

Chick to Clicks: ICT Integration for Enhanced Poultry Farming Productivity and Market Access in Bansud Oriental Mindoro

Nicko A. Magnaye^{*1}, Kennedy R. Sta. Rufina², Ivan Vincent O. Fabila³, Reyriel M. Visca⁴, Gerolyn B. Javier⁵, Dianne R. Oliveros⁶

^{1,2,3,4,5,6}Mindoro State University, Philippines.

*Corresponding Author

Nicko A. Magnaye

Mindoro State University, Philippines.

Article History

Received: 07.06.2023

Accepted: 16.06.2023

Published: 02.07.2023

Abstract: *Chick to Clicks*, an ICT-based approach, was implemented to address challenges faced by small-scale poultry farmers in Bansud, Oriental Mindoro, Philippines. This study aimed to assess the impact of *Chick to Clicks* on poultry farming productivity, market access, and technology adoption. A questionnaire was administered to evaluate farmers' knowledge of technology, market accessibility challenges, and economic implications of technology adoption. The findings revealed a mean productivity score of 3.87, indicating moderate productivity in poultry farming with the use of technology. Similarly, the mean score for market access challenges was 3.87, highlighting the moderate level of challenges faced by farmers, primarily due to high feed costs. However, farmers demonstrated awareness of the benefits of technology integration, with a mean score of 3.44, while expressing concerns about hardware availability and cost. To enhance the implementation of *Chick to Clicks*, recommendations were made to improve hardware accessibility and promote the advantages of technology adoption. Furthermore, this study explored the integration of ICT and social media for sales monitoring in poultry management. The research highlighted the benefits of implementing *Chick to Clicks*, utilizing mobile apps and online platforms for optimized management, market expansion, and improved production. The findings indicated that ICT integration provided real-time monitoring, data analytics, and enhanced business performance for farmers in Bansud, Oriental Mindoro. It is recommended that farmers embrace these technological advancements to overcome challenges, enhance productivity, and increase profitability in poultry farming. This study contributes to the understanding of the potential of ICT-based approaches in agricultural development, sustainable farming practices, and poverty reduction.

Keywords: Information Communication Technology, Integration, Poultry Farming, Productivity, Market Access.

INTRODUCTION

Poultry farming plays a crucial role in supporting rural livelihoods and ensuring food security in the Philippines by providing income opportunities for small-scale farmers. However, these farmers often face significant challenges that hinder their profitability and productivity. Limited market access, lack of knowledge, and underutilization of technology are among the key issues that can severely impact their success. With the increasing availability of information and communication technology (ICT), there is an opportunity to tackle these problems and improve poultry farming techniques while also increasing market access for small-scale farmers. In Oriental Mindoro, particularly in Bansud, poultry farming is a vital economic activity that sustains numerous small-scale farmers. However, traditional farming methods in this region

may be inefficient and fail to take advantage of modern technological advancements. As a result, farmers face challenges such as low productivity, insufficient disease control, and limited market access, all of which can harm their profitability. The *Chick to Clicks* technique may be able to solve these issues. This plan calls for the use of ICT resources such as mobile apps and online platforms to boost chicken farming production and market access. By exploiting the real-time monitoring and data analytics provided by these systems, farmers may optimize their poultry management approaches and expand their market reach beyond the local area. This study specifically focuses on investigating the impact of the *Chick to Clicks* approach on poultry farming productivity and market access in Bansud, Oriental Mindoro. Employing a quantitative research approach, the study aims to provide evidence-based recommendations for promoting sustainable poultry farming

