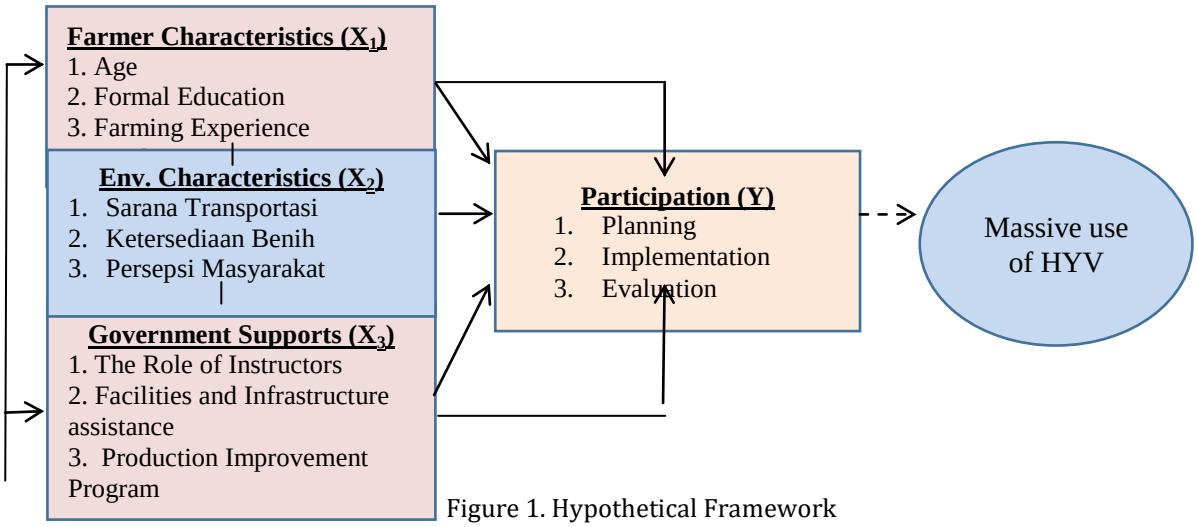

Figure 1. Hypothetical Framework

Research methodology

The study was conducted for three months (April 22 - July 26, 2019) in the villages of Budiasih, Sukasenang and Sukaresik, Sindangkasih Subdistrict, which is a rice producing area in Ciamis District. The population was all farmer group members who carried out lowland rice cultivation and received seed assistance from the government in Sindangkasih subdistrict, which was 468 people. Sampling was performed using the Slovin formula with a sampling error rate (e) of six percent so that a sample of 80 farmers was obtained as respondents. A tool to collect data in the form of a questionnaire containing closed questions and statements covering all research variables. Before being used, the questionnaire that

was made was tested for its validity and reliability. The results of the questionnaire validity test showed that all 45 items had r> 0.3 so that all items were valid. Likewise, the reliability test results are Cronbach Alfa 0.753 which means that all of the questions have sufficient reliability as a tool for data collection. The data collected consists of primary and secondary data. Primary data were obtained through direct interviews with respondents using a questionnaire, while secondary data were obtained from the Sindangkasih BPP Program. Data analysis was performed in two ways, namely descriptive statistical analysis to explain the variability of research variables, and linear regression to determine the determinants of farmer participation. The devices used were Microsoft Excel 2016 and SPSS 20.

Results and Discussion

1.1. Regional Performance

Sindangkasih Subdistrict is located in the western part of Ciamis District with a height of 250 meters above sea level and is about 15 kilometers from the District Capital. Until December 2018, there were a total population of 57,282 people consisting of 29,676 men and 27,606 women. The acidity (pH) of the soil varies between 4.5 and 6.5. The height varies from 430 to 700 meters above sea level, and this area is a heat regime. Climate classification according to Schmidt-Ferguson includes type C with a slightly wet nature where the value of Q = 60%. The highest rainfall is for 10 years.

