



Digital Messaging and Communication Efficiency: A Basis For Farmers' Productivity Enhancement Program

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This study aimed to answer the question: "What is the effect of digital messaging to the communication efficiency of farmers in Brgy. Baanan, Magdalena, Laguna?". As the town of Magdalena is known for its bountiful farms, the researchers used total enumeration as a sampling method and chose a specific barangay to represent the total population. Using the Digital Literacy Model adapted from Hobbs in 2010, the researchers conducted a quantitative study where the survey questionnaire that serves as the research instrument is divided into two parts: (1) Farmers' proficiency in digital messaging and (2) Communication efficiency on local farmers' productivity. Overall, the study finds that the farmers are unable to access digital messaging. Additionally, the farmers generally agreed with the claims made about the impact of effective communication on the productivity of local farmers. Based on the findings, the researchers recommend a suggestion to conduct seminars to improve farmers' communication efficiency and proficiency in digital messaging with the aim of increasing farmers' income and attracting customers not just within their vicinity.

KEYWORDS: Communication Efficiency; Digital Messaging; Farmers; Productivity

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I. INTRODUCTION

Effective communication plays a vital role in the work environment of today's society. Communication is concluded to be strongly related to an organization's productivity (Dutta et al., 2021). Moreover, it fosters strong relationships and collaboration among team members, leading to better teamwork and ultimately improved results. Enhancing productivity through effective communication is crucial in the modern work environment as information should be conveyed efficiently and accurately. Effective communication also ensures that messages are understood correctly, reducing the likelihood of errors.

The farmers are one of the most important sectors in the Philippines as it plays a crucial role in the national economy. The adoption of digitalization in agriculture is significant in today's modern world since it can help in providing real-time information about the weather, the marketplace, new techniques in farming, etc. Specifically, farmers can achieve this through digital messaging where they can use online and mobile communication for them to interact with their customers and not just limit themselves within their vicinity. As 85.16 million people are internet users and a total of 168.3 million were active with cellular mobile connections in early 2023, the usage of mobile phones are not just for personal communication anymore but can also be used for agricultural purposes.

The idea of having digital messaging as a way of conveying information efficiently, the researchers aimed to facilitate knowledge and assess local farmers' digital literacy by evaluating their proficiency in digital messaging and analyze its effect to the communication efficiency of local farmers. Thus, this study aimed to focus on the various aspects of digital messaging with the idea of its correlation with communication efficiency to provide better productivity to local farmers in Brgy. Baanan, Magdalena, Laguna.

II. MATERIAL AND METHOD(S)

This research employs a quantitative approach because the researchers gathered a range of numeric data. This made use of the descriptive correlational method of research, with the researchers concentrating on describing and assessing the farmers' proficiency in digital messaging and the communication efficiency in connection to local farmer's productivity. In addition, the study sought to establish the correlation between digital messaging and communication efficiency of the farmers. Each item and data are collected, and then the

relationships between them are investigated.

This study used total enumeration sampling to determine the effect of digital messaging to communication efficiency in providing local farmers' productivity. With a total of 37 farmers, the researchers got a 100% of the total population of farmers in Brgy. Baanan and this basis is enough for the researchers to gather the needs of this study with the use of a self-made questionnaire with a Cronbach Alpha reliability score of more than 0.8. The data and research information that was collected is in the form of a Likert scale because this method helps simplify and quantify the respondents' experience regarding the topic of the study. Pearson r and Spearman rho was used as a statistical tool to determine the correlation between the two variables.

III. RESULTS

Table 6 below shows the result of farmers' proficiency in digital messaging in using and sharing digital messages. Here, the mean value of 2.65 for question one showed that the respondents are neutral with the given statement in the questionnaire. Meanwhile the mean value of 2.08 for question two showed that the respondents disagree with the statement given in questionnaires, and lastly question three with the mean value of 2.57 showed that the respondents are neutral with the last statement in the questionnaire. As the mean value was calculated and resulted in a 2.41, the general assessment for using and sharing digital messages resulted in a "disagree" which means that digital messages is not use for connecting with customers.