in the region. By examining the effects of ICT integration on farmers' access to markets and production efficiency, the study seeks to identify barriers to technology adoption and develop effective strategies to overcome them. The need for conducting this study arises from the importance of addressing the challenges faced by small-scale poultry farmers in rural areas. Despite the potential benefits of ICT integration in improving poultry farming practices, there is a lack of specific research focusing on its impact in the context of Bansud, Oriental Mindoro. By conducting this study, we aim to fill this knowledge gap and provide valuable insights into the effectiveness of the Chick to Clicks approach in enhancing poultry farming productivity and market access. Additionally, this study contributes to the broader goal of sustainable agricultural development and poverty reduction. By improving the profitability and productivity of small-scale poultry farmers, it has the potential to uplift rural livelihoods and contribute to food security. Moreover, the study findings can inform policymakers, agricultural extension services, and other stakeholders about the benefits of ICT integration in poultry farming, encouraging wider adoption of these practices in other agricultural sectors and regions. In a previous study titled "Exploring the Impact of ICT Adoption on Poultry Farmers' Market Access and Productivity in Rural Philippines" (Santos, J. P., & Lim, R. A., 2016), researchers investigated the usage of ICT tools, such as mobile apps and online platforms, by small-scale poultry producers in rural parts of the Philippines. The study examined the influence of ICT adoption on farmers' market access and production, shedding light on both the advantages and disadvantages of ICT integration in chicken farming. However, this previous study did not specifically focus on the Bansud region in Oriental Mindoro. Hence, the current study builds upon the findings of this previous research to assess the applicability and impact of the Chick to Clicks approach in Bansud, offering region-specific insights and recommendations for poultry farmers in the area. This study aims to investigate the effectiveness of integrating Information and Communication Technology (ICT) in enhancing the productivity and market access of small-scale poultry farming in Bansud, Oriental Mindoro specifically, this study sought answers to the current productivity level of poultry farming in Bansud, Oriental Mindoro the challenges faced by poultry farmers in accessing markets in Bansud, Oriental Mindoro, and how can ICT integration address these challenges and current level of awareness and knowledge of poultry farmers in Bansud regarding ICT integration in farming practices?

Based on the research problem and review of related literature, the following assumptions can be made for the study the Small-scale poultry farmers in Bansud Oriental Mindoro are interested in adopting ICT tools to improve their farm management and productivity, but they may face barriers related to access, affordability, and digital literacy. The use of ICT tools in poultry farming can improve access to information on farming practices, market prices, and disease management, leading to increased productivity and profitability for farmers. The adoption of ICT tools in poultry farming can enhance market access for farmers by providing them with new opportunities to connect with buyers and access markets beyond their local area. The successful integration of ICT tools into small-scale poultry farming practices requires a supportive policy and regulatory environment, as well as adequate infrastructure and technical support for farmers. The use of ICT tools in poultry farming has the potential to contribute to

sustainable and inclusive agricultural development in Bansud Oriental Mindoro, by promoting more efficient and environmentally friendly farming practices and enhancing the economic well-being of small-scale farmers.

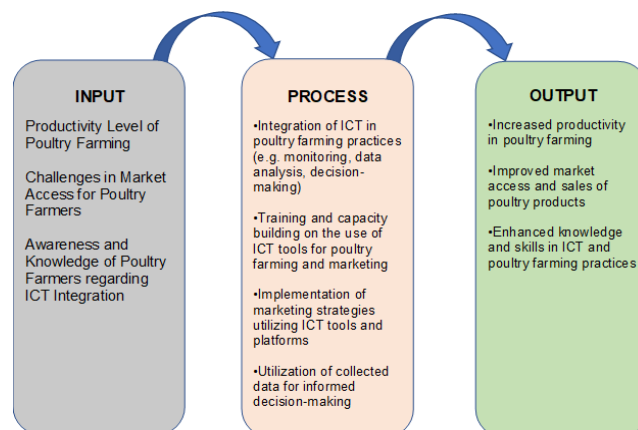


Figure 1: Conceptual Framework

Poultry farmers in Bansud, Oriental Mindoro encountered productivity and market access challenges. Despite playing a vital role in the agricultural sector, these farmers frequently face difficulties in maximizing their productivity and efficiently accessing markets. Evidence reveals that limited access to information, inadequate infrastructure, and a lack of technological advancements hinder their ability to improve productivity and reach broader markets. Additionally, factors such as having limited financial resources and lacking sufficient knowledge about market trends worsen the challenges that poultry farmers in Bansud, Oriental Mindoro already face.

This study explores the distinct elements driving information and communication technology (ICT) adoption among chicken growers and traders in Bansud, Oriental Mindoro, using the popular Unified Theory of Acceptance and Use of Technology (UTAUT). We hope to unearth innovative insights that empower stakeholders, improve decision-making, and encourage sustainable growth in the local poultry firm by studying performance expectancy, effort expectancy, social influence, and enabling factors.