1.2. Respondent Characteristics

Respondent characteristics consist of: age, level of formal education, farming experience, and land tenure. Characteristics mentioned above are presented in the following graph:

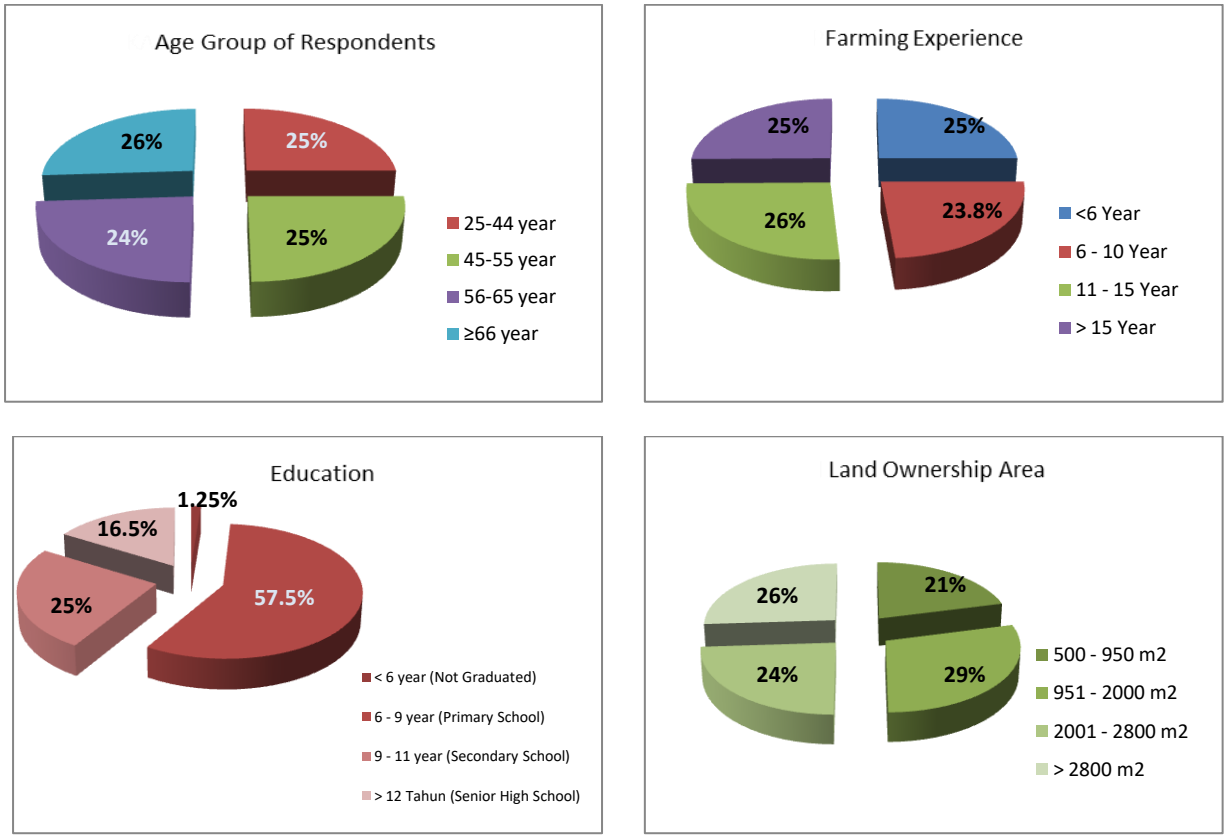

Figure 2.Farmers' characteristics (X_1)

The figure above shows that the age of respondents >66 years was quite a lot (26%) compared to other age groups. This means that the number of farmers who are relatively less productive is still large. Usually someone who is classified as old tends to have a low motivation to be directly involved in activities that affect his response to an innovation. Based on discussions with farmers, the lack of productive young farmers is because youth in the village are more interested in working in factories because they receive regular salaries.

The level of education of farmers was dominated by elementary schools (57.5%) with a school period of 6 - 8 years. Most farmers only graduated from elementary school. Based on information from several respondents, they considered that education is not very important in running a farm. This result is different from Sudana and Kasdi (2015) who states that the factors that determine the acceleration of innovation adoption are age and educational level.

The respondent's farming experience was dominated by around 11-15 years (26%). The distribution of each category was relatively evenly distributed between 23-27 percent. These results are relatively similar to studies conducted by Effendy and Rahmawati (2019), Effendy (2019), and Effendy and Meko (2019), that the experience of farmers is not the same between one region and another. These results support the opinion of Sudana and Kasdi (2012) who suggest that the factors that determine the acceleration of the adoption of innovations other than age are the level of formal education, and farming experience. Graph 1 also shows that the percentage of land tenure is relatively the same, those with land area category of 951-2000 (29%) shows the highest compare to other land area. According to farmers, the problem found in expanding land is the lack of capital because they cannot afford to buy or lease wider land.

