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Borrower perceptions of additional lender services: an Oklahoma AgCredit example

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Abstract

Purpose – Customer retention and attraction are common concerns in the financial services industry but are acute concerns for farm credit associations, given competition from commercial banks. Not only do Farm Credit associations face restricted territories but also they have a considerably smaller borrowing population when compared to commercial banks. Oklahoma AgCredit, a Farm Credit association in east and central Oklahoma, is considering creating additional services to increase the number of business interactions they have with their member-borrowers. Their goal in adding services like crop and livestock insurance is to retain current customers and attract new borrowers. The purpose of this research is to assess current and prospective borrower responses to added services in terms of loan volume and insured crop acres and head of livestock. Survey results determine the change in expected loan volume from current customers and additional loan volume from previous and potential customers. The analysis finds that while little can be inferred regarding customer retention, additional services have a positive impact on customer attraction. Expected service utilization and coverage of common crop and livestock enterprises vary between customer subsamples, but all customer types indicated they would cover some level of livestock, forage, hay, wheat and sorghum. While a recommendation cannot be made based on this research, it does seem that expanding the services offered is a viable pursuit for an agricultural lender to improve customer attraction.

Design/methodology/approach – Three groups of current and potential borrowers were surveyed to assess their current loan activity with Oklahoma AgCredit. Respondents were asked about their likely loan volume if an internal crop and livestock insurance agency was offered by Oklahoma AgCredit and their likely use of the crop and livestock insurance agency. Using survey results, the expected change in loan volume due to the proposed insurance enterprise was calculated.

Findings – Results show no statistically significant difference in current borrower loan intentions. However, there were six current borrowers who also operate crop and livestock insurance agencies. These borrowers likely biased results downward. A slight increase in borrowing from potential customers was found. A high percentage of current and potential borrowers, 70–80%, were likely to use the insurance service.

Originality/value – The study measures the expected impact of additional services by an agricultural lender in attracting and retaining borrowers.

Keywords Customer retention, Farm Credit, Agricultural lending

Paper type Research paper

Introduction

Customer retention and attraction are common concerns in the financial service industry. In reference to the agricultural lending market, both Fernandez-Aguirre *et al.* (2003) and Roucan-Kane *et al.* (2010) contend that customer retention is less expensive than recruiting new customers. Customer retention is also critical for agricultural lenders due to the declining pool of potential borrowers (Roucan-Kane *et al.*, 2010). Further, Farm Credit associations face competition from commercial banks and, increasingly, nontraditional lenders (Tetteh *et al.*, 2021).

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One approach to customer retention is "bundling" services to increase contact points between customers and service providers (Knights *et al*., 1994). This effectively increases customers' cost of disentangling from a provider and search costs to find new providers. Oklahoma AgCredit is an example of a Farm Credit association considering diversifying its services to increase contact points with borrowers to better customer retention and attract new customers. Oklahoma AgCredit provides loans worth more than $1.8bn to approximately 6,538 member-borrowers (Oklahoma AgCredit, 2022). Their lending territory is limited to 60 counties in central and eastern Oklahoma, restricting their customer base (Zeka and Burk, 2022). Since the potential customer base is restricted, Oklahoma AgCredit is considering adding services for their borrowers, specifically an internal crop and livestock insurance agency. By adding more points of business interaction with their member-borrowers, they hope to retain current borrowers and attract new borrowers by adding the convenience of a "one-stop" experience for lending and crop/livestock insurance.

Literature on bundling services in agricultural finance appears to be limited, if not nonexistent. However, some previous studies investigated the agricultural lender customer retention issues. For example, Roucan-Kane *et al*. (2010) used cluster analysis to identify market segments in the agricultural sector. Their results suggest that market segmentation based on sales and size categories might not be the most effective means to attract and retain customers. In a survey of agricultural bankers, Moss *et al*. (1997) reported that relationships between loan officers and borrowers are more important than loan terms in retaining customers.

To investigate the impact of diversification of lender services on borrower retention and recruitment, we surveyed current and previous Oklahoma AgCredit borrowers. The survey included questions regarding borrowing intentions and the likelihood of utilizing an internal insurance agency (see appendix A for the full survey instrument). The survey was also distributed outside of Oklahoma AgCredit borrowers to reach potential customers with no previous borrowing history. Using survey results, we developed a model of the expected impact of an internal crop and livestock insurance agency on customer retention and the predicted additional loan volume from current, previous and potential customers. The survey included questions regarding the likelihood of customers using this service and the expected crop and livestock coverage volume.

