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International Food and Agribusiness Management Review
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Executive Summaries

RESEARCH

Finnish Citizens' Attitudes towards Multifunctional Agriculture

Nina Hyytiä and Jukka Kola

The main objective of this study was to examine Finnish citizens' attitudes towards multifunctional agriculture. Moreover, the connections among these attitudes, consumers' willingness to pay and some socio-economic factors were examined. This study also combines some social and psychological dimensions of consumer behaviour to the policy analysis. Attitudinal dimensions were executed by using factor analysis. These attitudes can be interpreted as reflections of the values that guide human actions and attitudes. The information from the factors was attached to observations by using means of the factor scores. The respondents (N=1300) were distributed into six clusters based on their attitudes. It would be expected that people who have positive attitudes, would also state high values of WTP. Instead, this study suggests that attitudes and open-ended WTP do not have a positive relation.

To summarise about the connections of attitudes, WTP and socio-economic factors, a high social rank was reflected as positive attitudes towards multifunctional agriculture, but not as high WTP. Further, women had higher values of WTP, but men had more positive attitudes than women. As to place of living, people who lived in Southern Finland and Vaasa province expressed positive attitudes. Young age was connected to positive attitudes and alternatively to low values of WTP.

In conclusion, Finnish people are willing to support domestic agriculture, first and foremost, as a producer and provider of safe and high-quality food. The other functions of agriculture are still secondary. However, the findings indicate that a remarkable proportion of Finnish citizens have a positive attitude towards the externalities and joint products of agriculture.

Implications for agribusiness managers include the fact, given the strong region-specificity of the multifunctional characteristics of agriculture, that agricultural production, and farms as such, may become much more polarized than earlier, especially in Finland but also in the EU. Some farms, a minority in certain regions, will concentrate on efficient, large-scale production, and others, a majority in

numbers but minority in production volumes, will take advantage of support measures based on multifunctionality. Supply of raw materials and demand for production inputs will change, most likely to a considerable extent, especially in Finland and other less favoured production areas. This will have impacts on location decisions of food processing plants and input dealers. Moreover, through the stronger emphasis on multifunctionality – and so-called green box subsidies – the EU can better adjust to the expected multilateral removal of export subsidies in the WTO negotiations.

CASE STUDIES

Customer Relationship Management at Farm Credit Services of Mid-America: Working towards a SingleView

Bobby J. Martens and Jay T. Akridge

Identifying market segments and managing customer relationships is critical in developing and executing successful agribusiness marketing strategies. This case study explores Farm Credit Services of Mid-America's (FCS MA) process of identifying and implementing new technology needed to meet the needs of their customer relationship management (CRM) program. The firm's overall CRM strategy is described, known technology gaps that could keep FCS MA from executing their strategy are identified, and the solution FCS MA pursues is considered. Then, the implementation process is described in detail. This case illustrates the key challenges facing firms as their CRM programs are expanded and improved to continually meet the customer's needs.

The case highlights the importance of technology systems when managing a CRM program, but it also explores the complexities of developing and implementing a large information technology system. Decisions ranging from which technology system is right to what approach is best when training and motivating the system users (who in this case include all employees at FCS MA) are presented. FCS MA's implementation process is complicated by technology limitations and a decentralized organization. The case can be used to create discussions on the need for technology in a CRM program, short versus longer term CRM strategies, and how organizational structure impacts a CRM strategy.

Analyzing Risk and Uncertainty of New Product Marketing: The Case of eMerge Interactive and VerifEYE®

Michael A. Gunderson, Maud Roucan, Michael D. Boehlje and Allan W. Gray

Risk and uncertainty are inherent in all businesses, and managing this uncertainty is challenging. In the past, managers have used their 'gut,' that is, their instincts to make many of their decisions regarding investment decisions. Often times too much information and figuring led to 'paralysis by analysis,' that is doing nothing because too much analysis confounded the decision at hand. Increasingly sophisticated

management tools combined with improved spreadsheet technology have made analysis easier and more informative than has been the case in the past.

This teaching case focuses on the application of decision tools to assist managers making choices in an uncertain business climate. The case can be used as part of a course in strategy and/or risk management where tools such as influence diagrams, scenario and payoff matrices, decision trees, and real options are introduced. The case considers the difficult task of introducing a new product into the market. Under consideration is a sophisticated, surface-scanning technology that has applications in the food processing, food retail, and health industry sectors. Management of eMerge Interactive is faced with uncertainties in legislation, demand, and competitor response.

The emphasis of this case study is developing the ability of managers to use the tools identified above. As a result, all of the information needed for using the tools is contained within the case study, primarily through a fictional interview with the CEO of eMerge Interactive. The teaching notes of this case study provide detailed answers to the questions posed in the case study. One would be able to match answers their answers to those discussed in the teaching note to ensure that they were developing expertise in using the tools. Additional references are provided for further discussion of these sophisticated tools.

Banning Foie Gras in California

Gregory A. Baker and Fan Zhang

This teaching case describes the challenge faced by the owner of Sonoma Foie Gras, the sole producer of foie gras in the state of California. The production of foie gras by force-feeding ducks and geese has drawn world-wide criticism from animal rights groups. Legislation pending in California would ban the practice of force-feeding birds as well as the sale of the products of force-feeding birds. The case describes the positions of some of the parties involved in the issue.

The case is ideal for teaching the application of stakeholder analysis in undergraduate and graduate classes. Students may be asked to identify the principal stakeholders and their perspectives, develop and analyze alternatives, and recommend a course of action.



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Finnish Citizens' Attitudes towards Multifunctional Agriculture

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Abstract

This paper examines Finnish citizens' attitudes towards multifunctional agriculture and further, the connections among these attitudes, consumers' willingness to pay, and some socio economic factors. Attitudinal dimensions were executed by using factor analysis. The respondents (N=1300) were distributed into clusters based on their attitudes. It would be expected that people who have positive attitudes, would also state high values of WTP. Instead, this study suggests that attitudes and open-ended WTP do not have a positive relation. People are willing to support domestic agriculture as a provider of safe and high-quality food. However, a remarkable proportion of Finnish citizens have a positive attitude towards externalities and joint products of agriculture. The emphasised multifunctionality characteristics can have important implications on agribusiness firms in terms of e.g. plant location decisions, and on the WTO negotiations with regard to the anticipated removal of export subsidies.