Table 6. Using and sharing digital messages

Question	Mean	Verbal Interpretation
1. I use digital messages like SMS, call, picture, or video to respond to customer's questions and concerns. <i>(Gumagamit ako ng digital messages katulad ng SMS, pagtawag, larawan, o video para tumugon sa mga tanong at alalahanin ng mamimili.)</i>	2.65	Neutral
2. I use digital messages like SMS, call, picture, or video to easily sell and advertise products. <i>(Gumagamit ako ng digital messages katulad ng SMS, pagtawag, larawan, o video para madaling magbenta at magulang ng mga produkto.)</i>	2.08	Disagree
3. I use digital messages like SMS, call, picture, or video to acquire knowledge when it comes to my farming business. <i>(Gumagamit ako ng digital messages katulad ng SMS, pagtawag, larawan, o video para makakuha ng impormasyon tungkol pagbebenta ng akong mga pananim.)</i>	2.57	Neutral
General Assessment	2.41	Disagree

Legend:

Mean	Value Interpretation
4.50 - 5.00	Strongly Agree
3.50 - 4.49	Agree
2.50 - 3.49	Neutral
1.50 - 2.49	Disagree
1.00 - 1.49	Strongly Disagree

In Table 7, the mean value of the answers of the respondents in terms of creating and collaborating digital messages is 1.76 for question one, interpreted as disagree having the lowest mean value, while question two and three are still interpreted both as disagree with a mean of 1.81 and 2.08, respectively. Resulting the overall mean value of 1.86 and is interpreted as disagree. These findings imply that creating and collaborating digital messages is not widely used in their barangay. The farmers may not have practiced using digital messages to promote their crops or any other agricultural technique, or their knowledge of creating and collaborating digital messages may be limited.

Table 7. Creating and collaborating digital messages

Question	Mean	Verbal Interpretation
1. I can post pictures on social media to market my crops. (Nagagawa kong mag-post ng mga larawan sa social media upang makabenta ng pananim.)	1.76	Disagree
2. I can create a video to post on social media to market and promote my agricultural products online. (Nakakagawa ako ng video na ipa-post sa social media upang ibenta at isulong ang aking mga produktong pang-agrikultura online.)	1.81	Disagree
3. I am able to collaborate with my other farmers to sell my crops on social media. (Nagagawa kong makipagtulungan sa aking kapwa magsasaka upang ibenta ang aking mga pananim sa social media.)	2.08	Disagree
General Assessment	1.86	Disagree

Legend:

Mean	Value Interpretation
4.50 - 5.00	Strongly Agree
3.50 - 4.49	Agree
2.50 - 3.49	Neutral
1.50 - 2.49	Disagree
1.00 - 1.49	Strongly Disagree

In Table 8 the result shows the mean values of the answers of all the respondents in terms of analyzing and evaluating digital messages. Question two has the mean value of 3.65 and is interpreted as agree while question one and question three having the mean value of 3.38 and 3.41 respectively, having interpreted as neutral. Thus, the overall average mean value is 3.48 that is still interpreted as neutral. These findings show that the respondents are in between agreeing and disagreeing in analyzing and evaluating digital messages. This indicates that the farmers can comprehend the digital messages like text messages and calls but are unable to utilize them daily since their cell phone usage is limited.

Table 8. Analyzing and evaluating digital messages

Question	Mean	Verbal Interpretation
1. I can understand the content of the digital messages being sent to my mobile device. (Naiintindihan ko ang mga nilalaman ng mga pinapadala sa aking mga digital messages.)	3.38	Neutral
2. I can evaluate the different types of digital messages sent to my mobile device i.e., text, call, picture, video, etc. (Kaya kong suriin ang mga iba't ibang uri ng digital messages katulad ng text, tawag, litrato, video, at iba pa.)	3.65	Agree
3. I can analyze the contents of the digital messages sent to my mobile device in order to fully understand the context of the message. (Kaya kong pag-aralan ang mga digital messages na pinadala sa akin upang mas maintindihan ang nilalaman nito.)	3.41	Neutral
General Assessment	3.48	Neutral

Legend:

Mean	Value Interpretation
4.50 - 5.00	Strongly Agree
3.50 - 4.49	Agree
2.50 - 3.49	Neutral
1.50 - 2.49	Disagree
1.00 - 1.49	Strongly Disagree

In Table 9, the results showed the mean value of the answers of all the respondents in terms of applying ethical judgment in utilizing digital messages. Question one has a mean value of 1.11, interpreted as strongly disagree so as question two and three having the mean value of 2 and 1 respectively, both interpreted as strongly disagree. The results of the three (3) questions have been calculated into general assessment and have given the result of 1.37, being interpreted as strongly disagree. The result indicates that farmers showed a positive attitude in terms of ethical judgment. They clearly aren't doing what the questions asked, based on the outcomes of their disagreement. This is also something to take consideration because of their behavior, which also reveals how they interact with their fellow farmers and potential customers.

