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Willingness to Pay for Information Programs about E-Commerce: Results from a Convenience Sample of Rural Louisiana Businesses

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The probability of a business paying various amounts of money for an e-commerce presence ultimately depends on demographic features, experiences with e-commerce from a buyer's and seller's perspective, technological expertise, and knowledge of e-commerce opportunities and limitations. Estimating functions to assign probabilities associated with the willingness to pay for an e-commerce presence will assist in forecasting regional likelihood of certain profiles paying various monetary amounts for an e-commerce presence. In addition, if services are provided at no cost by a third party, value to a society will be maximized by selecting profiles with the highest willingness to pay.

Key Words: e-commerce, internet, rural businesses, technology, willingness to pay

JEL Classifications: A14, C25, D21, O13, O14, O33, Q16

An ongoing U.S. Department of Agriculture (USDA) Fund for Rural America, Rural Community Innovation project, called the Delta E-commerce Connection (DECC), is creating diversified economic opportunities over a 4-year period for small agricultural and other rural businesses in the Lower Mississippi Delta by assisting in e-commerce business development. The project offers seminars featuring a set of three educational training modules that relate e-commerce to rural entrepreneurs in a practical fashion. In addition, technical support in website development, developing an Internet marketing strategy, electronic retailing services, and space on a secure server are provided to selected rural businesses for a period of 1 year. Businesses retaining websites after this time assume responsibility for maintaining and funding their site. During the DECC seminars, the cost structure of e-commerce has always been a topic of great interest for participants. Due to the lack of information and understanding about businesses' willingness to pay for e-commerce products in rural areas, a survey was developed to gauge the value participants placed on the new opportunity. Specific objectives were to determine what representative businesses from rural Lou-

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isiana would pay for a seminar offering information about e-commerce, and a bundle of goods, including technical assistance for building an e-commerce website, and tutoring in the technical skills used to develop and maintain their own website. Elasticities and marginal effects associated with respondent's willingness to pay were measured as well.

Background

Increased Internet use has drastically altered the way business is conducted. Current Internet use is 186 million users in the United States and 945 million worldwide. In the year 2007, projections for U.S. and worldwide Internet use are 230 million and 1,466 million people, respectively (eTForecasts.com). The United States once had almost 90% of worldwide users in the mid-1980s; however, the percentage of users has continued to drop through time, with approximately 20% of users in 2004. There are many forces adding to the growth of the Internet in other countries, as well as the United States, including web cellular phones, prepaid Internet access cards, broadband Internet connection, wireless Internet access, e-commerce for mobile devices (M-commerce), Internet cafes in developing countries, declining Internet service provider rates, bundled services, web appliances and interactive web TV, among others (eTForecasts.com).

E-commerce sales are approximately 1.9% of total retail sales (U.S. Department of Commerce), with the greatest revenue stemming from computer hardware, furniture, software, books, music, videos, office supplies, food/beverages, and airlines tickets (Abate and Moser). According to the Nelsen-Net ratings, who conduct analysis and measurement on Internet audiences, the average American spends 80 minutes on-line at work and 26 minutes on-line at home daily, both spending approximately 1 minute per web page (Neilsen-NetRatings.com). This is not much time for a business to convince a consumer to make a purchase, much less, allow them to conduct the transaction. E-commerce requires a different approach as compared with the traditional brick and mortar business with respect to sales.

E-commerce provides an excellent opportunity for many smaller businesses. Entry costs into the marketplace are lowered, allowing businesses to compete on an international forum (Dutta and Evrard; Poone and Swatman; Webb and Sayer). Many new electronic businesses have developed because of this potential (Motiwall and Khan). Successful businesses have several features in common. They respond to website features that most consumers prefer, such as stock availability, privacy, customer service, order-tracking capabilities, and providing detailed product information (Post et al.). However, three of every four on-line businesses fail in the first 2 years, indicating a need to develop and administer a strategic business model tailored to an e-commerce platform (Paper et al.). In rural economies, this failure rate is even higher and it becomes necessary to determine what e-commerce products, educational information, and services are worth to these smaller companies (Small Business Administration [SBA]). Recent studies have explored consumer willingness to pay for Internet services, but not the sellers' willingness to pay for e-commerce services (Blefari-Melazzi et al.; Chellappa and Shivendu; Jiang; Lee et al.; Sultan; Suri et al.). There is a lack of information and understanding about what small businesses, particularly rural businesses, would be willing to pay for this opportunity to overcome geographic handicaps and compete with larger companies.