Customer behavior in the finance industry is characterized by inertia brought on by a lack of interest in financial services, and it is reinforced by complex products (Knights *et al*., 1994). Knights *et al*. (1994) suggest that this indifference means that, despite poor customer service, customers are still reluctant to switch providers. How do financial lenders combat this inertia to retain current customers and attract new customers?

One strategy is product extras or additional services. Product extras create a total service system that provides customers with additional benefits related to what they initially purchased (Rosenberg and Czepiel, 1984). By creating a total consumption system, lenders attract new customers by offering benefits their current providers do not. By adding services, a financial lender increases points of contact with an existing customer, increasing reluctance to switch.

Another retainment strategy emphasizes long-term customer relationships (Rosenberg and Czepiel, 1984). The long-term relationship between customer and company is essential to firm financial profitability. The longer a customer stays with a lender, the more interest the institution accrues. Customers who remain with the firm are more likely to expand their relationships to other products and therefore are more likely to recommend the lender (Reichheld and Kenny, 1990). It is thought that this combination of added products and relationship-emphasizing strategies improves customer retention and attracts new customers.

Methodology

The survey instrument [1] was distributed to current and previous borrowers of Oklahoma AgCredit. A convenience sample of Oklahoma agricultural producers was obtained by

distributing a survey via email to Oklahoma AgCredit member-borrowers who opened an account between 2019 and 2022. The snowball method was used to obtain non-Oklahoma AgCredit borrower respondents. Snowball sampling is a nonprobability method of sampling that relies on referrals from initially surveyed respondents (Johnson, 2014). In this case, the survey was shared on several university-associated Facebook pages and reshared by the pages' followers. The survey link was shared in an Oklahoma State University Agricultural Communication Services press release published by several Oklahoma-based agriculture news websites, newsletters and other sources. Oklahoma State Extension educators also distributed the survey link following presentations and meetings. This survey aimed to gather basic financial information, producer expectations of future borrowing habits and anticipated utilization of a crop and livestock insurance agency internal to an agricultural lending agency. The survey was distributed from September 26th, 2022 to November 15th, 2022. Respondents under the age of 18 were dropped from the survey after the initial demographic questions. Respondents who indicated they were neither crop nor livestock producers were also dropped. Of the total 109 responses recorded, 92 were completed by an agricultural producer over age 18 who reported their production base as in an Oklahoma county.

Respondents were asked demographic questions, including age, county, producer type and their interactions with Oklahoma AgCredit. Table 1 summarizes the demographic response data.

Respondents were asked to provide their current outstanding agricultural loan balance, how likely they are to continue borrowing over the next three years and how much additional money they anticipate borrowing over the next three years. These questions were then repeated under the scenario of an internal crop and livestock insurance service available through Oklahoma AgCredit. Finally, respondents were asked how likely they were to utilize an internal crop and livestock insurance service. If the likelihood was nonzero, they were asked how many head or acres they would insure from a list of Oklahoma's most common livestock and crop enterprises.

Expected outcomes for two success measures are calculated for three different subsamples. The two measures of success are expected changes in loan volume and expected livestock and crop coverage. The three subsamples are (1) current customers or respondents with open accounts at Oklahoma AgCredit, (2) respondents who previously had loans but do not currently have loans with Oklahoma AgCredit and (3) respondents with no borrowing history with Oklahoma AgCredit. The expected change in the corresponding loan volume is calculated for these subsamples. Respondents were presented with two scenarios to gather data for these calculations. The baseline scenario is Oklahoma AgCredit's ex-ante status quo, and the counterfactual scenario is adding an internal crop and livestock insurance service.