Table 9. Applying ethical judgment in utilizing digital messages

Question	Mean	Verbal Interpretation
1. I use digital messages like SMS, calls, pictures, or video on social media to sell non-owned farms or products. (Gumagamit ako ng digital messages katulad ng SMS, pagtawag, larawan, o video sa social media para magbenta ng mga binalik ko pag-aari, ng sababaw o produkto)	1.11	Strongly Disagree
2. I use digital messages like SMS, call, picture, or video on social media to handle misleading claims on my products. (Gumagamit ako ng digital messages katulad ng SMS, pagtawag, larawan, o video sa social media para ayusin ang mga mali, o hindi tolongang impormasyon tungkol sa aking mga produkto.)	2	Disagree
3. I use digital messages like SMS, calls, pictures, or video on social media to discredit my competitors in selling my products. (Gumagamit ako ng digital messages katulad ng SMS, pagtawag, larawan, o video sa social media para sirain ang mga kalaban ko sa pagbabenta.)	1	Strongly Disagree
General Assessment	1.37	Strongly Disagree

Legend:

Mean	Value Interpretation
4.50 - 5.00	Strongly Agree
3.50 - 4.49	Agree
2.50 - 3.49	Neutral
1.50 - 2.49	Disagree
1.00 - 1.49	Strongly Disagree

ble 10 shows the results of communication efficiency on local farmers' productivity which consisted of eight (8) questions. Question one showed that the respondents are neutral with the given statement on the questionnaire. While question number seven has the highest value of 4.70, interpreted as strongly agree. Question numbers 2, 5, 6 and 8 showed that the respondents agreed with the given statement in the questionnaire, question four was interpreted neutral with the mean value of 3.19, and lastly question three as the only one, interpreted as strongly disagree.

To have a better market and ways of farming, better communication will always be needed, not only for better farming but also to increase the customers' purchase of their agricultural products.

Table 10. Communication Efficiency on local farmers' productivity

Question	Mean	Verbal Interpretation
1. I can effectively share information on farming practices (in facebook messenger, text sms, etc.) (Mabisa kong magbabahagi ang impormasyon sa mga kasamayan sa pag-asaka. (sa facebook messenger, text sms, at iba pa.)	2.86	Neutral
2. I can easily understand the information I have been receiving that can be applied to my farming practices. (Madali kong nasimunduhan ang impormasyong natatanggap ko na maseedong magamit sa aking mga kasamayan sa pag-asaka)	4.30	Agree
3. I can choose communication channels that I know are effective for advertising my products online. (Maaari akong pumili ng mga channel ng komunikasyon, na alam kong epektibo, para sa pag-advertise ng aking mga produkto online.)	1.89	Disagree
4. I can use real-time communication on my farming products. (Magagamit ko ang real-time na komunikasyon sa aking mga produkto sa pag-asaka.)	3.19	Neutral
5. I have experienced delays and inefficiencies on my farming operations due to poor communication. (Nakarapas ako ng mga pagkapanatala at kawalaan ng kahusayan sa aking mga operasyon sa pag-asaka dahil sa mabihang komunikasyon.)	3.57	Agree
6. I always attend small meetings in our barangay to share my insights in terms of farming. (Lagi akong dumadalo sa mga maliit na pagpupulong sa aking barangay para ibahagi ang aking mga pananaw sa usaping pag-asaka.)	4.46	Agree
7. If any problem occurs, I try to fully understand it first before taking an action. (Kung may anumang problema, sinisikap kong unawain muna (o bago kunyos.)	4.70	Strongly Agree
8. My income has improved after using right and just communication with my customers for promoting my crops and farm. (Um taas ang aking kita pamit ang tamang pag-aari ng komunikasyon sa aking mga mamimili upang isulong ang aking mga pag-aari at maging tapos sa paghahanapbuhay)	4.21	Agree
General Assessment	3.65	Agree