1.3. Environmental Characteristics

Environmental characteristics consist of: transportation support, seed availability, and community perception. Detailed average values of environmental characteristics are presented in the following table:

Table 1. Average Value of Environmental Characteristics Support

No	Indicator	Average
1	Transportation Support	3.09
2	Seed Availability	3.24
3	Community Perception	3.23
	Average	3.18

The table above shows that the average environmental characteristics were 3.18, while each indicator wasclassified in the high category. The highest average was obtained by the aspect of seed availability (3.24). This is in accordance with the conditions in the field where seeds are available at kiosks and even seed sales stores.

1.4. Government Support

Government support consists of: the role of agricultural extension agents, facilities and infrastructure assistance, as well as production improvement programs. The performance of government support is presented in the following table:

Tabel 2. Average Value of Government Support

No	Indicator	Average
1	The Role of Agricultural Extension Agents	3.47
2	Facilities and nfrastructure Assistance	3.25
3	Production Improvement Program	3.12
	Average	3.28

According to the results of discussions with several farmers, government support in the form of seed assistance did not get a good response because they thought the assistance provided did not all give

good results, some were even losing money. These results are similar to the results reported by Effendy (2019) that in addition to the role of the institution, the innovator also determines whether technology is accepted or not.

1.5. Participation

The level of participation is measured starting from planning, implementation, and evaluation of results. The average value of each indicator is presented in the following table:

Table 3. Average Value of Participation

No	Indicator	Average
1	Planning	3.08
2	Implementation	2.93
3	Evaluation	2.82
	Average	2.94

Table 3 above shows that the value of participation was in the moderate category with average of 2.94. The highest average value was obtained by the planning indicator (3.08), while the lowest value was obtained by the evaluation indicator (2.82). The lack of involvement of extension agents in evaluating the results of activities can lead to farmers' lack of confidence in the technology.

1.6. The Influence of Research Variables on Participation

In order To find out how much effect each independent variable (X) has on young farmer participation, a multiple regression analysis was carried out with the equation $Y = a + b_1X_1 + b_2X_2 + b_3X_3$. The analysis results obtained indicate that the factors that influence participation are environmental characteristics (X_2) and government support (X_3) as presented in Table 4.

Table 4. Factors Affecting Farmers' Participation

No	Variable	Value	Significance	Description
1	R^2	0.378		
2	Constant	0.086	0.002	
3	Farmer Characteristics (X_1)	0.017	0.806	non-significant
4	Environmental Characteristics (X_2)	0.637	0.000	significant
5	Government Support (X_3)	0.347	0.025	significant

The table above shows that $R^2$is 0.378, which means that the independent variable in this study contributed to simulatan participation by 37 percent, while the other 63 percent came from factors not examined in this study. The results of the analysis of the regression equation are obtained as $Y = 0.086 + 0.637X_2 + 0.347X_3$ which means that partially the variable that gives significant influence is an external factor (X_2) with a coefficient value of 0.637 (ά = 0.001), and government support (X_3) with a coefficient of 0.347 (ά = 0.005), while respondent characteristics (X_1) did not significantly influence. These results indicate that (1) if external factors (X_2) and government support (X_3) have a fixed value (zero), then the participation of farmers in the use of HYV is 0.086; (2) if government support (X_3) has a value of one unit of external characteristics, it will increase participation by 0.637; and (4) if the external factor (X_2) has a fixed value (zero), each addition of one government support unit will increase participation by 0.347. This result confirms that external factors have a greater effect on farmer participation compared to government support. This result is in line with Effendy and Sudiro (2019) and Effendy (2019) who revealed that environmental factors and government policies are very influential on young farmer

participation in agricultural development activities and the application of balanced fertilization technology for lowland rice.

1.7. Model of Participation Improvement

The regression equation described above confirms that the factors that simultaneously influence participation are external factors (X_2) and government support (X_3). These findings can be formulated as a factual model to increase farmer participation in the use of HYV. The model is presented in the following figure:

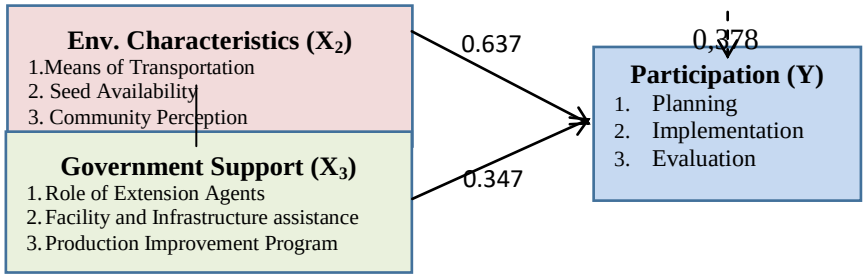

Figure 3.Model of Participation Improvement

Based on Figure 3, a strategy can be formulated to increase farmer participation in the use of HYV, namely by taking into account external characteristics such as transportation facilities, seed availability and their supporters, as well as positive perceptions from the community towards HYV, as well as optimizing support from the government, especially: the role of extension, facilities and infrastructure assistance, and production improvement programs.