Keywords: Agricultural policies, consumers, public goods, WTP

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Introduction

Multifunctional agriculture has been extensively studied in recent years. However, most of the studies have been focused on the supply, rather than the demand aspects of multifunctional agriculture (e.g. Romstad et al. 2000, Randall 2002, Vatn 2002, Ollikainen and Lankoski 2003). Although there are several opinion polls where people have been asked about their views on and expectations of multifunctional agriculture, these polls and surveys have rarely examined citizens' attitudes more thoroughly, and further examined what kind of impacts these attitudes might have on agricultural policy choices. Further, there are a number of studies concerning consumer attitudes towards various pro-environmental products, nature amenities and animal welfare (e.g. Gregory 2000, Nielsen 2001, Cook et al. 2002, Pouta 2003). Our aim is to combine these two themes; we try to find out Finnish citizens' attitudes towards multifunctional agriculture and to examine how these attitudes are reflected to estimated willingness to pay for multifunctional agriculture.

During the past few decades consumers have become increasingly concerned about environmental issues. This development is connected to the so-called 'Green Consumerism' that has its roots in popular movements of the 1970s and 1980s. According to Moisander (2003) Green Consumerism is most often understood to be based on ecologically oriented consumption activities that exhibit and reflect a relatively consistent and conscious concern for the environment. This development reflects also to the demand for agricultural products and to consumers' views on how these products should be produced. Citizens use their power both by voting and through their consumption choices. These decisions can have an impact on, in addition to the agricultural production in the short and medium term, future policies and the world, in which the future generations will live. Contemporary consumers demand a variety of high quality, safe and ethical food, and they also want high-quality public goods and services in exchange for the taxes they pay.

The economic significance of agriculture has diminished in developed countries at the same time as consumer incomes have increased. This development has promoted the demand for the non-marketable goods produced by agriculture. Governments have planned policies that would be capable of taking account of the various roles and functions of agriculture. Agriculture is not only a provider of food and fibre, but also a provider of public goods. In spite of their attempts, policy-makers still have difficulties in including these positive externalities of agriculture in product prices.

The European Union's Common Agricultural Policy (CAP) has had a direct impact on the well-being of its citizens through price, quality, safety and availability of food. Among the objectives of the CAP, there have traditionally been both consumer and producer oriented objectives. In spite of these common goals, the views and

benefits of consumers have not been represented in agricultural policies at an equal and sufficient rate (Ritson 1997). Analysis of consumer and citizen preferences and attitudes can provide information from which policy-makers can draw some conclusion on whether the aims and measures are in line with citizens' views and expectations. At its best, this understanding can contribute to the development of commonly accepted and efficient agricultural policies.

The world trade liberalisation and the enlargement of the European Union have put pressure on the EU to reform its agricultural policy. As the Union has defended and justified its agricultural protection, and aimed at stricter budget discipline, agricultural policy has been modified to be closer to the views and objectives of the citizens. Multifunctionality is one of the objectives of the European Model of Agriculture. Multifunctionality can also be considered as a principle behind the agricultural policy. The introduction of this principle as a part of the Common Agricultural Policy can be considered as a step towards an increasingly consumer and citizen-oriented agricultural policy.

The OECD (2001) analyses multifunctional agriculture from two different origins. On the one hand, multifunctionality is a characteristic of economic activity. Thus, the qualities that make economic activity multifunctional are those interconnected products and impacts that activity at issue produces. These impacts can be positive or negative, intended or unintended, and complementary or contradictory. This kind of multifunctionality is not tied only to agriculture; it is more like a characteristic of various economic actions. Multifunctionality can further be interpreted through the various tasks and objectives that are given to agriculture. Accordingly, agriculture fulfils the obligations that society has put on it. That way, the promotion of multifunctionality can become a policy object.

According to Romstad et al. (2000) multifunctional agriculture, in addition to traditional food and fibre production, has several other functions and social impacts. Agriculture produces both private goods and non-marketable public goods. Environmental effects, amenity services, food security and food quality, the viability of countryside and in some cases food security are essential components of multifunctional agriculture. Thus, multifunctional agriculture has three different dimensions: economic, social and ecological dimension. Lankoski's (2003) definition for multifunctional agriculture is, to a large extent, convergent to the one above, though he takes joint production and agriculture's role as a producer of multiple products more clearly into the consideration. He further stresses the public good and externality nature of multifunctional agriculture.

This study is grounded on neoclassical consumer's theory. That theory can provide a sound background for a research, but it also has certain weaknesses and shortcomings. For example, it does not take into consideration the psychological and social factors underlying an individual's preferences and choices. Accordingly, the

theoretical base was reinforced with Ajzen's & Fishbein's (1975, 1980) Theory of Reasoned Action and Ajzen's (1985) Theory of Planned Behaviour. These theories served as instruments to explain how attitudes are formed, and to understand the factors behind consumer's willingness to pay. We employed these theories in connection to an extensive data set, which was earlier collected to find out consumers' willingness to pay for multifunctional agriculture.

Our main objective is to examine Finnish citizens' attitudes towards multifunctional agriculture. The further aim is to examine the connections among these attitudes, consumers' willingness to pay and some socio economic factors. This study also tries to combine some social and psychological dimensions of consumer behaviour to the standard economics.

The rest of the paper is structured as follows. The introduction section is completed with a brief view of previous research. Chapter 2 presents values and attitudes from the point of view of social psychology. It also presents some value concepts that are often connected to public goods. Methods are presented in Chapter 3 and the results in Chapter 4. Finally, Chapter 5 concludes the paper.

Previous Research

Hall et al. (2004) reviewed a range of polls, surveys and some more rigorous surveys that tried to quantify public preferences using e.g. WTP methods. These polls and surveys were conducted by conservation organisations, government departments and the EU. Researches wanted to assess how appropriate those methods were for framing the broad policy tradeoffs. All of these surveys and polls were connected to the contents of multifunctional agriculture. These sources proved that the public opinion is both unstable and somewhat suggestible, and that public preferences for complex goods are hard to identify. Hall et al. attempted to find out if those analysed methods were appropriate and reliable of explaining what the public wants from agriculture. They concluded that it was impossible to derive meaningful quantitative conclusions from the existing literature. Though results reviewed were not statistically robust, they suggested that "the public see a definite role for farming as an intrinsically valued provider of rural environment and public goods."

Recently, number of consumer attitude studies, somehow related to the principles and contents of multifunctional agriculture, has been published. Aakkula's (1999) research "Economic value of pro-environmental farming" is one, objects and method of which have certain similarities to this study, though Aakkula's overall purpose was to investigate the applicability of the CV-method.