Legend:

Mean	Value Interpretation
4.50 - 5.00	Strongly Agree
3.50 - 4.49	Agree
2.50 - 3.49	Neutral
1.50 - 2.49	Disagree
1.00 - 1.49	Strongly Disagree

Table 11 presents the strength of relationship and degrees of correlation of the respondents shows the overall result, with an overall average of 0.75 as the degrees of correlation, that the respondents' proficiency in digital messaging, through the Digital Literacy model (Using and Sharing, Creating and Collaborating, Analyzing and Evaluating, Applying Ethical Judgment in Utilizing Digital Messages).

This explained that the relationship of the respondents is moderate correlation with using and sharing digital messages (0.59764 r value), Creating and Collaborating digital messages (0.545385 r value), Analyzing and Evaluating Digital Messages (0.675916 r value), and applying ethical judgment in utilizing messages (0.658467 r value). Wherein the overall r value is 0.751808 with an overall degree of correlation is strong correlation.

Table 11. Correlation of digital messaging to communication efficiency on local farmers' productivity

Spearman's rho	Using and sharing Digital Messages	r Strength of relationship N	0.59764 Moderate Correlation 37
	Creating and Collaborating Digital Messages	r Strength of relationship N	0.545385 Moderate Correlation 37
	Analyzing and Evaluating Digital Messages	r Strength of relationship N	0.675916 Moderate Correlation 37
	Applying ethical judgment in Utilizing Digital Messages	r Strength of relationship N	0.658467 Moderate Correlation 37
	General Assessment	r Strength of relationship N	0.751808 Strong Correlation 37

Legend:

r Value
0.00-0.25
0.26-0.29
0.50-0.69
0.70-0.89
0.90-1.00

Degrees of Correlation
Very Weak Correlation
Weak Correlation
Moderate Correlation
Strong Correlation
Very Strong Correlation

IV. DISCUSSION

Perceived utility of mobile phones influences their adoption in farmers' lives, according to Silva & Muya's (2019) study. Specifically, the farmers in Brgy. Baanan communicates with its consumers in person rather than through technology, they don't utilize their devices to send and receive digital messages.

In connection with that, the farmers in Brgy. Baanan were not using digital communications of any type to advertise their harvests. These observations were further supported by the statement of Kumar (2023) that farmers give information on selling crops priority when using their phones.

Most farmers get and share agricultural information via cell phones. They say they can talk to other farmers intelligibly and simply. On the other hand, Brgy farmers interact with one another in person to have a straightforward and understandable means of communicating to get, evaluate, and generate knowledge effectively and critically (Kumar, 2023).

According to the Agricultural Technology Development (2022), due to their small- scale operations, lack of finances, age, and lower educational attainment than workers in other industries, farmers encounter difficulties in many areas of digital literacy. In connection with this study, it is important to know how farmers act when it comes to their farming practices and how they use digital messages, specifically when it comes to communicating digitally.

Farmers displayed a positive ethical judgment, but their behavior indicates they are not adhering to ethical questions, affecting their interactions with fellow farmers and potential customers. Understanding how farmers behave with regard to their farming methods and their use of digital messages—more especially, their digital communication—is crucial for this study (Agricultural Technology Development, 2022).

Communication efficiency significantly enhances local farmers' productivity in Brgy. Baanan, promoting better market and farming methods, and increasing customer purchases of agricultural products. Furthermore, a significant contributing role to the development of farmers' attitudes was their exposure to communication channels. In connection with Mwambi et. al. (2023) study, farmers in Brgy interacting well with one another in person but have trouble communicating online because they don't use their cell phones very often.

These findings were corroborated by a statement made by Beltran et al. (2022), in which the farmers stated that social media broadens their knowledge of agriculture and gives them access to fresh viewpoints and ideas that they can apply to their farms or use to improve the efficiency of their associations through contemporary communication. According to this study, the relationship between digital messaging and effective

communication is linked to the notion that knowledge-sharing might help local farmers in Brgy. Baanan be more productive.