The change in expected borrowing for current customers is calculated to evaluate the impact an added insurance service would have on customer retention. For each respondent, the expected change is calculated by multiplying the likelihood that a respondent would continue

Table 1. Respondent summary by borrower category

	Current borrowers	Previous borrowers	Potential borrowers	Total sample
Total respondents	48	14	30	92
Crop producers	5	4	3	12
Livestock producers	27	4	16	47
Crop and livestock producers	16	6	11	33
Average age (years)	50	60	50	53
Average outstanding loan volume	$ 459,761	$ 414,286	$ 185,300	$353,116

Source(s): Authors' own work

borrowing from Oklahoma AgCredit by how much additional money would be borrowed, given the counterfactual scenario, then summed for all responses. Then, the same was calculated given the baseline scenario and subtracted from the counterfactual value. This difference is then divided by the number of current customer respondents to obtain the average and multiplied by Oklahoma AgCredit's current borrower population to calculate the expected population-wide impact. In Equation (1), the expected change in borrowing for current customers was calculated as:

$$\text{Expected } \Delta \text{ Borrowing for Current Customers} = \left(\frac{\left(\sum_{j_{cc}} \left(Pr_{j_{cc}} * LoanVol_{j_{cc}} | Cf\right) - \sum_{j_{cc}} \left(Pr_{j_{cc}} * LoanVol_{j_{cc}} | Bl\right)\right)}{j_{cc}} \right) \times population \quad (1)$$

where j_{cc} is the number of current customer respondents, *population* is the number of active member-borrowers Oklahoma AgCredit serves as of December 2022, *Pr* is the likelihood the respondent will continue borrowing from Oklahoma AgCredit over the next three years, *LoanVol* is the amount the respondent anticipates borrowing over the next three years, *Cf* is the counterfactual scenario and *Bl* is the baseline scenario.

Current customers were asked the following survey questions to obtain these values.

(1) What is the likelihood you will continue borrowing from Oklahoma AgCredit over the next three years? (Multiple choice response from 0 to 100%.)

(2) If Oklahoma AgCredit adds a livestock and crop insurance service, what is the likelihood you will continue borrowing from Oklahoma AgCredit over the next three years? (Multiple choice response from 0 to 100%.)

(3) Over the next three years, how much total additional money do you expect to borrow from Oklahoma AgCredit? (Multiple choice response from $0 to $2,000,000+. See the appendix for all available answer choices.)

(4) If Oklahoma AgCredit adds a livestock and crop insurance service, how much total additional money do you expect to borrow from Oklahoma AgCredit over the next three years? (Multiple choice response from $0 to $2,000,000+. See Appendix for all available answer choices.)

Equations (2) and (3) (below) calculate the expected new loan volume per person from previous and potential borrowers to capture the impact on customer attraction. These volumes are estimated by first summing the amount of money a respondent would borrow given the counterfactual scenario and the amount given the baseline scenario. Then, the difference is found by subtracting the baseline from the counterfactual. Finally, the difference is divided by the number of respondents in the corresponding subsample. These volumes are reported per borrower, as the populations of previous and potential borrowers are unknown. The equations are written as follows.

$$\text{Expected New Loan Volume from Previous Borrowers} = \frac{\sum_{j_{pc}} \left(Expected\ New\ Borrowing_{j_{pc}} \middle| Cf - Expected\ New\ Borrowing_{j_{pc}} \middle| Bl \right)}{j_{pc}} \quad (2)$$

where the expected amount of new borrowing given the baseline scenario is subtracted from that of the counterfactual, and j_{pc} is the number of previous customer respondents. The information used in (2) was taken from survey questions 2.8 and 2.10 or:

(5) Over the next three years, how much total money do you expect to borrow from Oklahoma AgCredit? (Multiple choice response from $0 to $2,000,000+. See Appendix for all available answer choices.)

(6) If Oklahoma AgCredit adds a crop and livestock insurance service, how much total money do you expect to borrow from Oklahoma AgCredit over the next three years? (Multiple choice response from $0 to $2,000,000+. See Appendix for all available answer choices.)

$$\text{Expected New Loan Volume from Potential Borrowers} = \frac{\sum_{j_{nc}} \left(Expected\ New\ Borrowing_{j_{nc}} \middle| Cf - Expected\ New\ Borrowing_{j_{nc}} \middle| Bl \right)}{j_{nc}} \tag{3}$$

where the expected amount of new borrowing given the baseline scenario is subtracted from that of the counterfactual, and j_{nc} is the number of potential customer respondents. The information in (3) was taken from survey questions 2.8 and 2.10, as listed above.