Conclusion

Based on the results and discussion above, it can be concluded that: (1) Respondents are dominated by the age group of 40 - 55 years, the level of formal education of farmers is low (SD), has experience in farming over 10 years, and has a relatively narrow land; (2) Factors affecting participation in the use of VUP are external characteristics and government support; and (3) improvement of farmer participation in the use of HYV can be done by taking into account external characteristics such as transportation facilities, availability of seeds and their supporters, as well as positive perceptions from the community towards HYV, as well as optimizing government support, especially: the role of extension, assistance in facilities and infrastructure, and production improvement program.

Recommendation

Improvement of farmer participation in the use of HYV is expected to be done by: (a) taking into account external characteristics such as transportation facilities, availability of seeds and their supporters, as well as positive perceptions from the community towards HYV, (b) optimizing support from the government, especially: the role of extension, facilities and infrastructure assistance, as well as product improvement programs.

Acknowledgement

With the completion of this research, the authors would like to express specialthanks of gratitude to the fellow lecturers of Study Program of the Sustainable Agriculture Extension for their encouragement and assistance so that this research can be completed. Likewise, we thank Reza Oktaviansyah for his assistance in conducting this research. We are feeling oblige in taking the opportunity to sincerely thanks to Director of the Bogor Agricultural Development Polytechnic for the opportunity and support that have been given.

References

1. *Afandi WN. 2010. Identifikasi karakteristik rumah tangga miskin di Kabupaten Padang Pariaman. Tesis (tidak dipublikasikan). Univeristas Andalas. unand.ac.id/20447/1 Diakses Januari 2017.*
2. *Agunggunanto EY. 2011. Analisis kemiskinan dan pendapatan keluarga nelayan kasus di Kecamatan Wedung Kabupaten Demak, Jawa Tengah, Indonesia. Jurnal Dinamika Ekonomi Pembangunan 1(1):50-58.*
3. *Badan Pusat Statistik (BPS) Jawa Barat dalam Angka 2015. Diakses pada www.bps.go.id diakses pada tanggal 05 Februari 2018 pukul 10.15 WIB.*
4. *Effendy, L. dan Yulia, A.A. 2019. Strategi Penumbuhan Minat Pemuda Perdesaan pada Pertanian melalui Budidaya Cabai Merah di Kecamatan Sindangkasih Kabupaten Ciamis. Disajikan pada Workshop Fema. Bogor: PPs-IPB. 7-9 Oktober 2019*
5. *Effendy, L. 2020. The Role of Institution and Innovation Attributes in The Adoption of Integrated Crop Management Technology of Lowland Rice of West Bandung and Sumedang District. International Journal of Multicultural and Multirelegious Understanding. Vol. 7 (4). May 2020.*
6. *Effendy. L. andSudiro. 2020. Models to Increase The Farmers' Participation on The Implementation of Lowland Rice Balanced Fertilization in CikonengSubdistrictCiamis. International Journal of Arts and Social Science. Vol. 3 (2) March – April 2020*
7. *Effendy, L and Dimas Badri. 2020. The Farmer Capacity Improvement Model on The Implementation of Rice Field Balanced Fertilization in SindangkasihSubdistrictCiamis. Journal of The Social Sciences. Vol. 48 (2). April 2020.*
8. *Effendy, L., YoyonHaryanto. 2020. Determinant Factors of Rural Youth Participation in Agricultural Development Programme at Majalengka District, Indonesia. International Journal of Innovative Research & Development. Vol. 9 (5) May 2020.*
9. *Effendy, L. WidaPradiana, and RisnaRahmawati. 2020. The Model of Rural Youth Empowerment Through Red Chili Farming in SindangkasihSubdistrict of Ciamis, Indonesia. The International Journal of Science &Technolodge. Vol. 8 (6) June 2020.*
10. *Manyamsari I, Mujiburrahmad. 2014. Karakteristik petani dan hubungannya dengan kompetensi petani lahan sempit. Agrisep 15(2): 58-74.*
11. *Mardikanto, Totok. 1993. Penyuluhan Pembangunan Pertanian. Surakarta: Sebelas Maret University Press.*
12. *Mejaya, M.J., Satoto, P. Sasmita, Y. Baliadi, A. Guswara, dan Suharna. 2014. Deskripsi varietas unggul baru padi. Badan Penelitian dan Pengembangan Pertanian. Jakarta.*
13. *Nurhasikin. 2013. Penduduk Usia produktif danketenaga-kerjaan.kepri.bkkbn. Diakses Januari 2015.*
14. *Nurjannah, Irma. (2013). Elemen-elemen Lingkungan Kelurahan Puunggaloba dan Benu-Benua Kendari (Menurut Peta Kognitif Penghuni Lingkungan).Jurnal Metropilar Vol. 11/ No. 1 April 2013. Hal. 162-172. Fak. Teknik Unhalu*
15. *Rukmana, Didi. 2012. Ekonomi Lingkungan dan Sumber Daya Alam. Makassar: Arus Timur*
16. *Deptan. 2016. Peraturan Menteri Pertanian No.67/Permentan/SM.050/12/2016. Tentang Pembinaan Kelembagaan Petani, Departemen Pertanian. Jakarta*
17. *Setiana. L. 2005, Teknik Penyuluhan dan Pemberdayaan Masyarakat. Bogor: Ghalia Indonesia*