In order to close the digital divide, the researchers developed a program proposal entitled; "Proposed Productivity Enhancement Program on Digital Messaging" which will help the farmers in Brgy. Baanan to be better equipped to communicate effectively and use digital messages. By offering training on basic internet and mobile phone skills, the initiative aims to provide local farmers with the necessary knowledge and abilities to effectively navigate the digital world.

Most of the farmers in Brgy. Baanan, Magdalena, Laguna are aware of digital messaging but struggle to apply it effectively in their farming. This impacts their communication efficiency and, consequently, their productivity. It's suggested that farmers should utilize online platforms like Facebook, TikTok, Instagram, X (formerly known as Twitter), and YouTube to promote their products better. The researchers recommend that farmers become more adept at using digital messaging to enhance their communication and productivity. Additionally, they suggest conducting seminars or training sessions for farmers, supported by the local government, to improve their digital messaging skills for agricultural purposes. Future research could explore which advertising media farmers should use, considering accessibility and audience reach.

REFERENCES

- [1]. Agricultural Technology Development. (2022). Thai Farmers' Digital Literacy: Current State and Policy Implications. FFTC Agricultural Policy Platform (Thailand). Articles. <https://ap.fttc.org.tw/article/3107>
- [2]. Atanga, S. J., (2020). Digitalization of Agriculture: How Digital Technology is Transforming Small-Scale Farming in Ghana. International Institute of Social Science. https://thesis.eur.nl/pub/55705/Atanga-Sam-Nicholas_MA_2019_20_AFES.pdf
- [3]. Baroga, R. F., (2019). The Role of Information and Communication Technology in Agricultural Development in the Philippines. The University of Western Australia School Of Agriculture And Environment Faculty Of Science. https://api.research-repository.uwa.edu.au/ws/portalfiles/portal/79035038/THESIS_DOCTOR_OF_PHILOSOPHY_BARROGA_Roger_2019.pdf
- [4]. Banogon, M. R., Barrion, L. O., Olvida, I. DG., Sawit, MT. R., (2022). Policy option to address low rice seed technology adoption of farmers in Sariaya, Quezon, Philippines. Journal of Public Affairs and Development. 9:33-51. ISSN: 2718-9228.
- [5]. Beltran, Y. L. P., Dela Cruz, D., & Vargas, D. S., (2022). Social Media as an Information Dissemination Arm to Promote Agricultural Knowledge Among Farmers in Time of Pandemic. Central Luzon State University, Philippines. https://www.researchgate.net/publication/361490558_Social_Media_as_an_Information_Dissemination_Arm_to_Promote_Agricultural_Knowledge_Among_Farmers_in_Time_of_Pandemic
- [6]. Department of Agriculture-Philippine Rice Research Institute. (2021). Digital Agriculture-How can we make it work?. Rice Science for Decision-Makers, VOL. 9 ISSN 2094-8409
- [7]. Dhanaraju, M.; Chenniappan, P.; Ramalingam, K.; Pazhanivelan, S.; Kaliaperumal, R. (2022). Smart Farming: Internet of Things (IoT)-Based Sustainable Agriculture. Agriculture 2022, 12, 1745. <https://doi.org/10.3390/agriculture12101745>
- [8]. Dogello, J. D., & Cagasan, U. A. (2021). A Review on the Status of Crop Production Innovations of the Philippines. Eurasian Journal of Agricultural Research 2021, 5(2), 130-136.
- [9]. Dutta, A., Steiner, E., Proulx, J., Berisha, V., Bliss, D. W., Poole, S., & Corman, S. (2021). Analyzing the relationship between productivity and human communication in an organizational setting. PloS one, 16(7), e0250301.
- [10]. Fowler, A., (2020). Breaking Silos, Clearer Visions, and Better Competitvity: Using Business Intelligence to Improve Price and Market Competitiveness of Filipino Farmers. Business Intelligence Master of Science Business Intelligence and Analytics ESC Clermont Business School Clermont-Ferrand, France.