This study aims to use information and communication technologies (ICTs) to increase chicken farming production and market access in Bansud, Oriental Mindoro. The research employs a quantitative approach, collecting data through surveys and statistical analysis. The sample population includes 17 participants, consisting of 10 poultry farmers and 7 traders, allowing for comprehensive insights into the challenges and perspectives within the local poultry industry.

The scope of the study is limited to Bansud, Oriental Mindoro, and the findings may not be generalizable to other places. A survey was used to collect data, which may have resulted in response bias. By employing basic survey questions and selecting a representative sample, efforts were made to remove constraints. The study was limited in time, potentially omitting long-term repercussions of ICT adoption, and was dependent on the availability of ICT infrastructure and the technical skills of the participants.

Despite these limitations, the study provides valuable insights into the potential of ICTs in enhancing poultry farming productivity and market access in Bansud, Oriental Mindoro. The findings

contribute to the development of effective policies and programs for the local poultry farming sector.

RESEARCH METHODOLOGY

This chapter discusses the researcher's design, demographic and sampling design, setting, research instrument, data gathering techniques, and statistical treatment. This study will employ a descriptive research design. The descriptive approach is used to describe the characteristics of a population or phenomenon under study. The method is used to compute frequencies, averages, and other statistical information. The descriptive method is used to collect limited data from a large number of cases. The goal is to gather information about ICT Integration for Improved Poultry Farming Productivity and Market Access. "Chicks to Clicks: ICT Integration for Enhanced Poultry Farming Productivity and Market Access in Bansud Oriental Mindoro" will be a survey. This will involve the distribution of questionnaires to the selected respondents in Barangay Poblacion, Bansud Oriental Mindoro. The survey will be performed in two stages. In the first phase, a pilot test will be done to assess the survey instrument's reliability and validity. The second phase will involve actual data collection from respondents. The survey will use a structured questionnaire consisting of closed-ended questions to gather data on the current practices, challenges, and potential opportunities in poultry farming and the use of ICT in Bansud Oriental Mindoro. The questionnaire will include the following topics: demography, poultry farming techniques, ICT use, market access, and industry problems. This study was conducted in Barangay Poblacion and in Sitios in Bansud, Oriental Mindoro. Where in the 7 Traders were from the Public Market in Barangay Poblacion Bansud and the 10 Poultry farmers are located in the selected Sitio in Poblacion, according to 2022 Census, Bansud is the Center of Commerce and Trade in the town with a population of approximately 3,500 individuals. The barangay respondent was conveniently located with easy access to the sitio, ensuring efficient data collection and interaction with the respective communities. The Sitio was the following Bibihan, the only vehicle that can be used to reach the place was a motorcycle because of the narrow road, and in just 5 minutes of travel from the highway you can reach the place, Masagana was the same situation to Sitio Bibihan but it takes 10 minutes from the highway. While in the Breeding, all vehicles can use but the location of the site-respondent has a narrow road that needs to use the paddies field embankment to go there, which can reach approximately 8 minutes using a motorcycle and 20 minutes by walking. All the locations can easily access and can be found by asking people where to go and where the place is, and can be reached using a motorcycle. The place for traders in Public Market was near to each other and can be reached by walking. The respondents of the study were 10 poultry farmers and 7 poultry traders in, Bansud Oriental Mindoro who were using ICT in their farming activities and marketing strategies. All of the respondents were considered for the intention of the study and to be utilized.

The In this study, a closed-ended questionnaire was used to obtain data on the current use of information and communication technology (ICT) in poultry farming in Bansud Oriental Mindoro, as well as the degree of ICT literacy among poultry farmers and the problems they face in accessing markets. Part I of the questionnaire will focus on the respondents' demographic information, such as their name, age, gender, education, and years of experience in chicken farming. Part II will comprise questions about various

farming activities, such as the productivity level of poultry farming, challenges faced in poultry farming, the economic impact of ICT integration on the poultry farming industry, implementation of ICT integration, and awareness and knowledge regarding ICT integration in farming practices. Part II questions will be built on a nominal scale, allowing respondents to express their level of agreement or disagreement on a point scale ranging from 1 to 5, with 5 signifying "strongly agree" and 1 representing "strongly disagree."

Table 1
Descriptive Scale

Numerical Scale	Description	Point scale
5	Strongly Agree	4.50 - 5.00
4	Moderately Agree	3.50 - 4.49
3	Agree	2.50 - 3.49
2	Slightly Disagree	1.50 - 2.49
1	Strongly Disagree	1.0 - 1.49

Descriptive statistics will be used to treat the data gathered. The data collected from the interviews and questionnaires was evaluated using simple descriptive statistics such as weighted mean and ranking. Tables and descriptions were used to present the study's findings.