In her research on attitudes and ecologically responsible consumption Moisander (1996) investigated the role of consumers' general pro-environmental attitudes as motivators of ecologically responsible consumption. Concern for environmental

problems and perceived moral responsibility for environmental protection were emotions that helped people to overcome the temptation to disregard the negative environmental consequences of their acts. A conceptual model used was based on Ajzen-Fishbein attitude theory. The findings of the study suggested that consumers' general pro-environmental attitudes were relevant motivators of ecologically responsible consumer behaviour, though a strong positive attitude-behaviour was not found in every ecologically relevant behaviour.

Saba's and Messina's (2002) questionnaire was constructed to assess attitudes and beliefs towards the consumption of organic fruits and vegetables. They further analysed the role of trust on perception of risks and benefits associated with pesticides on foods. In their research they utilized the Ajzen and Fishbein's model. The questionnaire contained questions of beliefs, attitudes and intentions of consuming. The study indicated that component attitude was found to be a significant predictor of intention to eat organic food and vegetables.

In Norway, Storstad and Bjorkhaug (2003) analysed consumers' and farmers' attitudes towards organic farming and organic food. The researchers analysed three separate questionnaires that contained claims about how Norwegian agriculture deals with the environment and animal welfare. Their further aim was to find out if there were any differences between the attitudes of organic and conventional farmers and organic and conventional consumers. The study's results indicated, among other things, that organic farmers and organic consumers had common attitudes towards environmental questions and animal welfare in Norwegian agriculture. Unlike consumers and organic farmers, conventional farmers considered that contemporary farming system do not cause major environmental problems or problems with animal welfare.

Focal Concepts

Values and Public Goods

Non-marketable goods produced by agriculture can have both direct and indirect use values. Direct use values are associated with good's tangible uses, such as outdoor recreation, whereas indirect values are connected to intangible uses, e.g. pleasures of scenic views. Existence value is not connected to good's actual or potential use. It only refers to the very existence of that good. When people consider that the pure existence of certain characteristic or good gives them utility, then that particular characteristic has value. Further, bequest value causes present WTP in order to make sure that certain goods are preserved for the future generations. Correspondingly, option value means that an individual wants to preserve the option to use a resource in the future even though he or she would not be able to use it at present. Altruistic value expresses individual's concern about the other people. Thus, the good is valuable, not only because of the personal utility gained, but also

because other people are able to use it. It has been suggested that existence value is a link that connects economics, environmental sciences and humanities (e.g. Kula 1994, Kahn 1998).

Attitudes and Values

Culture, norms and values are important determinants of human behaviour. In the long run, values become especially important because they provide direction and purpose to behaviour. A value is a permanent belief that certain behaviour and end states are preferred to alternative ones. Values constitute a value system which is an organization of these referred beliefs. Thus, a value is a way of believing how one should behave, and correspondingly, values define desirable end goals. Values are more or less permanent which implies that values hardly ever change (Antonides and van Raaij, 1998). Puohiniemi (2002) defines values as principles that guide choices that people make. Accordingly, people rely on their values in choices made in unpredictable situations. He further claims that values are conscious motives.

Values are relatively permanent, whereas attitudes are often susceptible to changes. Contrary to values, attitudes are directly related to attitude objects.

“Goals are the motives for concrete behaviours and for the attitudes and interests that concur with these behaviours. Values and goals give direction to knowledge, attitude and behaviour. Values are more general than attitudes, because one value can give direction to several attitudes, because values are not directly linked to specific objects. An attitude is the individual predisposition to evaluate an object or an aspect of the world in a favourable or unfavourable manner. Attitudes can briefly be described as likes and dislikes with regard to products, services, people, ideas, behaviours, and other attitude objects.”
(Antonides and van Raaij, 1998)

Ajzen (1988) defines attitudes as latent, hypothetical characteristics that can only be inferred from external, observable cues.

Attitudes are often, but not necessarily, based on previous personal experiences. Person's environment shapes type, quality and quantity of these available experiences and information. Moreover, characteristics and dimensions of attitudes vary. These characteristics and dimensions are for example the qualities based on likings and disliking of people, and resistance and extremity of attitudes. The confidence of attitude has also effect on the relationship between attitude and behaviour. When confidence is weak people look for additional information to confirm their decisions. The stability of attitude is dependent on, whether it is based on object's perceived utilitarian or hedonistic qualities. Utilitarian qualities

refer to use values and purposes of use. On the contrary, intangible goods are evaluated according to how they contribute to feelings (Engel et al. 1993).

Attitudes are likely to be relatively good predictors of behaviour. However, there are several limitations to this connection. Attitudes are not static; on the contrary, they are susceptible to changes. The time interval between the measurement and behaviour affects the dependence between attitude and behaviour. Attitude that is based on personal experience, e.g. consumption of certain product, is more stable than attitudes that are based on the information attained from secondary sources. Moreover, the pressures from the social environment sometimes have stronger impact on behaviour than personal attitudes (Engel et al. 1993). If attitudes are employed as predictors of consumer behaviour, there should be a clear connection between these attitudes and behaviour. However, researches have reported findings of an attitude-behaviour inconsistencies, or of a very weak relation between attitudes and behaviour (e.g. Heslop et al. 1981, Hutton and Ahtola 1991). In this study, willingness to pay can be considered more like an intention than an actual behaviour.

The Component of Attitudes

According to the traditional perception, attitudes consist of three different components: cognitive, affective and conative. A cognitive component includes the knowledge of and beliefs about the attitude object. Feelings towards the attitude object are, in turn, included in an affective component, whereas behavioural tendencies, intentions, and actions with respect to attitude object are included in a conative component.

From a more contemporary point of view, attitudes are restricted to the cognitive component. Thus, the affective and the conative components are, though quite closely related to attitudes, distinct entities. The cognitive component has an essential impact on the affective component. Further, both of these have effect on

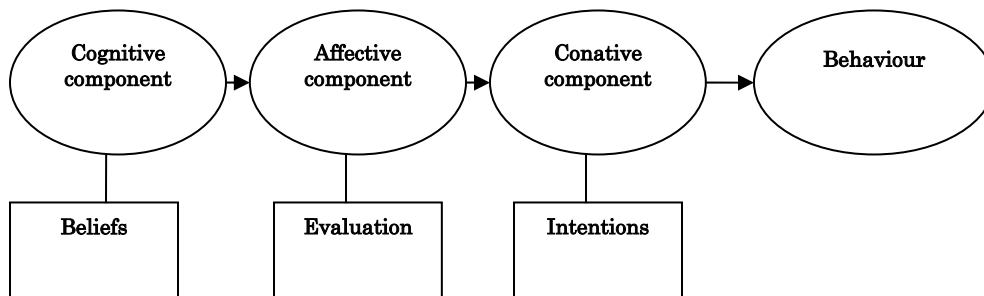


Figure 1: Cognitive, affective and conative components of attitude (Engel et al. 1993)

the conative component, which in turn is an immediate definer of the actual behaviour (Figure 1) (Engel et al. 1993). Ajzen (1988) interprets these component as being different categories of activities that reflect attitudes. Thus, the distinction to cognitive, affective and conative components is only a way of classifying the actions that reflect attitudes