Journal of the Social Sciences is an internationally peer-reviewed journal. **Journal of the Social Sciences** aims to publish original research articles and review articles in diverse fields of Social Sciences and related. This is non-profit, non-stock refereed scientific journal in the world. Journal of the Social Sciences was launched in 1973 and has established over the past a decades as one of the most influential Social Science journals in the world. It is highly appreciated by scientists throughout the world. Since 2011, **Journal of the Social Sciences** has turned into a full online version.

Journal of the social sciences
Publisher: Academic Publication Council (APC)
E-ISSN: 0975-8935 **P-ISSN:** 0253-1097

Discipline: Social Science
Publication: Quarterly
Impact Factor: 6.120 (2019)
Submit Paper at the Email: **editor@apcjss.com**
Open access journal published since 1973 Scopus coverage from 1999 to present

Author Guidelines

1. The **title** of the article should be bold, centered and type in **Sentence Case** in 14 point Times New Roman Font.
2. The author details should be 12 point Times New Roman Font in Sentence Case accordingly- **Full name » Designation » Email » Mobile numbers**.
3. All manuscripts must be accompanied by a brief abstract. Abstract including key words must not exceed **500 words**. It should be in fully justified and normal text. It should highlight research background, methodology, major finding and conclusion in brief.
4. Author must mention **4 to 6 keywords**. Key words should be listed alphabetically, separated by commas and full stop at the end.
5. **Language:** We only accept the manuscript written in English. Author can use both American and British version of English, but not mixture.
6. **Length of paper:** The manuscript should not exceed 5000 words (Five thousand) and length of the paper should not exceed 20 pages.
7. **Manuscript:** Manuscript typed in 10 point-Times New Roman with single space and single column on standard A4 size paper.
8. **Heading:** All heading must be bold-faced, Sentence Case, aligned left with 12 point-Times New Roman and sub-heading in 10 point.
9. **Article title:** It should be informative reflecting true sense of the manuscript and within three lines.

10. **Figures:** The title must be above the table and source of data should be mentioned below the figures and tables. Figures and tables should be centered and separately numbered. The authors should make sure that table and figures are referred to from the main text.
11. **Photographs:** Image files should be optimized to the minimum possible size (JPGE Format) without compromising the quality.
12. **Equations:** All the equations used in research paper or article should be consecutively numbered in parentheses, horizontally centered with equation number placed at the right.
13. **Table:** Number tables consecutively in accordance with their appearance in the text. Avoid vertical lines. They should be numbered consequently in Arabic numerals in the order of occurrence in the text.
14. **Acknowledgement:** Acknowledgement of any funding sources, if any should be included at the end of the paper.
15. **References:** Please make sure that every reference cited in the text must also be presented in the reference list and vice versa. The author is responsible for the accuracy of bibliographic citations. Reference should be in this order-

- **For Book-** Surname of the Author » Name of the Author » Year within bracket » Name of the Book » Name of the chapter » Edition no. » Publishers » Publication place » Page no.
- **For Journal-** Surname of the Author » Name of the Author » Year within bracket » Name of the journal » Name of the Topic » Page no.
- **For Conference paper-** Surname of the Author » Name of the Author » Year within bracket » Name of the conference » Name of the Paper » Page no.

For Internet sources no link address only website and sources. Please do not include **DOI number** in the references.

Kuwit

Journal of the Social Sciences
Prinses Beatrixlaan
Kempston
Kuwait
Contact Email: editor@apcjss.com