There have been several studies that have investigated e-commerce from the sellers' perspective (Kinsey 2000a,b; Salin). However, these studies did not examine the relationship between a business and their need for technological information on how to use e-commerce. Instead, they explored the relationship between the retailer and vender, or processor, manufacturer, and retailer (Kinsey 2000a,b). Others focused on supply-chain management (Salin). This research complements existing studies because it attempts to determine how much the technology is worth to rural businesses attending the educational seminar.

Research in agricultural e-commerce is

largely optimistic. Leroux, Wortman, and Mathias state that e-commerce benefits the agricultural industry through market transparency, price discovery, industry coordination, and the reduction of transaction costs. They emphasize the advantages for smaller businesses as opposed to the larger brick-and-mortar companies. For instance, larger companies are more sensitive to information technology (IT) investment, internal conflicts, and lack of willingness at the upper management level (Leroux et al.). This creates opportunities for small or rural-based businesses creating on-line presences. Dolan and Moon explain how various agribusiness sites provide product information, competitive prices, new customers, and the reduction of risk. These sites include DirectAg.com, XsAg.com, e-markets.com, Agribuys.com, and CyberCrop.com. Leroux, Wortman, and Mathias examine the complexities that agricultural products have with respect to e-commerce adoption. The pricing structure of agricultural products can be overwhelming. The example they cite is a product like No. 2 Yellow Corn, which has changing prices and quality considerations that would require extensive search engines and database management. These complexities may slow down agricultural adoption of e-commerce (Leroux et al.). A study by Moss also addresses the slower adoption of e-commerce in agriculture due to the relationship-oriented nature of the industry. Many transactions are settled one on one in agriculture and social capital often outranks economic goals in decision making (Leroux et al.). Henderson, Dooley, and Akridge also indicate that the key to successful adoption of e-commerce in agricultural lies in the ability of producers to build personal relationships on-line.

Abate and Moser state that agriculture has potential in e-commerce in cutting down supply costs. They explain how businesses can auction off surplus supplies and equipment and use auctions to request bids. Problems stem from businesses identifying products inappropriate for e-commerce. For example, bulky perishable products might not be appropriate. However, the true value in agriculture for e-commerce is in the value-added products (Abate and Moser).

Studies have also been conducted to determine characteristics of businesses with e-commerce as their business strategy. Results indicated that the larger the size and scope of the agribusiness, the more likely they would adopt e-commerce (Henderson et al.; McFarlane et al.). These studies also found that firms selling inputs, such as seed or feed, or those selling consulting or financial services were more likely to adopt e-commerce as opposed to those selling equipment.

Mueller examined e-commerce in agriculture and found that it consisted mostly of business-to-business transactions. However, only 28% of farmers with Internet access purchase products on-line and even fewer sell their products on-line. In a careful examination of agricultural websites, Mueller found that the wine industry emerged as one of the best for maintaining an e-commerce business model. Mueller also addressed the lack of information richness of most agricultural sites in that many are nothing more than a business card on-line with few sites having payment options. Mueller also notes that an additional complexity for agricultural-based businesses is that there is a gap between the sales negotiation and the delivery of the products, leading to potential reneging from either the buyer or seller.

Materials and Methods

A survey was conducted of businesses participating in a DECC seminar, as those businesses are known to have been exposed to educational material concerning e-commerce. The survey instrument examined whether or not participants would be willing to pay for a bundle of packages including a workshop to introduce e-commerce terminologies, advantages of e-commerce, how to market products, how to design a website, and how to maintain a website after it is built. Six choices were randomly assigned to participants with few very low and very high offers. The bulk of the offers were in the middle of the price range in order to minimize the potential for a thick tail in the distribution beyond the highest offer

(Loomis). The choices started at $1,000 and increased in $1,000 increments up to $6,000 (*Amount* variable). The level of technology was assessed with the following options for the participant: no access to the Internet or e-mail; access to Internet and e-mail, but no website; business has an informational website; business has an interactive website; or business has a transactional website (*Experience* variable). Participants were asked if they were aware of the potential of e-commerce before attending a seminar and their perceived level of difficulty for developing an e-commerce presence (*Aware* variable). Choices included impossible, very difficult, somewhat difficult, fairly easy, and very easy (*Difficulty* variable). Demographic information, such as gender, age, place of residence, and occupation were gathered (*Gender, Age, Place,* and *Job* variables). Income, annual sales, and annual profit were also included in the survey to determine if these influenced the willingness of a business to pay for specific e-commerce services (*Income, Sales,* and *Profit* variables).

