

Effect of Financial Technology on the Growth of the Agricultural sector of Micro, Small and Medium-sized Enterprises in Lipa City

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Abstract

One of the United Nations' Agenda for Sustainable Development is to promote MSME's expansion by providing them with access to financial services. Digitalization and innovation continue to reshape how to conduct business not only for the large-scale enterprises but also for MSMEs. The general objective of the study is to determine the effect of Financial Technology (Fintech) on the growth of the agriculture sector of the Micro, Small and Medium-sized Enterprises (MSMEs) in Lipa City. The study uses descriptive-causal research design. The study targets the registered agriculture enterprises in Lipa City. Total enumeration is applied, and 149 samples have been identified. Specifically, multiple regression is used to determine the effect of Fintech, in terms of mobile money, digital lending, and online banking on the growth of MSMEs while simple regression is used to determine the effect of Fintech as a whole on the growth of MSMEs. The result of the study shows that fintech positively and significantly affects the growth of the agricultural sector of MSMEs in Lipa City. Hence, the study recommends that the business owners increase the use of mobile money, digital lending and online banking and take advantage of its benefits while watching out on the potential risks so their businesses will continue to grow and develop.

Keywords: Agriculture; MSMEs; growth; financial technology; mobile money; digital lending; online banking

1. Introduction

Digitalization helps build sustainable societies. It gravitates companies to adapt to the demands imposed by the digital era (M.O.Pintea, 2020). It reduces transaction costs, provides better and quicker access to information, closes communication gaps between parties involved in a business, facilitates access to resources including finance, and drives the business improved performance. Hence, digitalization and innovation are regarded as keys to business growth and development.

In the same manner, MSMEs are regarded as vital to social cohesiveness, economic growth, and the generation of jobs. As cited by Trinugroho et al. (2021), there are factors that influence MSMEs' utilization of digital technologies and these include low frequency of visits to physical stores, online payment systems provided by businesses selling the same products, high volume of inquiries from customers about the availability of digital payments, young business owners and owners with higher education levels, dependable internet connectivity, and the availability of government funding (Acopiado, 2022). Further, it allows MSMEs to reinvent themselves, be more effective in creating and capturing value, save costs and time and create new revenue opportunities (Vera, 2022). In the field of financial services, new technologies including mobile money, peer-to-peer (P2P) or marketplace lending, robo-advice, insurance technology (insurtech), and crypto-assets have surfaced

globally (Feyen, 2021). Ntale (2018), in his study, has cited that mobile payments, digital loans, and mobile banking all influence the development of MSMEs. Businesses can now easily send or receive payments through the use of mobile application services. This is supported by the study of Owoseni, A., & Twinomurinzi, H. (2018) which claimed that mobile devices had a big impact on MSMEs particularly when employed to support business operations like marketing, sales, financial accounting, and other ones.

However, despite the tremendous benefits and opportunities digitalization and innovation offer, many MSMEs fall behind in the shift to digitalization. According to a survey conducted by the Philippine Institute for Development Studies, the rate of innovation among MSMEs in the Philippine economy is still low, with only one out of every thirty (3.1%) businesses reporting some public support for their innovations. Small and large businesses reported receiving more public support for their innovations than micro and small businesses did (Lim, 2022).

The Philippines identify MSMEs according to employment and asset size. Businesses with one to nine employees and an asset size up to Php3,000,000 are considered micro enterprises, while those with 10-99 employees and an asset size of Php3,000,001-Php15,000,000 are the small enterprises. Medium enterprises are those with 100-199 employees and an asset size of Php15,000,000-Php100,000,000 and large businesses have 200 or more employees and an assets of at least of Php100,000,001 (DTI, 2021).

Manufacturing, other service operations, wholesale and retail trade, lodging and food services, other service activities, banking and insurance activities, and other industry sectors make up 87% of all MSME establishments in the Philippines. Other industry sectors are categorized as "others," and these include things like real estate activities, office and support service activities, arts, entertainment, and recreation, as well as agriculture, forestry, and fishing (AFF).

According to the Philippine Statistics Authority (PSA), agriculture was the lowest contributor to Gross Domestic Product (GDP) among the three major sectors which include industry and services. It contributed only 9.2% in the GDP in 2019 compared to 30.2% and 60.6% from industry and services respectively. The sector has been underperforming since 1961. In terms of employment, Yamagishi (2021), in his research mentioned that 26% of employment is attributed to the sector but it has since declined from 44.91% since 1991 according to the World Bank study (Madayag, 2021).