The following statistical tools were used in interpreting the data gathered from the respondent.

Weighted Mean. This method was used in this study to assess poultry farming productivity, market accessibility issues, ICT integration possibilities, and Bansud poultry farmers' awareness/knowledge of ICT in agricultural practices. In Bansud, Oriental Mindoro, the findings aim to improve farming outcomes, promote market access, stimulate technology developments, and guide decision-making...

Ranking. This was used to rank the respondents' perceptions in relation to its indicators.

RESULTS AND DISCUSSIONS

This chapter presents the results and discussions of the data. The interpretation, data analysis, supports and evidence will be presented in this chapter.

1. What is the Current Productivity Level of Poultry Farming in Bansud, Oriental Mindoro.

Table 2 shows the mean perception of the respondents on the current productivity level of poultry farming in Bansud, Oriental Mindoro.

Item number 2, which indicates that Poultry Farm frequently meets or exceeds output targets, received a mean score of 4.41, indicating moderate agreement. This means that there were times when demand was great and output was equally high, and times when demand was simply sufficient to achieve their desired productivity.

Meanwhile, Item 3 obtained the lowest mean score of 3.12, showing agree with the statement that the level of training and expertise among poultry farm workers has a direct impact on productivity. Due to time constraints, this means that the training and knowledge they obtained were implemented, but not

adequately for them to grasp the technique of the program they attended.

The overall mean score was 3.87, described as moderately agree. This implies that the general productivity of poultry farming is quite good and slightly exceeded the target productivity using ICT in poultry farming.

Parallel to the study conducted by Quiatchon et al. (2017), the use of ICT in poultry farming was found to have a significant impact on the productivity of small-scale poultry farmers. The study showed that the use of ICT tools such as mobile applications and web-based platforms can improve poultry management practices, resulting in increased production and profitability.

Table 2
Productivity Level of Poultry Farming

Item	Weighted Mean	Rank	Description
1. The use of technology and innovation has positively impacted my poultry farm's productivity.	3.88	3	Moderately Agree
2. Poultry farm consistently meets or exceeds production targets.	4.41	1	Moderately Agree
3. The level of training and knowledge among poultry farm workers has a direct impact on productivity	3.12	5	Agree
4. Poultry farm uses best practices in poultry management to improve productivity	3.76	4	Moderately Agree
5. Adequate funding and investment in infrastructure and resources are critical to maintaining high levels of productivity in poultry farming.	4.18	2	Moderately Agree
Overall Mean	3.87		Moderately Agree

2. What are the challenges faced by poultry farmers in accessing markets in Bansud, Oriental Mindoro, and how can ICT integration address these challenges?

Table 3 shows the mean perception of the respondents on challenges in poultry farming in Bansud, Oriental Mindoro

The first rank item no. 1 and 3 had a mean score of 3.47, indicating moderate agreement, and asks, "To what extent do you agree that high feed costs are a significant challenge in poultry farming?" It is vital in chicken production to keep the surroundings clean and sanitary. This suggests that the high feed cost was an issue for them because feed prices were always shifting, forcing them to change their budget. And keeping their farm clean and sanitary is a major issue for them because, despite cleaning it, the smell persisted, and the neighbor complained.

Meanwhile, item number 4 got the last rank with a mean score of 2.18, described as slightly agree, which states that finding a reliable market for poultry products is a significant challenge in

poultry farming. This implies that finding a market that suits their budget was really slightly hard for them to find.

The overall mean score was 2.94, described as agree. This implies that the challenges in poultry farming seriously needed to give much attention to solve the encountered problems concerning environmental issues while earning money, also to lessen or avoid the complaints of the community in poultry farming and in budgetary concerns. Furthermore, the bad smell due to poultry may cause different diseases in the community.

In consonance with the study by Dator-Bercasio et al. (2019) examined the use of ICT in poultry disease surveillance in the Philippines. The study developed a web-based disease surveillance system for poultry, which allowed farmers and veterinarians to report and track poultry disease outbreaks in real time. The system was found to improve the timeliness and accuracy of disease reporting and helped to prevent the spread of disease.