The survey was administered through the mail according to the tailored design methods (Dillman). Contact was first made by mail and e-mail in the form of a prenotice letter. The prenotice letter was sent a few days prior to the survey, indicating the importance of responding. A cover letter and survey were then sent with a stamped, self-addressed return envelope, followed 1 week later by a postcard thanking respondents and urging nonrespondents to fill out and return the survey. A replacement survey was sent to those not responding to the survey several weeks later. One hundred and ninety two surveys were sent out, with 126 returned (65.6% response rate). Ninety-three surveys were filled out completely and deemed usable for the study. Participants were allowed to return blank surveys if they did not want to fill it out or be contacted any further.

The dichotomous choice logit contingent valuation method was used to evaluate willingness to pay using maximum likelihood estimation. Loomis suggests this method to be most appropriate when utilizing mail survey data. Alternative methods, such as the open-ended approach, allow the participant to name their own price. However, this is not the way individuals operate in a market. Instead, the market price is given and the consumer makes a decision to purchase or not based on the stated price. Another alternative, the iterative bidding process, results in social desirability bias where the consumer will overestimate their willingness to pay to please the interviewer. This method can also be influenced by the price the interviewer starts with (starting point effects), which can influence the final willingness to pay (Loomis). However, the range of prices must be correct, as the maximum willingness to pay is inferred with the aid of the logit dichotomous choice model.

The logit model is based on the cumulative logistic probability function, which allows all predictions to lie on the 0–1 interval. The model is specified in Equation (1) as

$$(1)\quad E(Y_i) = P_i = CPF(Z_i) = CPF(\alpha + \beta X_i) = \left(\frac{1}{1 + e^{-Z_i}}\right) = \left[\frac{1}{1 + e^{-(\alpha+\beta X_i)}}\right],$$

where Y_i is the linear probability model equal to $\alpha + \beta X_i + \varepsilon_i$, P_i is the probability of bid acceptance (Prob($Y_i = 1$)), CPF is the cumulative probability function, *CPF* is a vector of parameters, and X_i is a matrix of observations. The log-likelihood function to be maximized is specified in Equation (2) as

$$(2)\quad \text{Log } L = \sum_{i=1}^{n} Y_i \text{Ln}(P_i) + \sum_{i=1}^{n} (1 - Y_i)\text{Ln}(1 - P_i).$$

The log-likelihood function is maximized by differentiating the log L with respect to α and β, setting them equal to zero and solving the equations. The equations are consistent and efficient asymptotically (Pindyck and Rubinfeld).

Elasticity measures also report meaningful information concerning the changes in the probability of success when an explanatory variable changes. However, when there are many observations, the average is often used

as a summary measure. There is no guarantee that the logit function will pass through the summary measure. Therefore, evaluating every observation with predicted probabilities as weights for the observations can address this limitation (Shazam on-line). The elasticities were calculated in Equation (3) according to the following specifications for the kth coefficient:

$$(3) \quad E_{ki} = \left(\frac{\partial \hat{P}_i}{\partial X_{ki}}\right)\left(\frac{X_{ki}}{\hat{P}_i}\right),$$

while the weighted aggregate elasticity is specified in Equation (4) as

$$(4) \quad \bar{E}_k^W = \frac{\sum_{i=1}^{n} \hat{P}_i E_{ki}}{\sum_{i=1}^{n} \hat{P}_i}.$$

Marginal utility coefficients allow for the change in an independent variable to reflect on the utility index. The logit model marginal effects are specified in Equation (5) as

$$(5) \quad \frac{\partial \hat{P}_i}{\partial X_{ki}} = \frac{\hat{\beta}_k \exp(-X_i'\hat{\beta})}{[1 + \exp(-X_i'\hat{\beta})^2]}.$$

The chi-square test statistic is $\chi^2 = -2[\ln(L_{\text{unrestricted}} - L_{\text{restricted}})$, with the degrees of freedom equal to the number of slope coefficients. The null hypothesis is that all slope coefficients are equal to zero, where the sign of the coefficient indicates the direction of the effect of the variable on the probability of bid acceptance (Shazam on-line).