While the sector is still recognized for the overall value it brings in the economy, the fact remains that the agricultural economy fluctuates every quarter, manifesting volatility in its performance (Cagasan, 2021). Capital investments is one of the common challenges that the agricultural sector encounters. From the Philippine Institute for Development Studies (PIDS) (2021), while 62% of small farmers and fisherfolk can borrow from formal sources, 38% still do not. Additionally, a massive portion of other farmers and fisherman have resorted to self-financing due to cumbersome requirements of availing bank loan. Access to productivity-enhancing financial service is a problem present in the industry, thus businesses are not able to obtain the needed capital and do not have enough fund to buffer against unforeseen circumstances and risks which includes changing weather, pests, and price movement. (Paloma et.al., 2020). Another issue cited is agricultural risk, like the African Swine Fever (ASF) which set up the price movement in pork, hence banks snub agriculture due to high risk of collecting loans (Briones, 2021). Budgetary control is also a concern since monitoring of business funds for subsequent used or for costs incurred are infrequently tracked (Demillo, 2022).

Hence, as studied in an Asian Development Bank Institute working paper in 2018, it supports that financial inclusion is a key concept for the sector also. Policy innovations, including those involving financial technology

such as payment systems, are believed to be an advancement for the agriculture sector that will bring tremendous benefits for them.

The CALABARZON 2020 Regional Development Report cited that the agricultural sector recorded a decrease of 20% in its performance compared to previous years and these can be attributed to the series of unfortunate events such as typhoons, the Taal Volcano eruption, the COVID-19 pandemic, and African Swine Fever (ASF). Likewise, access to innovative financing remains to be an issue in the Region. Small farmer and fisherfolk organizations who joined in the capacity building in innovative finance declined by 53.19% from 2019 to 2020.

Among the cities from the CALABARZON region is Lipa City from the Batangas Province. The records from the City Planning and Development office of Lipa show that out of the 20,940 hectares of land, 54.07% of the total land area which is about 11,323 hectares is attributed to the agricultural sector. The City Agriculturist Office (CAgO) had several projects for the industry, and this includes Rice Enhancement Project, Coffee Rehabilitation Project, Tree Planting Project, SinagKabuhayan Project, Large Animal Dispersal and Swine Dispersal. Through the support of CAgO, local farmers and livestock producers were also sent to various trainings and seminars. There are seminars also for vegetable production, livestock natural feed formulation and waste management and entrepreneurial-based approach for development. The city also holds an annual Agri fair to support the agribusinesses even more. Accordingly, in 2022, the Permits and Licensing Division of the city confirmed a total of 149 agricultural registered MSMEs. Likewise, these businesses also encounter the same issue within the agriculture industry such as lack of funds, varying weather and calamity, inflation etc. Some issues also include a lack of equipment and materials for their operation and even ease of processing transactions for their financial needs. The same issues hinder entrepreneurial growth and pose a threat to their sustainability.

Knowledge on fintech and its benefits on the MSMEs have been greatly studied. However, these studies focused primarily on MSMEs as a whole and other sectors like the small food businesses. This research aims to provide another perspective by targeting the Agricultural Sector. The study conducted by Najib, et.al., (2021) shows that lending adoption through fintech has a positive relationship in the sustainability of food businesses especially those who are in the startup stage. Funding through fintech lending can help in their operational capacity and support their sustainability. The same is concluded for the culinary business as a study conducted in Kupang City showed that e-payment brings a lot of benefits to business owners and consumers as it facilitates easier and practical transactions (Latuherut, 2021). However, researchers gathered data that revealed a paucity of this research specifically for the agricultural sector.

Hence, this study aims to determine how financial technology, measured through mobile money, digital lending, and online banking, affects the growth of MSMEs in the agricultural sector in Lipa City. It aims to describe how innovation in finance can help in the growth of agriculture business enterprise. This research wishes to incorporate new programs and practices that can promote digital financial inclusion and help in the growth and healthy development of MSMEs.

1.1. Research Frameworks

The study adopted the framework by Ngung'U (2021). The independent variables consist of financial technology services which include mobile payment, mobile finance, and mobile banking. The dependent variable is the growth of MSMEs.

The study by Ngung'U (2021) concluded that there is strong correlation between Fintech and the growth of SMEs. While mobile/online banking has a significant impact on the growth of MSMEs, both mobile money and digital lending did not. The study also concluded that greater use of mobile money positively impacts the

growth of SMEs in Kiambu County in Kenya considering the expansion of SMEs, increase in sales volume and additional revenues earned.

The conceptual framework for the study showed the relationship between the independent variables and the dependent variable as shown in Figure 1.