- [11]. Google Maps. (n.d.). Map of Laguna. Retrieved July 18, 2023, from <https://maps.app.goo.gl/MZVneVaSVrCFaVeL7>
- [12]. Hobbs, R. (2010). Digital and media literacy: A plan of action: A white paper on the digital and media literacy recommendations of the knight commission on the information needs of communities in a democracy.
- [13]. Infante, A., & Mardikaningsih, R. (2022). The Potential of social media as a Means of Online Business Promotion. Journal of Social Science Studies (JOS3), 2(2), 45-49.
- [14]. Kumar, R. (2023). Farmers' Use of the Mobile Phone for Accessing Agricultural Information in Haryana: An Analytical Study. In Open Information Science (Vol. 7, Issue 1). Walter de Gruyter GmbH. <https://doi.org/10.1515/opis-2022-0145>
- [15]. Madayag, W., & Estanislao, H., (2021). A Sector Study on Philippine Agriculture Is It Growing Or Dying? University of the Philippines Diliman. Research Gate. https://www.researchgate.net/publication/353295428_Sector_Study_on_Philippine_Agriculture
- [16]. Medina, B. O., A. Hidalgo, A. R., & Tabliago, J. A. (2019). Communication Platforms and Perspectives on Climate Change among Layer Farmers in San Jose, Batangas, Philippines. International Journal of English Literature and Social Sciences (IJELS), 4(3). Retrieved from <https://journal-repository.theshillonga.com/index.php/ijels/article/view/646>
- [17]. Melo-Velasco, J., (2023). Digital Agriculture' Implications For Small Farmers: Evidence From Colombia. Faculty of the Graduate School at the University of Missouri-Columbia. <https://mospace.umsystem.edu/xmlui/handle/10355/96993>
- [18]. Muya, G., & Silva, G. M. R. (2019). Adoption and Appropriation of Mobile Phones among Rice Farmers of San Juan, Batangas. LPU "Laguna Journal of Arts and Sciences, 3(2), 1-1.
- [19]. Mwambia, M., Depenbusch, L., Bonnarith, U., Sotelo-Cardona, P., Kieu, K., di Tada, N., Srinivasan, R., Schreinemachers, P., (2023). Can phone text messages promote the use of integrated pest management? A study of vegetable farmers in Cambodia. Ecological Economics, Volume 204, Part A, 2023, 107650, ISSN 0921-8009, <https://doi.org/10.1016/j.ecolecon.2022.107650>.
- [20]. Panganiban, G.G.F. (2019). E-governance in agriculture: digital tools enabling Filipino farmers. Journal of Asian Public Policy, 12:1, 51-70. <https://doi.org/10.1080/17516234.2018.1499479>.
- [21]. Prakash, C., Singh, L. P., Gupta, A., & Lohan, S. K. (2023). Advancements in smart farming: A comprehensive review of IoT, wireless communication, sensors, and hardware for agricultural automation. Sensors and Actuators A: Physical, 114605.
- [22]. Oñal Jr, P. A., Jinon, R. J. & Martinez, L. B. (2022). The Extension Services and the Level of Productivity of Sugarcane Farmers in the Visayas, Philippines. International Journal of Multidisciplinary: Applied Business and Education Research. 3 (1), 90 – 101. doi: 10.11594/ijmaber.03.01.10

- [23]. Qian, Y., & Zhang, W. (2022). The Current Situation and Causes of Farmers' Digital Literacy. In 2022 8th International Conference on Humanities and Social Science Research (ICHSSR 2022) (pp. 2334-2337). Atlantis Press.
- [24]. Sessions, N., and Jodloman, C., (2021). Keeping food on the move during the COVID-19 pandemics in the Philippines. FEX 65 digest. www.enonline.net/fexdigest/65/movefoodinitiativephilippines
- [25]. Soma, T., & Nuckchady, B., (2021). Communicating the Benefits and Risks of Digital Agriculture Technologies: Perspectives on the Future of Digital Agricultural Education and Training. *Front. Commun.* 6:762201. doi: 10.3389/fcomm.2021.762201
- [26]. Soeprijanto, S., Diamah, A., & Rusmono, R. (2022). The effect of digital literacy, self-awareness, and career planning on engineering and vocational teacher education students' learning achievement. *Journal of Technology and Science Education*, 12(1), 172-190. <https://doi.org/10.3926/jotse.143>