Methods

In this study, previously collected data was utilized. The data had been collected in 2002 in order to reveal Finnish consumers' willingness to pay for multifunctional agriculture. The commercial research company had installed a computer-aided interviewing system in 1 300 Finnish households. The selection of these households based on demographic information assured that these people constituted a representative sample of all Finnish citizens aged between 18 and 75 years. Consumers' willingness to pay had been revealed through an open-ended contingent valuation method. Estimated average open-ended WTP for multifunctional agriculture was 94 euros / year per person and the median annual willingness to pay was 50 euros.

Factor analysis was utilised to reveal the latent attitudes behind the respondents' opinions. According to Hair et al (1995) factor analysis is a statistical approach that can be used to analyze interrelationships among a large number of variables and to explain these variables in terms of their common underlying dimensions. The objective is, with a minimum loss of information, to condense the information contained in a number of original variables into a smaller set of factors. The factor analysis was executed by using the SPSS 10 software package. Factor analysis was carried out with both maximum-likelihood method and principal axis factoring. On the grounds of results attained, both methods were feasible and both resulted in a four-factor solution. Factors attained with maximum likelihood method were more clearly interpretable. Warimax was the chosen method for factor rotation.

Factor analysis is able to condense the information contained in data and to reveal the main attitudinal dimensions. However, the results of the factor analysis cannot be used for further analysis as such. The information from the factors can be attached to observations by using means of the factor scores. These scores express how each respondent is ranked in respect of a certain factor (Alkula et al. 1994).

The respondents were distributed into clusters based on their attitudes. Cluster analysis was conducted by using the Quick Cluster k-means cluster procedure included in the SPSS 10. Cluster analysis is a multivariate procedure for detecting groupings in the data. It attempts to identify relatively homogenous groups of cases based on selected characteristics. Cluster distances were computed by using simple Euclidian distance.

Results

In this research the summated variable measuring attitudes consisted of three different sets of claims and questions. These sets measured respondents' views regarding environment, agriculture, rural areas, the functions of agriculture and agricultural policies. It was possible to combine these different sets, because all of them were measured with five-point category scales (ranging from 1 to 5). Between the first and second sets, the respondents were informed about the concept and contents of multifunctional agriculture. The internal reliability of the summated variable was measured with Cronbach's alpha coefficient. According to Hair et al. (1995), the commonly used coefficient's limiting value of acceptable reliability is 0.7. The final set consisted of 19 different claims and questions. The final value of the alpha coefficient was 0.857. This indicator can be considered relatively reliable in measuring consumers' attitudes towards multifunctional agriculture.

Factor analysis was carried out with both maximum-likelihood method and principal axis factoring. Both methods concluded a four-factor solution. Maximum likelihood factor analysis was chosen, both because the results met the indicating criterion and because it provided clearly interpretable factors. Orthogonal rotation further clarified this interpretation. Only factors which had eigenvalues greater than one were included in the final factor solution. Another measure to decide the number of factors used was Cattell's scree test. The core idea of this test is to derive the number of factors from the relations among successive eigenvalues. This inference can be made graphically by presenting eigenvalues along the Y-axis and their serial position along the X-axis, and observing where the curve stabilizes. Further, the first four factors accounted for 42.9 per cent of the total variation, and fourth factor alone for 5.8 per cent (Appendix A).

According to all these referred criteria, the maximum number of factors to be extracted was four. In addition, the three-factor solution was also interpreted, but the existence and bequest value dimension were lost in that solution. The rotated factor pattern is presented in Table 1. Factor loadings lower than 0.3 are excluded from the table.

The verbal description of the factors:

- **Factor 1:** This factor represents an attitude, which emphasizes communality and the individual's responsibility to the environment. It illustrates a positive attitude towards the values of sustainable development. Human advantages are not prior to the well-being of nature and the environment. On the contrary, the human is a part of nature, and an individual is aware of the consequences of humans' deeds, and he/she is prepared to take responsibility for these consequences.

Table 1: Varimax-Rotated Factor Matrix²

Variable	Factor 1	Factor 2	Factor 3	Factor 4	h ²
MFA14D	0.739				0.577
MFA14F	0.675				0.506
MFA14B	0.649				0.477
MFA14C	0.541		0.307		0.462
MFA14E	0.523		0.351		0.408
MFA13D	0.507				0.274
MFA14A	0.401	0.326			0.366
MFA13E	0.385				0.213
MFA15B		0.729			0.624
MFA15A		0.707			0.649
MFA15C		0.636		0.317	0.589
MFA13A		0.388			0.266
NMFA13B			0.582		0.367
NMFA13F			0.501		0.321
NMFA13C			0.467		0.230
MFA13H			0.457		0.219
MFA13G			0.442		0.319
MFA15D		0.364		0.612	0.602
MFA15E	0.384	0.373		0.584	0.692

- **Factor 2:** This factor expresses perception that rural areas are for vacation and recreation. The most important function of the rural areas is to provide aesthetic experiences and rest.
- **Factor 3:** Behind this factor is the idea that domestic agricultural production is important both in practice and in principle. Agriculture should focus on its core functions: the production of safe and high-quality agricultural products.
- **Factor 4:** Behind this factor is a perception that it is important to preserve and sustain rural landscapes and the state of the environment, even if it is not possible to personally benefit from these public goods. This attitude reflects existence values and a concern for the rights of future generations.

After the attitudes were defined, the respondents were grouped on the basis of these attitudes. Clustering was executed with five, six, seven and eight initial groups. The six-cluster solution was chosen first, because it appeared to offer a meaningful interpretation for underlying attitudes. Secondly, the one-way variance analysis that was executed supported this solution and finally; a relatively large number of group members in each cluster further strengthened this conclusion.

² Description of the variables presented in table 1 is in the Appendix B.

The significance of the cluster mean differences were tested against WTP and socio-economic variables. The socio-economic variables employed were gender, age, income, place of residence, education, profession, political orientation and place of residence during the childhood. In addition, respondents' opinion on how multifunctionality support should be collected was used to compare the group mean differences.