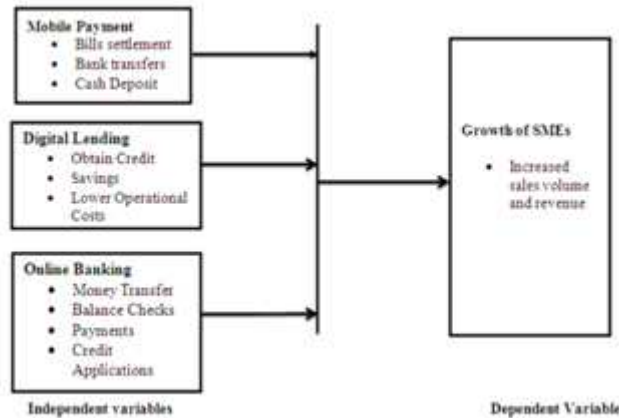


Figure 1. Conceptual Framework
Effect of Fintech on Growth of Small and Medium Enterprises in Kiambu County, Kenya (Ngung'u, 2021)

The study identified Fintech, in terms of mobile money, digital lending and online banking, as the independent variables for this study. Mobile money is a financial service using mobile money accounts that is being offered by a mobile network operator (Shirano, 2018). This would include bank transfers, cash deposit and bill settlement. Digital lending refers to disbursing and collecting loans via websites or mobile applications (Business Standard, 2022) and this includes the MSMEs ability to obtain credit and make savings while online banking is the capacity to make money transfer, account checking, payment and credit application. For the dependent variable, the study identified it as the growth of MSMEs through increase in sales volume and revenue. This research determined the effect of Fintech, in terms of mobile money, digital lending and online banking on the growth of MSMEs.

The operational framework used in the study is based on Figure 1, conceptual framework, from the study conducted in Kenya. There are no changes on the independent variables, but the dependent variable is focused on the agricultural sector of MSMEs. The proponent tried to assess the effect of technology in finance in the development of the businesses of the said sector in Lipa City. The modified framework is shown in Figure 2.

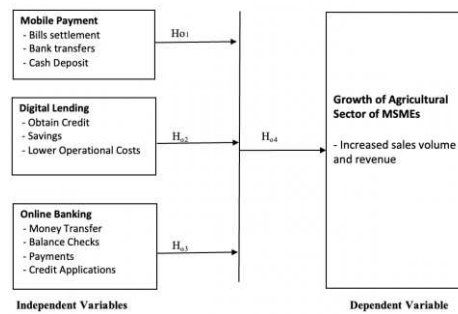


Figure 2. Operational Framework

1.2. Objectives of the Study

In general, this study determined the effects of Fintech on the growth of the agricultural sector of MSMEs in Lipa City.

Specifically, it aimed to:

1. determine the effect of Fintech in terms of mobile money, digital lending, and online/mobile banking on growth on agricultural sector of MSMEs in Lipa City;
2. determine the effect of Fintech as a whole on the growth on agricultural sector of MSMEs in Lipa City; and
3. introduce a fintech business model to incorporate new programs and practices that can promote business sustainability and growth.

1.3. Research Hypotheses

The study tested the following research hypotheses:

H_{01} : Mobile money has no significant effect on the growth of agricultural sector of MSMEs

H_{02} : Digital lending has no significant effect on the growth of the agricultural sector of MSMEs

H_{03} : Online banking has no significant effect on the growth of the agricultural sector of MSMEs

H_{04} : Fintech, as a whole, has no significant effect on the growth of agricultural sector of MSMEs

2. Methodology

The study employed descriptive – causal research design. It was utilized as it was the most proper method to gather and analyze data to establish the effect of FinTech on the growth of the agricultural sector of MSMEs in Lipa City. Descriptive research was employed to gather data about the existing state of phenomena and to characterize “what exists” with respect to variables or conditions in a situation. A causal research on the other hand is about understanding a phenomenon in terms of conditional statements in the form “If X, then Y.” (MySHU, 2020). Thus, this study used both methods to collect data for detailed analysis and at the same time gain an understanding of the causal link between variables.

The targeted population for the study was the agricultural sector of MSMEs in Lipa City. From the Permits and Licensing Division of the local government unit, Lipa City has a total of 149 agricultural registered business enterprises. Under the sector, registered businesses include poultry and piggery farms, poultry supplies and enterprises, agri business center and others. The study also employed a total enumeration sampling procedure. The data used for the study was collected through structured questionnaires to the respondents. The questionnaire aimed to gather data regarding the background of the respondents. It asked for the general

information including gender, age group, educational attainment, and others. Aside from this, it aimed to gather information concerning both the independent and dependent variables such as mobile money, digital lending, online banking, and growth of MSMEs. A reliability test was conducted to determine the validity and reliability of the questionnaire. This revealed that mobile money had a Cronbach value of (.854), digital lending had a value of (.978) and online banking had a Cronbach value of (.966). Likert scale was used to collect data on the survey questionnaire. Specification of Questionnaire is presented in Table 1.