Finally, expected service utilization and enterprise coverage are calculated to gauge respondent interest. The likelihood of service utilization is summed and divided by the number of respondents per subsample for each customer category. Expected service utilization by current customers is multiplied by Oklahoma AgCredit's total population to capture an overall effect. Previous and potential customer usage is reported on an average per-customer basis as their populations are unknown.

$$\text{Expected Service Utilization by Current Customers} = \left(\frac{\sum_{j_{cc}} Pr_{j_{cc}}}{j_{cc}} \right) \times population$$

$$\text{Expected Service Utilization by Previous Customers} = \left(\frac{\sum_{j_{pc}} Pr_{j_{pc}}}{j_{pc}} \right) \tag{4}$$

$$\text{Expected Service Utilization by Potential Customers} = \left(\frac{\sum_{j_{nc}} Pr_{j_{nc}}}{j_{nc}} \right)$$

where j_{cc}, j_{pc} and j_{nc} are the current, previous and potential respondent subsamples. *Population* is the number of active member-borrowers Oklahoma AgCredit serves as of December 2022. Pr_j is the likelihood a respondent will utilize an insurance service internal to Oklahoma AgCredit. These values come from survey question 2.9 or:

(7) What is the likelihood that you would insure your crops and/or livestock through Oklahoma AgCredit if they added an internal crop and livestock insurance service? (Multiple choice response from 0 to 100%.)

Equation (5) calculates the expected coverage of common livestock and crop enterprises in Oklahoma. Expected coverage is reported by subsample. For current customers, the average herd size indicated by responses is multiplied by the response probability or the ratio of responses per enterprise, given the total number of respondents. The expected coverage is multiplied by Oklahoma AgCredit's population to capture the overall impact. For previous and potential customer expected coverage, the indicated herd sizes are averaged and the probability of response is calculated; however, these numbers are not multiplied as there is no corresponding population data.

$$\begin{gathered}\text{Expected Head of Livestock Covered by Current Customers} \\ = (\textit{average herd} * \textit{probability of response} \times \textit{population}) \\ \text{Expected Acreage of Crop Enterprises Covered by Current Customers} \\ = (\textit{average acreage} * \textit{probability of response} \times \textit{population})\end{gathered} \tag{5}$$

Average herd or *acreage* is the average response of the head or acres covered per enterprise. *Probability of response* is the ratio of responses per enterprise, given the total number of survey responses. *Population* is the number of active member-borrowers. Oklahoma AgCredit serves as of December 2022. The data are taken from the following survey questions:

(8) What is the likelihood that you would insure your crops and/or livestock through Oklahoma AgCredit if they added an internal crop and livestock insurance service? (Multiple choice response from 0 to 100%.)

(9) How many head would you expect to insure through Oklahoma AgCredit if they were to add an internal crop and livestock insurance service? Stocker cattle, fed cattle, meat goats, dairy goats, sheep and others. (See appendix for herd and acreage answer choices.)

(10) How many head would you expect to insure through Oklahoma AgCredit if they were to add an internal crop and livestock insurance service? Swine, chickens/broilers. (See appendix for herd and acreage answer choices.)

(11) How many acres do you expect to insure if Oklahoma AgCredit adds an internal crop and livestock insurance service? Forage, hay, wheat, cotton, corn, soybeans, sorghum, peanuts, pecans, rye, canola, oats and others. (See appendix for herd and acreage answer choices.)

Confidence intervals are calculated for each equation and the degree of significance. For Equations (1) through (3), the standard error of differences formula was used, and confidence intervals were two-sided. The standard error was multiplied by the Student's t-score, corresponding to the appropriate subsample size and significance level. For Equation (4), confidence intervals were two-sided. Confidence intervals for Equation (5) were found using the Student's t-score at the highest significance level. One-sided positive confidence intervals restrict nonsensical negative herd or acreage amounts.

Results

This survey and subsequent analysis revealed that further data collection efforts are needed to accurately capture this additional service's impact. Table 2 summarizes the expected impact.