Table 3
Challenges in Poultry Farming

Statement	Weighted Mean	Rank	Description
1. To what extent do you agree that high feed costs are a significant challenge in poultry farming?	3.47	1.5	Agree
2. To what extent do you feel that environmental factors such as climate change and extreme weather events pose a challenge to poultry farming?	2.65	3	Agree
3. Maintaining a clean and sanitary environment is a significant challenge in poultry farming.	3.47	1.5	Agree
4. Finding a reliable market for poultry products is a significant challenge in poultry farming.	2.18	4	Slightly Disagree
Overall Mean	2.94		Agree

3. What is the current level of awareness and knowledge of poultry farmers in Bansud regarding ICT integration in farming practices?

Table 4 shows the mean perception of the respondents on awareness and knowledge regarding ICT integration in farming practices.

The first rank got a mean score of 3.76 described as moderately agree, which was item no. 2 states how much you agree that you

have access to information and resources to support ICT integration in your poultry farming practices. This implies that ICT integration helps them to easily access the information they need in the poultry business, and they can easily search for good ways how to run their business

Meanwhile, item no.3 got the last rank with a mean score of 3.12, described as agree, which states to what extent you agree that you have a clear understanding of how ICT integration can improve your poultry farming productivity and profitability. This implies that the owner of the poultry farming was agree to ICT integration in their business hence they were doubtful about the capital, and if they were going to embrace ICT in their business how much the cost will be? They were open-minded about the changes in their

operation for improvement but they choose to use a different platform or app on the cellphone that they actually used.

The overall mean score was 3.44, indicating agreement. This suggests that the owner was aware of and knowledgeable about ICT integration in farming operations, but he was unwilling to use ICT due to a lack of system hardware in Oriental Mindoro. They also have no idea how much the system will cost them if they decide to use it. It also implies that they were aware of the ICT integration, particularly in terms of tracking their sales and potential clients through ICT.

According to Feliciano et al. (2018), integrating mobile phones and social media platforms can improve chicken product marketing by connecting farmers with buyers directly, increasing market access and sales.

Table 4
Awareness and Knowledge Regarding
ICT Integration in Farming Practices

Statement	Weighted Mean	Rank	Description
1. How much do you agree that you have knowledge about the different ICT tools that can be used in poultry farming?	3.53	2	Moderately Agree
2. How much do you agree that you have access to information and resources to support ICT integration in your poultry farming practices?	3.76	1	Moderately Agree
3. To what extent do you agree that you have a clear understanding of how ICT integration can improve your poultry farming productivity and profitability?	3.12	4	Agree
4. How much do you agree that you are willing to adopt ICT tools in your poultry farming practices to enhance productivity and profitability?	3.35	3	Agree
Overall Mean	3.44		Agree

This chapter presents the summary of findings, conclusions, and recommendations based on the results of data gathered, tabulated, analyzed, and interpreted. Based on the results from the data gathered, What is the Current Productivity Level of Poultry Farming in Bansud, Oriental Mindoro.

The first rank had a mean score of 4.41, which was rated as moderately agree. While Item 3 was ranked last with a mean score of 3.12, it was described as agree. The overall mean score was 3.87, suggesting moderate agreement. This shows that poultry farming's overall productivity is quite good and has slightly exceeded the target productivity utilizing ICT in poultry farming. What are the challenges faced by poultry farmers in accessing markets in Bansud, Oriental Mindoro, and how can ICT integration address these challenges? The first rank items no. 1 and 3 got a mean score of 3.47, which was rated as moderately agreeable. Meanwhile, item number 4 was ranked last with a mean score of 2.18, indicating that it was marginally agree. The entire mean score was 3.87, which is classified as moderately agreeable. This means that the overall productivity of chicken farming is quite good and has slightly exceeded the target productivity utilizing ICT in poultry farming. What is the Current Level of Awareness and Knowledge of Poultry Farmers in Bansud regarding ICT Integration in Farming Practices? Item no. 2 received the first rank, with a mean score of 3.76 which was rated moderately agree, while item no. 3 obtained the last rank, with the mean score of 3.12 describe as agree. The overall mean score of 3.44 indicates agreement. These results shed light on participants' perceptions,

highlighting areas of varying agreement within the study. This implies that the awareness and knowledge regarding ICT integration in farming practices was quite good but the owner was

hesitant to use the ICT due to the unavailability of the system hardware here in Oriental Mindoro. And they have no idea about the price of the system if they were decided to avail. It also implies that they were aware of the ICT integration, especially in monitoring their sales and possible customers through the use of ICT.