Table 1. Questionnaire Specification

Variable Type	Variable	No. of Questions
Independent	Mobile Money	7 questions
Independent	Digital lending	5 questions
Independent	Online banking	6 questions
Dependent	Growth of SMEs	5 questions

Descriptive and inferential statistics were employed in analyzing the collected data. The quantitative data were gathered through the questionnaire. Mean was used to describe the extent of use of Fintech, in terms of mobile money, digital lending and online banking as well as the growth of MSMEs. This was interpreted as presented in Table 2.

Table 2 Scale of Interpretation

Mean Ranges	Verbal Interpretation
	Extent of Use of Fintech (Mobile Money, Digital Lending, & Online Banking) and Growth of MSMEs
4.21-5.00	Very large extent
3.41-4.20	Large extent
2.61-3.40	Moderate
1.81-2.60	Little extent
1.00-1.80	Very little extent

On the one hand, multiple linear regression was used to determine the effect of Fintech, in terms of mobile money, digital lending and online banking on the growth of MSMEs. Standardized beta coefficients were used to identify the factor that has the greatest contribution to growth. On the other hand, simple regression was used to determine the effect of Fintech, as a whole, on the growth of MSMEs. A p-value of less than .05 indicates significant effect. All figures should be numbered with Arabic numerals (1,2,...n). All photographs, schemas, graphs and diagrams are to be referred to as figures. Line drawings should be good quality scans or true electronic output. Low-quality scans are not acceptable. Figures must be embedded into the text and not supplied separately. Lettering and symbols should be clearly defined either in the caption or in a legend provided as part of the figure. Figures should be placed at the top or bottom of a page wherever possible, as close as possible to the first reference to them in the paper.

3. Results and Discussion

This chapter presents the data collected from the survey questionnaire. In accordance with the study's objectives, data were interpreted, findings were analyzed, and conclusions were drawn.

The respondents were almost equally distributed between the two genders with male respondents at 50.9% and female at 49.1%. Coincidentally, the population in Lipa City in 2022 by gender is also estimated with 50.14% of male and 49.86% female. Accordingly, 70.5% of the respondents are operating micro- sized businesses, while 22.3% have an employee number ranging from 10-99 people with an asset size of Php3,000,000 - Php15,000,000 and are categorized under small business and the rest of 7.1% respondents are medium sized businesses. Most of the respondents fall under the age group of 31-40 years old which accounts for 42.9% of the total number. This shows the dominance of the middle-aged entrepreneurs. It was followed by the 21-30 years old age group at 30.4%, then 17% are 41-50 years old. Also, 5.4% of those who responded are below 20 years old while 4.5% are over 50 years old. As part of the study, they also indicated their level of education, and the survey shows that majority of them are college graduates with 75% of the total number of the business owners. 10.7% of the participants attained secondary education while 9.8% are with post graduate degree and only 4.5% of them finished the primary level. It can be inferred that those who have finished their degree in the university are more inclined in venturing to business whether for the main source of earnings or additional income stream. Part of the profile of the business also showed that 31.3% of the business are operating for about two to five years while 26.8% of the business have been in operation for more than 10 years. Businesses operating for six to ten years account for 23.2% of the total respondents and the rest have been operating for less than two years (18.8%). From the data gathered, the lowest number of businesses is attributed to the entities that are still in the start-up stage, while the rest have already navigated their way through agricultural business and continue to thrive in their venture. The study also asked for the annual turnover of the business, and it shows that 67.9% of the MSMEs made a turnover of below Php 1 million, while 21.4% at the range of between Php 1 Million to Php2 million. 6.3% of the business made a turnover between Php2 Million to Php 3 Million, 3.6% between Php3 million to Php4 million. 0.09% made a turnover between Php4 Million to Php5 million.

3.1 Mobile Money

The results of the survey clearly indicated that the respondents appear to have the same opinion when it comes to the use of mobile money in their business operations. Data shows that the respondents of the study agreed that they use their mobile wallets when placing orders to their suppliers ($M=3.89$, $SD=1.13$) and at the same time, when accepting payments from their customers ($M=3.81$; $SD=1.13$). It is evident that the use of mobile money has also prevailed in handling business transactions such that digital payments to suppliers took place also among the respondents. Not only do they engage with the clients through mobile money but also with their business colleagues as well ($M=3.79$, $SD=1.03$). E- money transactions also facilitate enhanced efficiency of conducting business among the business owners and this is even more justified as the participants expressed their relief of having too much cash on hand. These QR- code based payment technologies let its users speed up payment transactions and accelerate money transfers. The risk of theft and misappropriation of cash on hand also decreases when utilizing the mobile money applications. However, there are respondents in the study who do not fully adopt the use of mobile money as cash is used as much as mobile payments as indicated with a mean of 3.38 and standard deviation of 1.19.