Only one result, expected new loan volume from potential customers, was significant with 95% confidence. It is important to note that while less than 95% significance is of concern to researchers, an investment steering committee may be interested in the results with lower levels of significance, dependent on the risk tolerance level of the firm. Therefore, the results in Table 2 are discussed at much lower significance levels than typically accepted. Current borrowers indicated they would borrow $57,958 less than anticipated if an insurance service

Table 2. Expected lending changes and degree of significance

	Average value	Standard error	Level of statistical significance	Confidence interval
Change in expected borrowing for current customers	−$378,931,583	$419,195,789	60%	(−$735,667,199, −$22,195,967)
Expected new loan volume from previous customers	$3,143	$40,404	n/a	
Expected new loan volume from potential customers	$45,655	$22,106	95%	($381, $90,929)
Expected service utilization by current customers	42.71%	34.81%	70%	(6.16%, 79.26%)
Expected service utilization by previous customers	40%	25.42%	80%	(5.68%, 74.32%)
Expected service utilization by potential customers	38%	30.78%	70%	(5.49%, 70.51%)

Source(s): Authors' own work

was added. Across the entire population, Oklahoma AgCredit could expect to see a total loss in current loan volume of $378,931,583. However, the confidence interval for Equation (1) indicated that this result was statistically significant with 60% confidence. This decrease may result from a flaw in the survey design, discussed further in implications. However, some current borrowers own independent crop and livestock insurance businesses. According to Zeka (2023), Oklahoma AgCredit has received negative feedback from six borrowers who are not supportive of their agricultural lender potentially competing with their businesses. It is possible that the survey picked up this concern, even if it is not statistically significant. To address this concern, we identified six current customer responses in which a borrower indicated they would stop borrowing from Oklahoma AgCredit if an insurance service were added. Equation (1) was calculated again, omitting these six responses. The change in expected customer borrowing was then positive, increasing to $5,631 per borrower or a $36,815,167 increase across the entire population. While Oklahoma AgCredit cannot ignore the potential loss in loan volume, the revised calculation does provide a plausible explanation for the negative result.

Previous borrowers or the respondents who had borrowed from Oklahoma AgCredit in the past but do not currently, indicated they would bring a new loan volume of approximately $3,143 per borrower with an added insurance service. This result is not statistically significant, even at the 50% level. However, new loan volume from potential customers was statistically significant with 95% confidence. Potential borrower respondents indicated they would borrow an average of $45,655 if an insurance service were added.

Of current borrowers, 43% indicated they would utilize an insurance service internal to Oklahoma AgCredit. Similarly, 40% of previous borrowers and 38% of potential borrowers said they would likely utilize an insurance service internal to Oklahoma Ag Credit, with 70–80% confidence.

Tables 3-8 report the livestock and crop enterprises survey respondents indicated respondents would most likely insure. Current customers indicated they would insure stocker cattle, fed cattle, swine and meat goats. The expected coverage ranged from 75 to 85% confidence. Oklahoma AgCredit could expect their current borrowers to have a 32%

Table 3. Expected livestock coverage by current customers

	Average probability	Average herd (head)	Expected coverage (head)	Standard error of expected coverage	Confidence	Confidence interval for expected coverage
Stockers	32.08%	90	153,501	138,527	85%	(8,048, 298,954)
Fed cattle	25.83%	81	120,456	173,617	75%	(2,223, 238,689)
Swine	4.79%	50	10,660	10,660	80%	(1,588, 19,731)
Meat goats	4.79%	38	10,660	13,614	75%	(1,389, 19,931)

Source(s): Authors' own work

likelihood of insuring approximately 153,500 head of stocker cattle, an average of 90 head per borrower. Similarly, they could expect 23% of their current borrower population to have a 26% likelihood of insuring 120,450 fed cattle, an average of 81 head per borrower. Swine and meat goat producers only had a 4.35 and 3.26% response rate, respectively. Oklahoma AgCredit could expect their current borrowers to insure approximately 10,600 head of each enterprise.

Table 4 reports the expected coverage of common crop enterprises that current customers indicated they would insure. The four crops with the highest expected coverage are forage, hay, wheat, and sorghum. About 24% of current borrowers indicated they would insure an average of 385 acres of forage per borrower, 601,200 acres in total. Similarly, 21% of borrowers would insure an average of 223 acres of hay per borrower. Current borrowers indicated they would insure an average of 436 acres of wheat each and 375 acres of sorghum. While soybeans and corn had high expected coverages, only 3.26% of respondents expressed interest in insuring these crops through Oklahoma AgCredit. The expected coverage for oats was not statistically significant, and rye was excluded due to few positive responses.