Results

The estimated equation is shown in Equation (6).

$$(6) \quad \text{Log}\left(\frac{\text{Pr Yes}}{1 - \text{Pr Yes}}\right) = \underset{(-0.40732)}{-1.0467} \underset{(-2.43270)}{- 0.00068\textit{Amount}} + \underset{(2.10300)}{0.79803\textit{Experience}} + \underset{(0.21866)}{0.21380\textit{Aware}} \underset{(-0.55594)}{- 0.29750\textit{Difficulty}} + \underset{(0.12220)}{0.07868\textit{Gender}} + \underset{(0.65475)}{0.20332\textit{Age}} + \underset{(0.19841)}{0.05877\textit{Place}} \underset{(-0.13118)}{- 0.09372\textit{Job}} + \underset{(0.34816)}{0.08640\textit{Income}} \underset{(-2.0774)}{- 0.60582\textit{Sales}} + \underset{(0.37873)}{0.11737\textit{Profit}}.$$

The logit model coefficient signs estimated by maximum likelihood give the direction of the effect of the change in the explanatory variable on the probability of bid acceptance. The variable *Amount* had a negative sign, indicating that the larger the bid amount, the smaller the probability of bid acceptance. Other negative coefficient signs included the variables *Difficulty, Job,* and *Sales. Difficulty* was a variable that measured the perceived level of difficulty participants had for developing an e-commerce presence. Therefore, the more difficult the business perceived e-commerce to be, the less likely the participant would accept the bid. A business that perceives e-commerce as difficult may find it hard to justify investing, as the probability of success decreases the harder the task appears. The *Job* variable was divided into blue- and white-collar occupations. Blue-collar occupations were defined as a job consisting of largely manual labor, while white-collar jobs were considered professional occupations. The study measured the business owner's current type of occupation while considering an e-commerce presence. White-collar workers were less likely to accept the proposed bid. This might be due to the training that most white-collar business owners either currently have or the access they possess with respect to e-commerce and Internet technology. Therefore, they would not be willing to pay as high of a price as those with less access. The *Sales* variable represented annual sales. Businesses with higher sales had a lower probability of bid acceptance. This might be explained by the participating businesses being skeptical that e-commerce would significantly increase their sales.

The remaining variables coefficient signs were positive, including *Experience, Aware,*

Table 1. Weighted Aggregate Elasticities and Marginal Effect of Logit Model Variables

Variable	Weighted Aggregate Elasticity	Marginal Effect
Amount	−1.12170	−0.00005
Experience	1.57870	0.05367
Aware	—	0.001437
Difficulty	−0.59964	−0.02001
Gender	—	0.00529
Age	0.53240	0.01367
Place	0.11371	0.00395
Job	—	−0.00630
Income	0.16303	0.00581
Sales	−1.1868	−0.04075
Profit	0.18734	0.00789

Gender, Age, Place, Income, and *Profit.* The *Experience* variable measured on a continuum the current level of technology for the business, including the following categories: no access to the Internet or e-mail (level 0); access to Internet and e-mail, but no website (level 1); informational website (level 2); interactive website (level 3); and transactional website (level 4). The more experience the business had with technology, the higher the probability of bid acceptance. This is probably because respondents with the most experience with technology have more information on prices and values for various technology-oriented items. Also, the more technically savvy a participating business is, the easier it is to continue to keep up-to-date with technologies. Therefore, the value to these businesses is greater, as they will be able to not only set up an e-commerce presence but maintain and improve it through time.