According to Devanesan, (2022), inadequate knowledge about the options and benefits of cashless payments remains to be one of the obstacles in the mainstream acceptance of digital payments as many Filipinos still rely on cash in processing their daily transactions. Also, a study by Parlasca in 2022 believes that while mobile financial services is a promising tool in agricultural finance farmer still receive agricultural payments through cash. This holds true for the respondents who have mentioned that their business transactions are still heavily reliant on cash.

In relation to the results discussed above, the respondents were also asked to indicate the payment method they usually used in their business. Figure 3 shows the breakdown of the result. Majority of the respondents are using Gcash and this accounts for 55% of the total responses gathered. GCash is the household name for e-wallet in the country and allows its users to pay their bills, buy goods and services and also send and receive the money

no matter what the location is. This is followed by 39% of the participants in the study who stated that their usual mode of payment and means of transaction in their business transactions are still through cash.

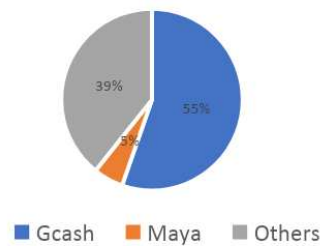


Figure 3. Payment Methods Usually Used by the Respondents in their Business.

3.2 Digital Lending

The researcher also tried to establish how the respondents access capital for their business and the findings are shown in the Figure 4. It can be inferred that a large number of the respondents, represented by 57% in total, do not incur debts through online platforms to obtain additional funding for their business needs and requirements. Meanwhile, the Gcash application might have raised awareness about the Gcredit hence 30% choose this method of loan acquisition without having the need to visit a physical bank. Other alternatives from the figure show Home Credit with 8% and Konek2Card application with another 4%. While information about the Tala App appears to be all over the internet, Lipeño business owners under agriculture might not have accessed borrowings in the said application yet.

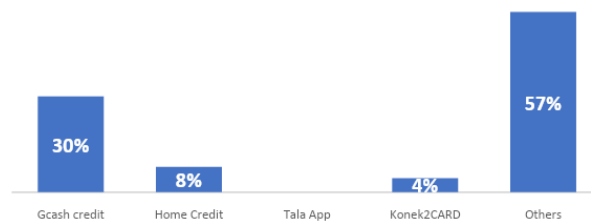


Figure 4. Lending Methods Usually Used by Respondents

The findings presented from Figure 4 is supported by the survey result which shows that the respondents moderately secured additional funding through online lending applications ($M=3.34$, $SD=1.18$) and were apprehensive about obtaining loans through online platforms ($M=3.27$, $SD=1.24$). While Mastropietro (2022) believes that online lending systems have the right set of circumstances to offer extensive advancement to MSMEs as it allows frictionless and easy process for -time busy MSMES, the finding of this study seem to negate this claim since from the results it can be inferred that digital lending moderately serve as a quick fix for their need of cash flow injection ($M=3.31$, $SD=1.22$). The number of unbanked in the Philippines in general is about 44% of the total adult population (BSP, 2022) and while digital lending presents a huge potential, the emergence of new financing options to MSMEs however relieves the respondents from the burden of having to open a bank account only to a considerable extent ($M=3.23$, $SD=1.22$), same with the help it brings to the business owners to economize and cut costs when dealing with their business proceedings ($M=3.29$, $SD=1.26$). Credit is an essential factor in agricultural development (Dacuycuy, 2022) however survey results imply that

borrowing money from digital lending applications is not yet a widely accepted practice among the business owners in Lipa City. Instead of availing credit from this fintech, respondents have mentioned that they make use of their personal cash and even credits from their relatives and from the banks.

3.3 Online banking

From the findings, it was found out that the respondents agreed that electronic banking allowed them to monitor their bank transactions ($M = 4.04$, $SD = 1.10$) and through their phone, they are able to access and check their account balance ($M = 4.08$; $SD = 1.11$). According to Meher, 2020, digital banking is the transformation of physical banking where people need to be at the bank premise to complete their bank transaction. With the evolution of banking, customers can now complete banking services with the presence of the internet. This holds true in the study as the respondents have spared themselves also from waiting in the long queue in the banks as they enjoy the convenience of doing direct deposit to their bank account ($M = 3.96$, $SD = 1.18$) through online banking. By doing so, the respondents have embraced the comfort that e-banking brings. Misappropriation of cash or even theft has been minimized as the participants in the study have expressed confidence in the adoption of innovative banking ($M = 3.68$, $SD = 1.25$) and they stated that they depend on e-banking in doing their business ($M = 3.48$, $SD = 1.31$). These are only few of the benefits the system offers, and the respondents of the survey have first-hand experience on these advantages. Consumer acceptance of online banking can also be attributed to ease of doing business, as well as cost and time saving as they find it convenient when dealing business transactions through online banking ($M = 3.82$, $SD = 1.17$). All items revealed that online banking is used by the respondents to a large extent.