Table 5 shows the expected coverage of livestock enterprises for previous customers. The expected coverage is the average per borrower, as the population is unknown. Oklahoma AgCredit could expect that in addition to borrowing $3,000 per person, a previous customer returning would also insure stocker cattle, fed cattle and poultry. About 3% of previous respondents indicated there was a 12% likelihood they would insure an average of 192 stocker cattle and a 9% chance they would insure 55 fed cattle. About 2% of respondents said there was an 8% likelihood they would insure a flock of 175 chickens. Results were significant with 80% confidence.

Table 4. Expected crop coverage by current customers

	Average probability	Average acreage	Expected coverage	Standard error of expected coverage	Confidence	Confidence interval for expected coverage
Forage	26.88%	385	601,212	839,508	75%	(29,507, 1,172,916)
Hay	24.17%	223	301,317	408,765	75%	(22,948, 579,685)
Wheat	14.38%	436	309,844	451,291	75%	(2,515, 617,173)
Sorghum	5.83%	375	106,598	154,203	75%	(1,585, 211,610)
Pecans	5.63%	28	9,949	12,391	75%	(1,511, 18,387)
Soybeans	4.17%	693	147,816	125,976	85%	(15,541, 280,090)
Oats	3.96%	70	9,949	18,477	n/a	
Corn	2.29%	393	83,857	88,544	80%	(8,506, 159,208)

Source(s): Authors' own work

Table 5. Expected livestock coverage by previous customers

	Average probability	Average herd	Probability of response	Standard error	Confidence	Confidence interval
Stockers	12.14%	192	3.26%	188	80%	(24, 352)
Fed cattle	9.29%	55	3.26%	55	80%	(7, 104)
Poultry	7.86%	175	2.17%	135	80%	(18, 252)

Source(s): Authors' own work

Table 6 shows previous customer respondents' expected coverage of common crop enterprises. The four most covered crops were the same as those indicated by current customers. However, previous customers reported a lower probability of usage with higher average acreages. Forage had the highest coverage, with respondents indicating an 18% likelihood they would insure an average of 472 acres. However, only 5% of previous borrowers indicated they would insure forage, compared to 23% of current borrower respondents.

Table 7 shows expected livestock coverage for potential customers. Similarly to current and previous customers, potential customers indicated they would insure stocker and fed cattle, and they also indicated they would insure more swine than current customers at a higher likelihood, 8% than 5%. However, the response rate was lower than current customers for all three livestock enterprises.

Finally, Table 8 displays the crop enterprises most likely insured by potential customers. Potential customers indicated they would insure the same four crops as current and previous borrowers. While more likely to insure forage and hay than previous customers, the average acreage is lower for all four crops when compared to expected coverage for current and previous customers.

Table 6. Expected crop coverage by previous customers

	Average probability	Average acreage	Probability of response	Standard error	Confidence	Confidence interval
Forage	17.86%	472	5.43%	454	80%	(59, 849)
Hay	17.86%	248	5.43%	243	80%	(32, 455)
Wheat	12.86%	507	3.26%	757	80%	(98, 1,415)
Sorghum	11.43%	173	3.26%	204	80%	(26, 381)
Cotton	8.57%	580	2.17%	1,032	80%	(134, 1,931)

Source(s): Authors' own work

Table 7. Expected livestock coverage by potential customers

	Average probability	Average herd	Probability of response	Standard error	Confidence	Confidence interval
Stockers	21.67%	99	11.96%	115	80%	(1, 197)
Fed cattle	11.33%	62	6.52%	62	80%	(8, 115)
Swine	7.86%	175	2.17%	135	80%	(18, 252)

Source(s): Authors' own work

Table 8. Expected crop coverage by potential customers

	Average probability	Average acreage	Probability of response	Standard error	Confidence	Confidence interval
Forage	19.67%	244	11.96%	374	n.a	
Hay	19.33%	182	10.87%	255	75%	(8, 356)
Wheat	4.67%	180	3.26%	281	n.a	
Sorghum	3%	160	2.17%	204	75%	(21, 299)

Source(s): Authors' own work

Discussion and conclusions

Given the high cost of recruiting new borrowers relative to retaining existing borrowers, the declining farm population and competition for commercial banks and nontraditional lenders, retention of current agricultural borrowers is critical to the success of Farm Credit Associations. Here we analyzed the impact of adding an internal crop/livestock insurance agency to the services offered by Oklahoma AgCredit. Current and past customers were surveyed to elicit their potential changes in future lending and use of an in-house crop insurance agency. To reach new customers potentially attracted by the added service, a snowball survey was utilized.