A dichotomous question concerning the businesses awareness (*Aware* variable) of the potential of e-commerce indicated that businesses more aware of the potential of e-commerce were more likely to accept the proposed bid. A business must be able to realize the benefits to match it with the associated costs, which ultimately determine the value to a business. The *Gender* variable was also a 0/1 variable, with 1 representing males. The positive sign indicates that, if the business was headed by a male, the probability of bid acceptance would increase. The *Age* variable indicates that the older the business owner, the higher the probability of bid acceptance. An older business owner likely has greater equity and can invest in e-commerce easier than business owners still getting established. This is somewhat of a paradox in that younger people typically are more receptive of technology than older people but are not necessarily more willing to pay. Younger owners may be more receptive, but less willing or able to pay. One might suspect this trend will change as time

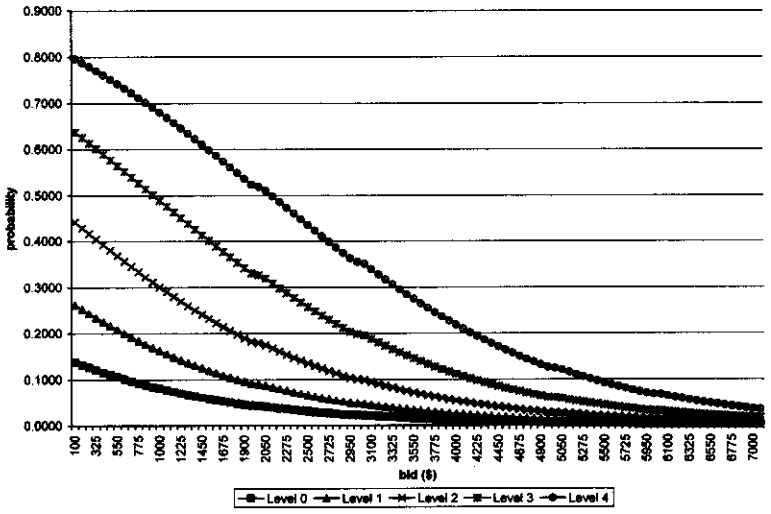

Figure 1. Probability of Bid Acceptance by Technology Level

Table 2. Probability of Bid Acceptance at Various Levels of Technology

	Bid							
	$100	$1,000	$2,000	$3,000	$4,000	$5,000	$6,000	$7,000
Technology Level[a]								
Level 0	0.1380	0.0802	0.0425	0.0221	0.0114	0.0058	0.0030	0.0015
Level 1	0.2623	0.1622	0.0897	0.0478	0.0249	0.0128	0.0066	0.0034
Level 2	0.4412	0.3007	0.1796	0.1002	0.0537	0.0281	0.0145	0.0074
Level 3	0.6369	0.4885	0.3271	0.1984	0.1119	0.0602	0.0316	0.0163
Level 4	0.7957	0.6796	0.5192	0.3547	0.2186	0.1247	0.0676	0.0356
Expected Willingness to Pay								
Level 0	$13.80	$80.20	**$85.00**[b]	$66.30	$45.60	$29.00	$18.00	$10.50
Level 1	$26.23	$162.20	**$179.40**	$143.40	$99.60	$64.00	$39.60	$23.80
Level 2	$44.12	$300.70	**$359.20**	$300.60	$214.80	$140.50	$87.00	$51.80
Level 3	$63.69	$488.50	**$654.20**	$595.20	$447.60	$301.00	$189.60	$114.10
Level 4	$79.57	$679.60	$1,038.40	**$1,064.10**	$874.40	$623.50	$405.60	$249.20

[a] Level 0 is no e-mail or internet access; level 1 is e-mail and internet access, no website; level 2 is static website; level 3 is interactive website; level 4 is transactional website.
[b] Boldface indicates the bid price where each technology level is maximized.

passes, as managers in their early 20s will have had more computer-oriented high school and college experience. In this study, most of the young managers were in their late 20s, which could explain the results that were found.

Place was a variable to determine the population of the town in which the business was located. It was found that the larger the population, the more likely the bid would be accepted. Larger areas tend to have more resources available, and therefore their population has access to and can learn more about new technologies faster than the population of smaller, rural communities, with a lack of infrastructure for the latest technologies. Larger population areas are usually early adopters relative to the rest of the United States, due to market access in these areas. The *Income* variable reflected the annual income for the business owner with higher income levels being more likely to accept the proposed bid. *Profit* was a variable that measured the annual profit for the business where the higher profiting businesses had a higher probability of bid acceptance. The most profitable businesses have already either figured out their niche or are outpacing their competitors in some way.

The overall significance of the model was assessed using the likelihood ratio test. The null hypothesis that all slope coefficients were zero was rejected at the 10% significance level. The Cragg–Uhler R^2 reported was .309, while the McFadden R^2 was .233.