3.4 Growth of MSMEs

The study also seeks to analyze the awareness of the agricultural business owners in terms of the effect of digitalization in the financial services. They were asked to point out their level of agreement in the areas mentioned in the study such as growth in sales, revenue and customer base. In a study conducted by Cambridge Centre for Alternative Finance (CCAF) and ADB in 2022, plenty of MSMEs disclosed the great deal of favors that they gained such as increased productivity, profits, revenue and customer base through the financial technology platform.

In this study, the respondents revealed in this research study that the digital capabilities of fintech are boosting the progress of the business in terms of sales ($M = 3.57$, $SD = 1.03$) and as well as customer expansion ($M = 3.61$, $SD = 1.07$) respectively.

Aside from growing the customer base and sales, the participants of this study have agreed that increase in sales revenue is also apparent in their business and they also have agreed that fintech innovations have proved to be more cost-effective ($M = 3.59$, $SD = 1.09$). Business owners under the sector were able to expand their market value and market share too ($M = 3.59$, $SD = .96$).

Fintech acts as a catalyst for growth and helps in reshaping how businesses carry out business dealings and transactions. This is in line with the study by Dai, (2020) that digital wallets, e-banking facilitate easier access to financial resources, expedite payments and expand market share. Likewise, the utilization of the technology has also revolutionized revenue records, helped generate fast sales and assisted in reducing expenses (Anifa, 2022). It helps agricultural business sustainability by enhancing finances (Al-Okaily, 2018).

3.5 Summary of descriptive statistics

Table 3 presents the descriptive statistics result. It shows that the respondents use their mobile devices in their business transactions profoundly, with a mean score of 3.63 and standard deviation of 0.75. It can be attributed to its dimensions which are mobile money with a mean score of 3.75, online banking of 3.82 which affirms the substantial adoption of these fintech methods by the respondents, and digital lending with a mean score of 3.29 where respondents seem to be conservative on the digital lending practices.

Table 3. Extent of Use of Fintech by Agricultural MSMEs in Lipa City

Variables	Mean	Std.Deviation	N
Mobile Money	3.75	0.76	112
Digital Lending	3.29	1.13	112
Online banking	3.82	1.12	112
Fintech – overall	3.63	0.76	112
Growth of MSMEs	3.59	0.96	112

Out of the initial number of 149 registered businesses under agriculture, 2% of the target businesses have ceased operations during the year. Also, during the data gathering, 23% of the business owners refused to participate in the study. Thus, only 75% of the respondents, which is 112 in number, were covered in the study.

3. 6 Effect of Mobile Money, Digital Lending and Online Banking on the Growth of Agricultural Sector of MSMEs

Results presented Table 4, it shows that mobile money, digital lending and online banking are statistically significant to the growth of the business with a p value of 0.008, 0.000 and of 0.000, respectively. This means that mobile and online banking have been a viable partner of the businesses in welcoming opportunities for their operational efficiency and substantial growth. Further, e-money transactions and other digital finance infrastructures can be considered as drivers of growth for MSMEs. Effect of the three financial technologies, mobile money, digital lending and online banking on business growth is positive with beta coefficients of .220, .323 and .409 respectively. This implies that the more the business uses these fintech, the more opportunity they have to grow and develop.

In summary, results show that 55.8% of business growth can be attributed to changes in financial technology ($R^2 = .558$, F-value= 45.534 and p value = .000).

Table 4. Effect of Mobile Money, Digital Lending and Online Banking on the Growth of Agricultural Sector of MSMEs in Lipa City

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.140	.324		.432	.666
Mobile Money	.281	.105	.220	2.685	.008*
Digital Lending	.276	.061	.323	4.544	.000*
Online Banking	.385	.073	.409	5.292	.000*

- a. Dependent Variable: Growth of Business
 b. $R^2 = .558$; Mean square = 19.192; F-value 45.534; p-value = .000
 c. *Significant

Correspondingly, Table 5 shows that fintech as a whole significantly affects the ability of the MSMEs to flourish and thrive as indicated by a beta coefficient of 0.948 with a p value of 0.000. This implies that the growth of agricultural business in Lipa is directly affected by the use of financial technology.