Conclusion

Based on the study findings, the following conclusions have been drawn:

1. The current productivity level of poultry farming in Bansud, Oriental Mindoro was productive and the best practices were applied.
2. These issues remain despite the owners' best attempts to keep the poultry environment clean and to find a reliable market for chicken products in order to keep the business afloat. As a result, problems remain.
3. The business owners in Bansud, Oriental Mindoro are aware of ICT integration and utilize social media for sales monitoring. Implementing the Chick to Clicks technique with mobile apps and online platforms can optimize poultry management, expand market reach, and improve production. ICT provides real-time monitoring, data analytics, and enhanced business performance for farmers.

Recommendations

The following recommendations are made for consideration based on the insights gained and conclusions reached.

1. The owner may consider to improve the level of productivity through technological innovation and a series of training programs to master the skills in poultry farming.
2. The business owner may attend a seminar-workshop regarding effective budgeting, orientation for sanitation improvement programs, and market strategies and; find a reliable market for poultry products by canvassing different markets.
3. The business owners in are aware of ICT integration and utilize social media for sales monitoring. Implementing the Click to Clicks technique with mobile apps and online platforms can optimize poultry management, expand market reach, and improve production. ICT provides real-time monitoring, data analytics, and enhances business performance for farmers. Consider learning ICT integration to improve sales and attract a larger customer base through the system.

References

1. Ali, M., & Hameed, I. (2020). ICTs in Agriculture and Rural Development: A Review of Existing Literature and Analysis of Future Prospects. *Journal of Agricultural Extension and Rural Development*, 12(3), 44-55
2. Amores, M. J. L., Abejuela, E. C., & Borines, M. G. (2018). Development of mobile application for monitoring and management of poultry farm in Region IV-A, Philippines. *International Journal of Engineering and Technology*, 10(5)
3. Asperilla, N. P., Resurreccion, B. P., Villegas, V. T., & Ferrer, B. D. (2020). Integration of Information and Communication Technology in Small-Scale Poultry Farms in the Philippines. In *Proceedings of the 3rd International Conference on Computer Science, Information Technology, & Security*.
4. Balangue, M. J. V., & Baniqued, M. J. C. (2018). Digital Agriculture: A Review of Current Technologies and Applications. *International Journal of Advanced Research in Computer Science*, 9(2)
5. Dator-Bercasio, M. A. A., Borines, M. G., & Amores, M. J. L. (2019). Adoption of ICTs for small-scale poultry farmers in Laguna, Philippines. *International Journal of Advanced Research in Computer Science and Software Engineering*,
6. Dela Cruz, R. A., & Japitana, M. (2020). Using Information and Communication Technology (ICT) for Agricultural Development: An Empirical Study in the Philippines. *International Journal of Agricultural Management and Development*, 10(2),
7. Feliciano, A., Crisostomo, R., & Peñaranda, D. (2018). Mobile phone and social media integration in poultry marketing: A case study in the Philippines. *Journal of Agricultural Extension*, 22(1)
8. Food and Agriculture Organization of the United Nations. (2016). Digital Agriculture: Leveraging the Power of ICTs. Retrieved from <http://www.fao.org/3/a-i6253e.pdf>
9. Molina, A. (2018). Information and Communication Technologies in Agriculture and Rural Development in the Philippines. *Information Development*, 34(1)
10. Philippine Statistics Authority. (2020). Highlights of the Philippine Statistics Authority's Latest Census of Agriculture and Fisheries. Retrieved from <https://psa.gov.ph/statistics/survey/agriculture-and-fisheries/updates/highlights-philippine-statistics-authoritys-latest-census-agriculture-and-fisheries>
11. Quiatchon, B. R., Limpin, C. M., & Flor, R. J. (2017). ICT in small-scale poultry production and management. *Asian Journal of Agriculture and Development*, 14(2)
12. Reyes, R. B. (2019). Enhancing Farm Productivity and Market Access through the Use of Information and Communication Technology (ICT): The Case of Philippine Agriculture. *Philippine Journal of Development*, 46(2), 105-123.