Although the actual coefficients on the logit model mean very little to economists, weighted aggregate elasticities can be determined to assess magnitudes of change. These measures are reported in Table 1 for all continuous variables. For example, on average, a 1% increase in income gives a 0.16% increase in the probability of bid acceptance, holding all else constant. Additional weighted aggregate elasticities can be interpreted in the same way. Marginal effects are also noteworthy and are shown in Table 1. It was found that, on average, a $1,000 increase in income leads to a .005 increase in the probability of bid acceptance, holding all else constant. Dummy variables can be interpreted in the same way.

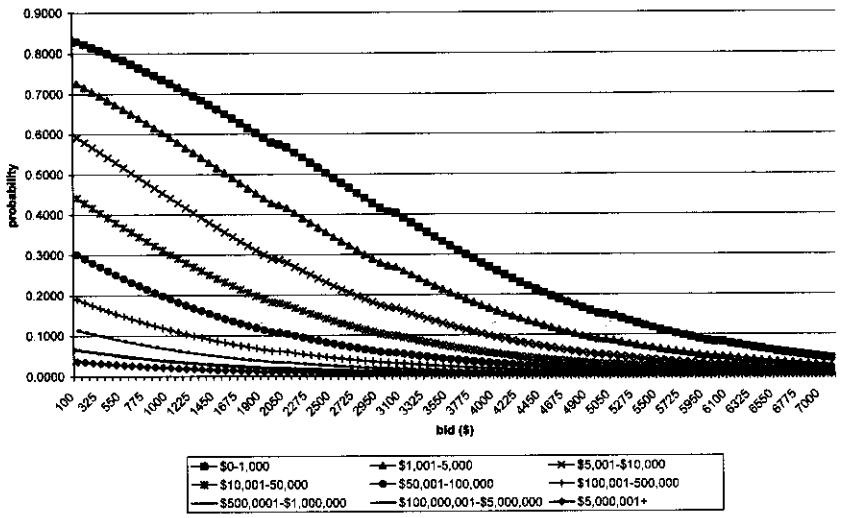

Figure 2. Probability of Bid Acceptance by Level of Annual Sales

For example, if the participant was aware of the potential of e-commerce, there was a .001437 increase in the probability of bid acceptance.

Probabilities can be determined for specific business profiles gathered through a convenience sample by inserting the variable values into the logistic probability function. The level of technological progress was determined to be an important variable in determining willingness to pay for e-commerce. Holding all variables at the mean and allowing the *Experience* variable to change demonstrates how these probabilities also change. For example, a white-collar, male aged 45–54 living in a town under 10,000 with annual income of $40,001–60,000, annual sales of $10,000–50,000, annual profit of $5,001–10,000, who perceives that developing an e-commerce presence is somewhat difficult, would have different probabilities assigned to various bid amounts depending on their level of experience with technology (Figure 1). Table 2 demonstrates these fluctuations. The expected willingness to pay (probability multiplied by bid price) is also shown. A respondent with technology level 0 (no e-mail or website access) will maximize their expected willingness to pay at a bid price of $2,000. Technology levels 0–3 would each maximize expected willingness to pay at a $2,000 bid price, while level 4 would be maximized at a bid price of $3,000.

The level of annual sales was also determined to have a large influence on willingness to pay for information programs about e-commerce. Holding all variables constant, except sales, demonstrates the variability of the probability function. For example, a white-collar, male aged 45–54 living in a town under 10,000 with annual income of $40,001–60,000, annual profit of $5,001–10,000 that perceives that developing an e-commerce presence is somewhat difficult and has a technology level of 2 (informational website) would have different probabilities assigned to various bid amounts, depending on the annual sales of the business (Figure 2). Table 3 demonstrates these fluctuations. A respondent with $0–1,000 in sales would maximize their expected willingness to pay at a bid price of $3,000. *Sales* between $1,001 and $5,000,000 would maximize their willingness to pay at a bid price of $2,000, while sales over $5,000,000 would be maximized at a bid price of $1,000.