This supports the study in Kenya where it shows that smallholder farmers are freed up from the inconvenience of payment methods through fintech and that this digital transformation also enhances the productivity and profitability of business enterprises (Mapanje, O. 2023). This is aligned with the benefits brought by fintech to the agricultural sector such as transparency in supply chains through digital payment systems strengthening the digital financial services ecosystem. (Kihu, S. 2022). Tabetando (2022) in his study has also mentioned that there is an increase in the per capita farm income by entrepreneurs through diverting from the conventional business process and shifting towards the use of mobile payments. Also, these platforms help the sales of agricultural products through e-commerce which then affects the income (Song, 2022). Thus, integrating digitalization in the agricultural sector could give hope to entrepreneurs in sustaining the existence and further growth of business.

Table 5. Effect of Fintech as a whole on the Agricultural Growth of MSMEs in Lipa City

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1	(Constant)	.146	.301	.484	.629
	FintechOverall	.948	.081	.744	.000*

a. Dependent Variable: Growth of Business

b. R²=.553; Mean square =57.043, F-value =136.246; p value=.000

c. * Significant

4. Conclusion and Recommendations

The study concluded that FinTech has a significant effect on the growth of MSMEs under the agricultural industry in Lipa City. Looking at each predictor individually also reached the same conclusion. Mobile money, digital lending and online banking, each has a significant positive relationship to business improvement and development as well. Therefore, the study rejected both H₀₁ and H₀₂.

The following are the recommendations from this study based on the results and discussion and the conclusion above. The study has proven that the adoption of fintech in the operations of agricultural entities can stimulate growth. For business owners, this may serve as a basis for understanding the influence of the use of mobile money, digital lending and online banking in running a business particularly in the sector. The study also established that the respondents are using these platforms and now the aim is to encourage them to utilize them more for easier transactions. This will then help them to attract and retain customers and help their business thrive as they increase sales and revenue. Hence, the researcher wishes to connect the agricultural business owners in one digital marketplace where they can interact more and be provided with additional details about the use of fintech. Here, the researcher will work together with the identified key contacts from the pool of respondents and the Department of Agriculture (DA). The plan is to integrate videos and posts, success stories and other relevant uploads about these digital applications and how these have helped the growth of agricultural business. There is a specific theme for upload on a monthly basis, i.e., piggy, farming, etc. This is a venue which will empower the entrepreneurs to be limitless in going with the flow of the ever-changing business ecosystem. The digital marketplace aims to open more communication among the actors of the agricultural value chain while making them equipped with more facts and details about the benefits and risks of the use of digital wallets, online borrowings, and e-banking. Being open to changes and agile in the context of digital

finance can help reshape businesses and help them keep up in the ever-changing landscape of doing business. For the future researchers, this study may serve as a foundation and basis to which they can be more inspired to help the industry grow. As there are anticipated further improvements moving forward in terms of digital transformation, the researcher recommends that the study be carried out in the future and they may use this paper as a comparative study that can also provide helpful insights to the other sector as well, regarding mobile money, digital lending and online banking..