The distributions of the continuous variables were tested. According to this information and the scales of the variables, the most appropriate measures of testing the group differences were chosen. The group differences were tested with χ^2 tests based both on cross-tabulations and of the non-parametric analysis of variances (Kruskall-Wallis). Both methods found statistically significant differences in cluster-related WTP, gender, political orientation, place of residence during childhood, the way multifunctionality support should be collected and the questions concerning on the place of residence. Age was tested by using the analysis of variances and further, the Scedge post hoc test was conducted to determine differences between specific groups. These results are presented in Table 2, where the symbol S refers to significance and I to insignificance at a 5% risk level.

Pair wise comparisons for ordinal scale variables were carried out by applying Dunn's (1964) formula which allows for unequal sample sizes (Siegel and Castellan

Table 2: The Statistically Significant and Insignificant Differences (t=0.05) in the Cluster Related Means

Variable	χ^2 df	p = Crosstabulations	χ^2 df	p = Kruskall-Wallis	
MFA17 WTP			126.147 df=5	.000	S
TK1 Gender	12.355 df=5	.030	12.346 df=5	.030	S
TK38 Education	32.715 df=35	.579			I
TK39 Profession	96.887 df=50	.000	7.028 df=5	.219	S/I
TK40 Line of business	40.183 df=35	.251	14.149 df=5	.015	I/S
TK44 Income	108.142 df=100	.272	16.380 df=5	.006	I/S
TK60 Political orientation	70.007 df=20	.000	19.176 df=5	.002	S
MFA1 Place of residence during childhood	111.859 df=10	.000	94.133 df=5	.000	S
MFA21 Method of collecting multifunctionality subsidies	77.291 df=15	.000	55.623 df=5	.000	S
LAANI Province	104.527 df=50	.000	62.100 df=5	.000	S
KUN2 Place of residence	100.833 df=15	.000	95.217 df=5	.000	S
ALU2 Place of residence	73.441 df=15	.000	63.880 df=5	.000	S
Age	Analysis of variances	F=2.049	p = .069		I

Jr 1988). These comparisons were made to assure that each cluster had statistically significant difference compared to at least one other cluster. Otherwise, the expediency of maintaining that particular cluster would have been questionable.

The essential information concerning this solution can be found in Table 3. The mean factor scores represent the mean value of factor scores that the factor in question has received in the cluster. A positive mean value of factor scores indicates that the clusters having a positive mean value have a stronger-than-average tendency to support the views expressed in that specific factor. Further, the mean and median willingness to pay, together with the percentage proportion of gender and mean age in each cluster is presented in Table 4. The information attained by comparing the cross tabulations' observed and expected counts is interpreted in the verbal characterization of the clusters below.

Table 3: Solutions with Six Clusters

Cluster	N=1375 Frequency (n)	%	Mean score F1	Mean score F2	Mean score F3	Mean score F4
1	135	9.8	1.53	-0.39	-0.36	-0.28
2	170	12.4	-0.20	0.65	-0.03	1.28
3	134	9.7	1.38	0.70	0.91	0.54
4	278	20.2	-0.44	-0.47	0.72	-0.26
5	481	35.0	-0.35	-0.50	-0.57	-0.18
6	177	12.9	-0.39	1.23	0.02	-0.53

Table 4: Cluster Related Means of Selected Socio-economic Variables

Cluster	WTP mean	WTP median	Gender % female /male	Mean age
1	48.47	20.00	47.4 / 52.6	43.89
2	97.52	50.00	50.0 / 50.0	47.48
3	42.76	0.00	39.6 / 60.4	44.07
4	103.69	100.00	54.7 / 45.3	46.71
5	118.44	100.00	55.1 / 44.9	46.28
6	81.02	50.00	50.8 / 49.2	46.87

The verbal characterizations of the clusters are expressed in the following way:

- **Cluster 1:**
10% of the respondents belonged to this cluster. There were slightly more men than women in this cluster. The mean age was the lowest of all the clusters: 43.9 years. The mean and median WTP had the second lowest values (mean 48 euros and median 20 euros). Typically, a member of this

group was born in the countryside or in a sparsely populated area and was living either in Central Finland or Vaasa province (on the west coast). In addition, he or she was a politically independent worker or entrepreneur.

The members of this group bear common responsibility for nature and for other people. Human interest is not prior; on the contrary, human beings are part of nature and should bear responsibility for their own acts. In addition, these people consider that agriculture should produce high-quality and safe food with production methods that respect farm animals and pay attention to the environment. This view is very close to the principles of sustainable development.

- **Cluster 2:**

Both sexes were evenly represented in this group. The mean age was highest: 47.5 years. WTP measures represented average levels: the mean was 98 € and the median was 50 €. 12% of the respondents belonged to this cluster. A typical member was a person who was born in a population centre and was politically a slightly left or clearly right oriented student or senior citizen who considered that multifunctionality subsidies should be collected via higher product prices.

These people consider that it is important to maintain rural landscapes and a good state of environment, even though they would not directly be able to benefit from these services. Yet, these people also appreciate beautiful scenery and clean environment in their own neighbourhoods.

- **Cluster 3:**

The cluster consisted of 10% of the respondents. There were clearly more men than women (60%/40 %). Group members' mean age was the second lowest: 44.1 years. Both the mean and median WTP were the lowest of all the clusters. Typically, a member of this group was born in a town and was living either in Uusimaa (on the south coast) or Vaasa province. Typical occupation was front-runner, superior employee or student. He or she was politically either clearly right oriented or alternatively left oriented. The method on how the multifunctionality subsidies are collected did not play any role to these people.

These are people who have a positive attitude towards the whole content of multifunctional agriculture and towards the values this concept represents. Agriculture is important as a provider of both marketable and non-marketable products. On the one hand, agriculture should take account of the environment and the society in which it operates and produces services. On the other hand, agriculture deserves respect and compensation for these services.

- **Cluster 4:**

20% of the respondents belonged to this group. There were slightly more women than men in this cluster (55%). The mean age was 46.7, which represented an average level of all clusters. WTP was second highest: mean was 104 euros and median 100 euros. The typical member was born in town, was living in Southern Finland or Uusimaa province, and his or her occupation was superior employee, blue-collar worker or unemployed. Cluster members' political orientation was clearly or modestly left oriented. They considered that multifunctionality subsidies should be collected via taxation.

These people think that domestic agriculture is important and valuable as such. Agriculture should produce healthy and clean food, other functions of agriculture being quite unimportant.