As previously mentioned, there is bias in the data. According to Zeka (2023), Oklahoma AgCredit received six calls from current borrowers who were opposed to Oklahoma AgCredit adding an internal insurance service. These six customers own crop and livestock insurance firms. Obviously, these customers responded negatively to the survey, indicating they would wholly or drastically reduce their expected loan volume in response to an added insurance service. Further inspection of the responses shows six current customers indicated they would borrow zero dollars from Oklahoma AgCredit under the counterfactual scenario. The lost volumes were considerable amounts, totaling over $3 m in current outstanding debt. These six borrowers are about 12.5% of the current customer respondents but do not likely represent 12.5% of Oklahoma AgCredit's customer base. So, the negative impact on expected loan volume by current customers is likely disproportionately weighted within the sample. This phenomenon is further supported by the fact that the change in expected loan volume for current customers was positive when these six respondents were removed. However, the expected change for current customers is the smallest amount of all three subgroups of respondents. In short, Oklahoma AgCredit needs to carefully consider the impact of an added agricultural insurance service on net loan volume changes given the loss of over $3 m from just six current customers. It is possible, maybe even likely, that these six customers are overstating their current loan volume with Oklahoma AgCredit to strategically discourage the entrance of competition for a finite pool of crop and livestock insurance customers.

Regardless of sampling issues, some inferences can be drawn regarding customer attraction. In many cases, loan volume is expected to increase with 80% confidence, indicating that new customers could be drawn with additional service for borrowers, such as internal crop and livestock insurance. The added customers and loan volume must be weighed against some lost borrowers and the cost of an internal crop and livestock enterprise.

While generalizing from these results to other Farm Credit associations is not possible, there are reasons to expect that an in-house crop/livestock insurance agency will benefit Oklahoma AgCredit. Current borrowers, past borrowers and potential borrowers have a non-zero probability of utilizing the in-house agency. Tables 3 and 4 show that current customers expect to insure nearly 300,000 head of livestock and over 1.5 m acres. So, the agency would generate significant revenue from commissions [2]. Further, a non-zero percent of previous customers and potential customers indicated they would utilize an in-house agency. Table 2 shows the in-house agency would generate new loan volume from past and potential customers.

There is a reason to be hesitant too. The impact on loan volume from current customers has a negative, albeit insignificant, expected value. As noted above, this is likely due to six current customers with their own crop/livestock agencies. Their responses demonstrate their rejection of doing business with a lender who is also a competitor.

This preliminary analysis serves as a starting point for further evaluation and analysis. The natural next step is to evaluate the potential costs from the viewpoint of the crop insurance agency. Unfortunately, data were not available to evaluate the combination of retained customers and increased loan volume required to break even on the internal crop and livestock insurance agency. This analysis may serve as a starting point, proving an interest for both current and potential customers that can be used in more complicated analysis incorporating agent incentives and commission schemes.

Using this study as a starting point, future research can address challenges that come from determining compensation for crop insurance agents. Agent compensation depends on the total premiums transferred to insurance companies, with commission rates influenced by the actuarial performance of the policies. Thus, agents are motivated to maximize premiums (volume incentive) and optimize actuarial performance (quality incentive) (Delay *et al*., 2020) While we asked about the number of acres and head of animals that would be insured, we did not collect information on the type of policy (e.g. yield protection or revenue protection) and the level of coverage on each enterprise by the respondents. Although we cannot provide a first cut at the level of expected compensation and thus breakeven calculations, this could be a contribution of future research. Sensitivity analysis surrounding this type of question is incredibly important due to differences between states regarding crop and livestock mix as well as clientele preferences. In the financial services industry, retaining customers is a common priority, as it is more cost-effective than acquiring new ones. For agricultural lenders, customer retention is especially important due to a shrinking pool of potential borrowers. Additionally, Farm Credit associations face growing competition from commercial banks and nontraditional lenders, which makes this research timely and further extensions of this analysis an important contribution.

Notes

1. The survey received approval from the Oklahoma State University Institutional Review Board, IRB-22–324.
2. The expected amount of the commissions cannot be calculated from the survey data. Additional information is needed on the level of coverage elected, the insurance products utilized and the actuary performance of the insurance contracts.

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Supplementary material

The supplementary material for this article can be found online.

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