References

- Acopiado, I., Sarmineto, J., Romo, G., Acuña, T., Traje, A., & Wahing, G.(2022). Digital payment adoption during the COVID-19 Pandemic in the Philippines. *Philippine Journal of Science* Vol. 151 No. 3, 1185-1196.
- Al-Okaily, M. (2018). Sustainable FinTech Innovation Orientation: A Moderated Model. <https://www.mdpi.com/20711050/13/24/13591>.
- Anifa, M. (2022) Fintech Innovations in the Financial Service Industry. <https://doi.org/10.3390/jrfm15070287>.
- Bangko Sentral ng Pilipinas, (2021). 2021 Financial Inclusion Survey. <https://www.bsp.gov.ph/Inclusive%20Finance/Financial%20Inclusion%20Reports%20and%20Publications/2021/2021FISToplineReport.pdf>.
- B. K. Meher et al. (2021). The impact of digital banking on the growth of Micro, Small and Medium Enterprises (MSMEs) in India: A Case Study. *Business: Theory and Practice*, ISSN 1648-0627 / eISSN 1822-4202, 22(1): 18–28, <https://doi.org/10.3846/btp.2021.12856>.
- Briones, R.,(2021). Philippine agriculture: Current state, challenges and ways forward.
- Dai,R., (2020).Fintech as a catalyst for growth of micro, small and medium enterprises in Indonesia. *Academy of Strategic Management Journal* Print ISSN: 1544-1458; Online ISSN: 1939-6104, 26 (5).
- Dacuycuy,C. et.al., (2022) Sustainable value chain financing for smallholder agricultural production in the Philippines. *Philippine Journal of Development* Volume 46 (2022) Number 1. <https://think-asia.org/bitstream/handle/11540/14772/pidspjd46-2022-1b.pdf?sequence=1>.
- Demillo, G., (2022). Financial management system of small – scale agricultural industries: Basis for a training scheme. *Asian Journal of Economics, Business and Accounting*. 22(11): 44-64, 2022; Article no. AJEBA.86232 ISSN: 2456-639X
- Devanesan, J., (2022). Here's how fintech is modernising digital payments in the Philippines. <https://fintechnews.ph/57320/payments/heres-how-fintech-is-modernising-digital-payments-in-the-philippines/#:~:text=Some%20of%20the%20most%20popular,and%20wallet%2C%20Coins.ph>.
- DTI.(2021). <https://www.dti.gov.ph/resources/msme-statistics/>
- Feyen, E., Frost, J., Gambacorta, L., Natarajan, H., Saal, M. (2021).Fintech and the digital transformation of financial services:implications for market structure and public policy. *BIS Papers*.No 117.
- Kihu, S. 2022. 4 Ways the fintech industry is helping farmers. <https://www.fintechna.com/articles/4-ways-the-fintech-industry-is-helping-farmers/>.
- Latuheta, T.,Foenay, C., (2021). Analysis of the impact of e-payment on culinary business development in Kupang City. *Advances in Economics, Business and Management Research*. <https://doi.org/10.2991/aebmr.k.211124.092>.
- Lim, C.T.N. (2022). Innovation behavior of small and medium enterprises in the Philippines. *Economics and Business Quarterly Reviews*,5(3),1-7. DOI: 10.31014/aior.1992.05.03.430.
- Lin, S., Yu, Y., Wu, C., Wu, S.(2018). The effects of internet banking on financial performance: Evidence from East Asian Countries. *Journal of Accounting, Finance & Management Strategy*. Taipei, 13(1). 100-155
- Mapanje,O. 2023. Financing sustainable agriculture in Sub-Saharan Africa: A review of the role of financial technologies. <https://www.mdpi.com/2071-1050/15/5/4587>.
- Mastropietro,F. (2022).. Why digital lending is the future for banks and SMEs. https://www.ey.com/en_sy/financial-services-emeia/why-digital-lending-is-the-future-for-banks-and-smes.
- MySHU. Organizing Academic Research Papers: Types of Research Design. (2020). Retrieved from Sacred Heart University Library: <https://library.sacredheart.edu/c.php?g=29803&p=185902#s-lg-box-wrapper-626723>.
- Najib, M., Ermawati, W., Fahma, F., Endri, E., Suhartanto, D. (2021). FinTech in the small food business and its relation with open innovation. *J. Open Innov. Technol. Mark. Complex*. 2021, 7(1), 88; <https://doi.org/10.3390/joitmc7010088>.
- Ndung'U, N., (2020). Effect of Fintech on Growth of Small, and Medium Enterprises in Kiambu County, Kenya.
- Owoseni, A., Twinomurinzim,H., (2018). Mobile apps usage and dynamic capabilities: A structural equation model of SMEs in Lagos, Nigeria. *Telematics and Informatics*. Volume 35, Issue 7, Pages 2067-2081. <https://doi.org/10.1016/j.tele.2018.07.009>.
- Paloma, S., Riesgo, L., Louhichi, K. (2020). The role of smallholder farms in food and nutrition security.
- Parlasca,M.(2022). Use of mobile financial services among farmers in Africa: Insights from Kenya.
- Philippine Information Agency. (2021). FinTech key to farmers' access to financial services, supply chain efficiency. <https://www.searca.org/press/fintech-key-farmers-access-financial-services-supply-chain-efficiency>
- Pintea,M.O., (2020). The challenges of finance digitalization. *Managerial challenges of the contemporary society*, 13(1), Cluj-Napoca: Babes Bolyai University. 58-63.

- Sharma, N., & Thao, K. (2021). From cash to digital wage payments in the Philippines. Win-Win for Enterprises & Women Employees. https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_779514.pdf
- Thomas, L. (2022). Stratified Sampling | Definition, Guide & Examples. <https://www.scribbr.com/methodology/stratified-sampling/#:~:text=What%20is%20stratified%20sampling%3F,using%20another%20probability%20sampling%20method>
- Vera, D., Medranda, Y., Burbano, N., Garrigos, J., & Guerrero, K. (2022). Worldwide research on open innovation in SMEs. *J. Open Innov. Technol. Mark. Complex.* 8(1), 20; <https://doi.org/10.3390/joitmc8010020>.