- **Cluster 5:**

This cluster was the largest, representing 35% of all the respondents. There were slightly more women than men (55%). The mean age was 46.3 years. In spite of attitudinal indifference, these people stated the highest values of WTP: mean 118 € and median 100 €. Most farmers belonged to this cluster. These people were born in the countryside or sparsely populated areas and were living in Northern Finland or Central Finland. They considered that multifunctionality subsidies should be collected via taxation.

These people have a negative or indifferent attitude towards all the values and functions that multifunctional agriculture represents.

- **Cluster 6:**

13% of the respondents belonged to this cluster where both sexes were evenly represented. The mean age was second highest of all the clusters. WTP was on the average level: mean was 81 € and median was 50 €. Typically, these people were born in town and they were living in Uusimaa province. Further, typical occupation was white collar or blue collar worker. These people considered that multifunctionality subsidies should be collected via taxation or via higher product prices.

For these people the countryside is a source of recreation and a place for leisure. They consider agriculture and the countryside as providers of services and of safe and pure food. These people can be considered hedonists. They are looking for enjoyment from beautiful nature resorts and landscapes. It can be suggested that agriculture has instrumental value for these people.

If the clusters are sorted after increasing WTP, the ranking of the occupations is the following. In the cluster of the lowest WTP, the proportions of front-runners, superior employees and students were higher than the expected values. The typical member of the second lowest WTP-cluster was a blue-collar worker, and in the next cluster white-collar worker or blue-collar worker. In the cluster where existence and bequest values were highly appreciated, the groups were, not surprisingly, students and pensioners. In the cluster of second highest WTP superior employees, white-collar workers and the unemployed were overly represented. Finally, the highest WTP was typically among farmers and pensioners. According to Moisander (2001) women are more often concerned about environmental issues, and they also express this concern in the way they act. Nevertheless, in this study the majority of the members in clusters that represented the most positive attitudes towards multifunctional agriculture were men. Instead, in the clusters of high WTP women constituted a majority. Consequently, for both sexes attitudes and intentions were not in line.

There was not linear dependence between attitudes and WTP. The results were also examined against the socio-economic variables. The economic theory presupposes that, as consumers' income grows, the demand for so-called normal goods grows, as well. In this study, there was no linear dependence between consumers' income and their WTP. However, because income was measured as a whole household's pre-tax income, while WTP is personal, these two were not unambiguously comparable. In addition, there was no statistically significant difference between the clusters with relation to households' pre-tax income.

Consumer theory presupposes that people are capable of comparing expected costs and benefits and of making them commensurable. Accordingly, it would be expected that people who have positive attitudes towards multifunctional agriculture would also state high values of WTP. Instead, this study suggests that attitudes and WTP may have a more or less inverse relation. However, past research (e.g. Moisander 2001, Aakkula 1999) also suggests that the presence of a pro-environmental attitude does not necessarily lead to pro-environmental actions or intentions. The results are interpreted against this background, although the utilized open-ended WTP includes the possibility of a number of biases.

The respondents were told that they should pay extra for multifunctional agriculture. Yet, the relatively high proportion of zero WTPs (20% of respondents) indicates that instead of collecting more taxes or increasing prices, the reallocation of the agricultural subsidies would be a preferable choice. Moreover, the mean WTP is very sensible to the outliers. The outliers were not excluded because there was a desire to maintain comparability with the results that were previously attained from this data. One further source of bias is that people do not have experience in valuing these goods in monetary terms. Accordingly, their stated WTP may differ from the situation in which they actually are obliged to pay that sum.

Discussion

The increased importance of multifunctional characteristics will have clear impacts on consumers, farmers, food chains and agribusiness managers, and international trade in terms of the WTO negotiations.

Starting from the consumer aspects, we need to recognize that in addition to use value, non-marketable products have non-use values such as existence value, bequest value, and option value, which relate to multifunctionality characteristics. The contingent valuation method is able to produce monetary estimates for these values. In this study attitudinal dimensions were executed using factor analysis. These attitudes can be interpreted as reflections of the values that guide human actions and attitudes. Factor 1 reflects the values of sustainable development, Factors 2 and 3 the use values of agriculture and rural areas (food and recreation), and Factor 4 existence value and bequest value.

Consumer theory presupposes that people are capable of comparing expected costs and benefits and of making them commensurable. Accordingly, it would be expected that people who have positive attitudes towards multifunctional agriculture would also state high values of WTP. Instead, this study suggests that attitudes and WTP do not have a positive relation. The highest mean and median WTP was in the cluster whose members had negative or indifferent attitude towards all the values and functions that multifunctional agriculture represents. These people had typically lived their childhood in the countryside, and they lived in Northern or Central Finland. Thus, because of the circumstances, these people are familiar with the problems of agriculture and rural areas. It is possible that the concepts multifunctional agriculture and externalities and their contents are not familiar enough to these people. Herein should also be considered the confines and sources of errors included in open-ended WTP results. Yet, since most of the farmers belonged to this group of high WTP and indifferent attitudes, it is presumable that farmers do not consider multifunctional agriculture, or at least some of its contents, very important, though they are the ones who are supposed to put these principles and actions into practice. Many farmers consider that agricultural production already complies with ethical and pro environmental principles. Previous research suggests (e.g. Drake 1991, Aakkula 1999) that this can be interpreted as strategic behaviour. Accordingly, farmers state high values of WTP to ensure higher subsidies and thus a higher level of income in the future.

In general, people want to give a good impression on themselves. Nowadays, it is certainly very fashionable to give an impression of green and modern attitudes. In marketing and consumer research, researchers have often met this problem that people are far from fully consistent on their claims and attitudes, considering for example organic food, if compared to situations, when they make the actual

purchasing decisions. This is one reason why social psychology methods should be welcome also to the economic research. Economics tends to explain human behaviour being logical and somewhat straightforward. We consider that these undisputable inconsistencies should also be brought into the policy analysis.

It would be possible to go deeper into the issues and the results of this study and to recover some of the perceived limitations by further researching the influential factors behind the WTP. For example, to find and research the 'subjective norm' and 'perceived behavioural control' which are referred to in the Ajzen's Theory of Planned Behavior.

In conclusion, Finnish people are willing to support domestic agriculture, first and foremost, as a producer and provider of safe and high-quality food. The other functions of agriculture are still secondary. However, the findings indicate that a remarkable proportion of Finnish consumers have a positive attitude towards the externalities and joint products of agriculture.