The scenarios presented represent the average participating business's characteristics in this study. The model allows for changes to be made for any of the variables to tailor the forecast to reflect specific business profiles. For example, the probability will change for a

Table 3. Probability of Bid Acceptance at Various Levels of Sales

	Bid							
	$100	$1,000	$2,000	$3,000	$4,000	$5,000	$6,000	$7,000
Level of Sales								
$0–1,000[a]	0.8294	0.7258	0.5740	0.4068	0.2588	0.1509	0.0829	0.0440
$1,001–5,000	0.7262	0.5909	0.4237	0.2723	0.1600	0.0884	0.0470	0.0245
$5,001–10,000	0.5914	0.4407	0.2863	0.1696	0.0941	0.0502	0.0262	0.0135
$10,001–50,000	0.4412	0.3007	0.1796	0.1002	0.0537	0.0281	0.0145	0.0074
$50,001–100,000	0.3011	0.1900	0.1067	0.0573	0.0300	0.0155	0.0080	0.0041
$100,001–500,000	0.1903	0.1135	0.0612	0.0321	0.0166	0.0085	0.0044	0.0022
$500,001–1,000,000	0.1137	0.0653	0.0343	0.0178	0.0091	0.0047	0.0024	0.0012
$1,000,001–5,000,000	0.0654	0.0367	0.0190	0.0098	0.0050	0.0026	0.0013	0.0007
$5,000,001+	0.0368	0.024	0.0105	0.0054	0.0027	0.0014	0.0007	0.0004
Expected Willingness to Pay[b]								
$0–1,000	$82.94	$725.80	$1,148.00	**$1,220.40**	$1,035.20	$754.50	$497.40	$308.00
$1,001–5,000	$72.62	$590.90	**$847.40**	$816.90	$640.00	$442.00	$282.00	$171.50
$5,001–10,000	$59.14	$440.70	**$572.60**	$508.80	$376.40	$251.00	$157.20	$94.50
$10,001–50,000	$44.12	$300.70	**$359.20**	$300.60	$214.80	$140.50	$87.00	$51.80
$50,001–100,000	$30.11	$190.00	**$213.40**	$171.90	$120.00	$77.50	$48.00	$28.70
$100,001–500,000	$19.03	$113.50	**$122.40**	$96.30	$66.40	$42.50	$26.40	$15.40
$500,001–1,000,000	$11.37	$65.30	**$68.60**	$53.40	$36.40	$23.50	$14.40	$8.40
$1,000,001–5,000,000	$6.54	$36.70	**$38.00**	$29.40	$20.00	$13.00	$7.80	$4.90
$5,000,001+	$3.68	**$24.00**	$21.00	$16.20	$10.80	$7.00	$4.20	$2.80

[a] Level of annual sales for the rural business.

[b] Boldface indicates the bid price where each technology level is maximized.

business that has annual profits of $10,000 versus $150,000. The signs on the model let the reader know the direction of the probability change based on the business's characteristics. However, due to the large number of possible profiles, only two are presented in the paper.

Summary and Conclusions

The data for this study are from a convenience sample of rural businesses attending an educational seminar on e-commerce. Attendees of such a seminar are more likely to be innovative and therefore may reflect expected willingness to pay for more progressive types of rural businesses rather than the average rural business. The analysis shows that certain business profiles are more (or less) willing to pay for e-commerce. Specifically, the probability of a business paying various amounts of money for an e-commerce presence depends on demographic features, experiences with e-commerce, level of technological expertise, and the financial status of the business.

Businesses that have traditionally been less competitive in the marketplace, such as small and rural businesses, have the opportunity to develop a dominant presence in the virtual marketplace. However, this comes with an investment in both time and money. By estimating functions to assign probabilities associated with the willingness to pay for an e-commerce presence, one can forecast the likelihood of certain business profiles paying various monetary amounts for an e-commerce presence. These estimates will likely vary by region. In Louisiana, the willingness to pay was shown to be largely influenced by the current level of technology and annual sales. Positive indicators of increased willingness to pay included more experience, being aware of the potential of e-commerce, male business ownership, older business ownership, larger population area, and higher annual income and profit levels. Negative indicators of decreased willingness to pay for e-commerce included the perceived level of difficulty with creating an on-line presence, white-collar business owners, and larger annual sales.

The forecasting model can assist rural development facilities in determining which businesses value e-commerce the most and can assist in allocating limited funds. Businesses with the highest probabilities of paying for e-commerce can be identified as prime candidates for e-commerce and technology assistance services, thereby maximizing benefits to society.

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