In addition to these aspects and impacts related to consumer behaviour and demand, implications for agribusiness managers are clear. Firstly, given the strong region-specificity of the multifunctional characteristics of agriculture, agricultural production and farms may become much more polarized than earlier, especially in Finland but also in the EU. Some farms, a minority in certain regions, will concentrate on efficient, profit-maximizing, large-scale production, and others, a majority in numbers but minority in production volumes, will take advantage of support measures based on multifunctionality. In the up-stream of the food chain, supply of raw materials and demand for production inputs will change, most likely to a considerable extent, especially in Finland and other less favoured production areas (LFA) of the EU. This will have impacts on the location decisions of food processing plants and input dealers.

Moreover, as consumers' preferences and attitudes and farmers' decisions as well as policy decisions on multifunctionality of agriculture gradually become clearer and more concrete, consequences for international trade may appear as fundamental. Through the stronger emphasis on multifunctionality – and so-called green box subsidies – the EU can more flexibly adjust to the primary claim of the WTO negotiations, i.e. the overall, multilateral removal of export subsidies.

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Appendix A

Table 5: Eigenvalues and Variances Explained by each Factor – Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,994	31,545	31,545	5,450	28,687	28,687	3,011	15,849	15,849
2	2,029	10,678	42,223	1,405	7,396	36,083	2,225	11,712	27,561
3	1,410	7,419	49,642	,930	4,893	40,976	1,828	9,623	37,184
4	1,048	5,515	55,157	,376	1,977	42,953	1,096	5,769	42,953
5	,920	4,843	59,999						
6	,866	4,556	64,555						
7	,753	3,966	68,521						
8	,720	3,789	72,310						
9	,663	3,488	75,798						
10	,631	3,320	79,118						
11	,581	3,056	82,173						
12	,554	2,914	85,088						
13	,518	2,728	87,815						
14	,460	2,421	90,236						
15	,414	2,178	92,415						
16	,411	2,162	94,576						
17	,368	1,939	96,515						
18	,348	1,832	98,347						
19	,314	1,653	100,000						

Extraction Method: Maximum Likelihood.

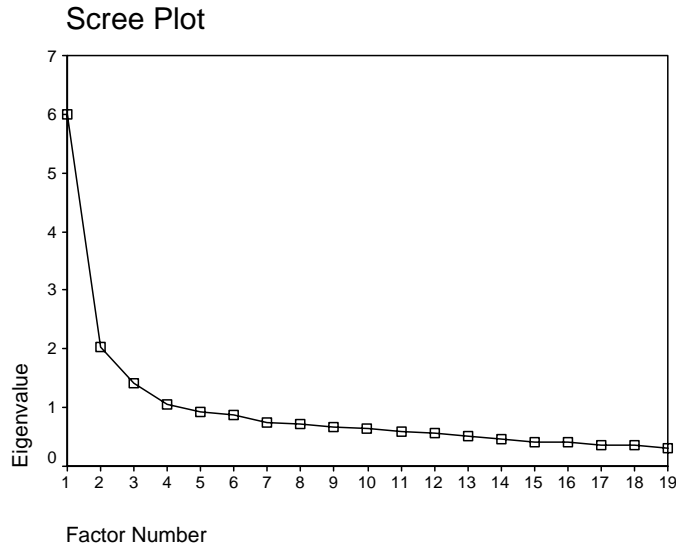


Figure 2: Cattell’s Scree Test

Appendix B

Variables loaded with each factor in Table 1.

Factor 1:

- MFA14D It is important to guarantee food safety.
- MFA14F It is important to guarantee production animal welfare.
- MFA14B It is important to maintain rural environment (e.g. reduce nutrition leaches and to maintain biodiversity).
- MFA14C It is important to maintain socio economic viability of rural areas.
- MFA14E It is important to guarantee food security.
- MFA13D Agricultural policy should guarantee animal welfare.
- MFA14A It is important to maintain rural landscapes.
- MFA13E People are responsible for nature conservation.

Factor 2:

- MFA15B It is important to maintain rural landscapes around the areas where I spend my holidays and leisure time.
- MFA15A It is important to maintain rural landscapes near my residence.
- MFA15C It is important to maintain rural landscapes around the roads I often use.
- MFA13A From time to time, it is pleasant to spend time in a peaceful countryside far away from the city noise.

Factor 3:

- NMFA13B I do not consider that agriculture remarkably damages environment.
NMFA13 We should subsidise agriculture.
NMFA13C In a situation of crisis, food imports are not a solution for the food supply preservation.
MFA13H I find agricultural landscape more appealing than landscape in its natural state.
MFA13G I prefer domestically produced food.

Factor 4:

- MFA15D It is important to maintain rural landscapes and rural areas in remote areas.
MFA15E It is important to maintain rural landscapes and rural areas generally.



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Customer Relationship Management at Farm Credit Services of Mid-America: Working towards a SingleView¹

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Abstract

This case study explores Farm Credit Services of Mid-America's (FCS MA) process of identifying and implementing new technology needed to meet the needs of their customer relationship management (CRM) program. This case illustrates the key challenges facing firms as their CRM programs are expanded and improved to continually meet the customer's needs and explores the complexities of developing and implementing a large information technology system. Decisions ranging from which technology system is right to which approach is best when training and motivating the system users are considered.

Keywords: customer relationship management, technology implementation, market segmentation, marketing strategy

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IAMA Agribusiness Case 9.3.A

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Background

Farm Credit Services of Mid-America (FCS MA) is a cooperative financial services provider serving over 65,000 customers throughout the states of Kentucky, Ohio, Indiana, and Tennessee. Through internal growth, consolidations, and mergers, FCS MA has become the nation's largest Farm Credit association with more than \$8.5 billion in loan assets, 81 lending locations, and over 750 employees.

FCS MA's core strategy is to deliver financial products, loan products, and limited financial services in a competitive, efficient, and seamless fashion to farmers and rural residents. FCS MA believes their customers look for value, so they concentrate on low cost and efficiency. At the same time, FCS MA believes they must create a relationship with their customers that is so proactive, deep, and tangible that the customer will not want to shop with anyone else. Therefore, 'customer focus' is one of FCS MA's six corporate values. FCS MA defines this 'customer focus value' to mean that "FCS MA will constantly seek to identify and understand the needs of both our external and internal customers – and to exceed their expectations in a way that will help them achieve success." According to FCS MA, these corporate values are intended to help define both expectations of employees and practices to be followed.

Delivering on the customer focus defined above is important because FCS MA's customers are diverse. Farm and agribusiness customers range from those that have gross farm incomes (GFI) as low as \$500 annually to large national agribusiness firms with sales in the hundreds of millions of dollars. In addition to farm loans, FCS MA offers home loans to anyone living in rural areas or in towns with a population under 2500. Approximately 85% of their portfolio is in agricultural loans to full and part-time farmers and agribusinesses, and about 15% is in consumer loans.

Farm loans include operating loans, equipment loans, and real estate loans with many rate options and payment types. Country home or consumer loans include loans to build, re-build, purchase, or develop a homestead. Finally, financial services include life insurance, crop insurance, and funds management. Clearly, customers needing these types of loans and financial services are diverse, and FCS MA has grown by serving all of them in their four state region.

Segmenting Customers at FCS MA

Maintaining FCS MA's core value of customer focus is a challenge due to the diverse customer base, the broad product offering, and the large size of the organization. For these reasons, FCS MA's leadership recognized a need to develop a segmented marketing strategy. Four segments, listed below with some of their primary characteristics, were identified by FCS MA leadership:

1. Rural Home or Agri-Consumer (farmer with annual GFI of \$500 to \$40,000)
 - Influenced by timeliness of handling of all service requests, trouble free loan processing procedures, and up-front explanations of all services.
 - Reached through influencers such as builders, realtors, current customers, auctioneers, insurance agents, title companies, developers, and other lenders.
2. Part-time Farmer (GFI of \$40,000 to \$100,000)
 - Influenced by same factors as agri-consumers plus visible community involvement by all FCS MA staff. Expects staff to possess a strong grasp of all eligibility rules and lending regulations.
 - Reached through influencers such as equipment dealers and input suppliers.
3. Traditional Farmer (GFI of \$100,000 to \$250,000)
 - Influenced by up-front and personal contact. Counseling and agricultural expertise is important. One-on-one farm visits are needed, and loan approvals or denials must be communicated clearly.
 - Reached through community involvement and one-on-one attention.
4. Commercial Farmer (GFI of \$250,000 and up)
 - Expects lending officers to have broad expertise and a thorough understanding of the agricultural industry and important trends.
 - Lending officers must allow customer preferences to drive the type of relationship and level of necessary contact, but at least two annual, personal contacts should be made with each customer in this group.

FCS MA leadership believes that these market segments and associated characteristics are general guidelines, but not absolutes. They recognize that customer relationships are complex and that every customer has some unique characteristics.

Serving Customers at FCS MA

FCS MA's current structure allows for decentralized, site specific execution of the marketing strategy. Home town service is provided from over 80 locations by financial service officers (FSOs). The FSO is the key person in determining the type of relationship that best matches the customer's needs. Some FSOs are dedicated to the consumer market and others serve the agricultural market. The agricultural FSOs have a considerable array of loan products, interest rate options, loan pricing flexibility and financial services to build from as they develop tailored solutions for farmer customers.

In addition to directing the customer relationship, the FSO is responsible for sales, has authority to act on loan requests, and keeps information on potential customers such as loan needs or expansion plans. The approximately 80 agricultural FSOs are encouraged to spend a high percentage of their time doing field visits with their 250 to 400 accounts. (Some FSOs have as many as 900 accounts.) The average loan portfolio for an FSO runs anywhere from \$45 million to \$75 million. At the same time, the realities of the position require a relatively significant amount of time to be invested in completing administrative duties. The FSO also directs the customer service representative (CSR), business analyst (BA), and other FCS MA employees when they participate in the customer relationship.

The CSR interacts with customers on a regular basis doing loan processing and follow-up work, moving money between accounts, and performing other transactional activities. Although CSRs spend most of their time in the office, they have a high degree of customer interaction over the telephone. While customers have primary CSRs, the realities of scheduling mean that at any given time, a farmer customer may be working with a different CSR. The role of the CSR is to support the FSO, and for each FSO there are usually two CSRs. The FSO and the CSR are housed in the same location, but their roles and relationships do vary some from location to location across the four-state area.

The business analysts (BAs) complete the customer service team in a role primarily focused on evaluating loan applications. Although the BAs have little direct contact with the customers, they are encouraged to spend as much as 15% of their time in the field meeting customers. In many cases, such BA contact with customers plays an educational role to help producers better understand the loan decisions FCS MA makes. At other times, it is a trust building activity, so the farmer customer can become more comfortable with the 'lending team' servicing his/her account. In many cases BAs are not at the same physical location as the CSRs and FSOs they support. Figure 1 depicts the relationship between FSOs, CSRs, and BAs.

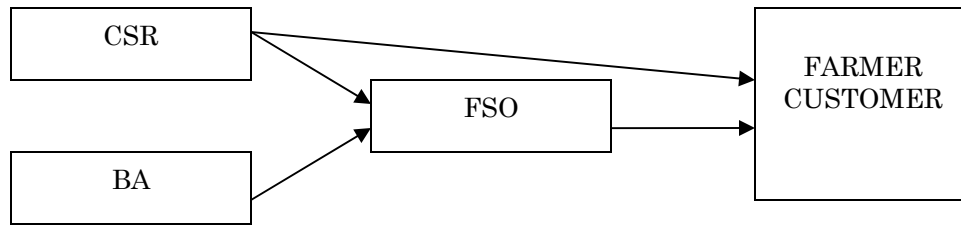


Figure 1: Organizational Relationship between Customers, FSOs, CSRs, and BAs

A recent survey of FSOs revealed much about the nature of their relationships with farmer customers:

- FSOs typically have between 30 and 90 accounts (out of 250 to 400 total accounts) that receive close attention, while 15 to 30 accounts receive concentrated attention.
- These key customers (top 30 to 90 accounts) account for between 40% and 70% of new money opportunities in addition to their current business.
- A list of 10 - 15 “hot prospect” accounts is maintained by most FSOs.
- These “hot prospects” account for 10% to 15% of new money opportunities.
- Most FSOs perform some administrative/clerical tasks that should be delegated to CSRs or clerical staff. A general belief is that FSOs could accomplish much more with more CSR support.

Finally, the FSOs, CSRs, and BAs are all involved in the loan origination process. This process involves manual customer information entry into one of four loan origination software tools that exist at FCS MA. FCS MA leadership acknowledges that the loan origination process is inefficient.

Sales Force Automation

FCS MA’s sales culture involves tracking a variety of performance metrics and emphasizes basic principles of reaching out to customers through sales calls, letter writing, emails, and tailoring loan options, among other sales and marketing tactics. Metrics in these areas are measured weekly, benchmarked, and reported within the organization. Each FSO and CSR knows how their performance compares to others in the organization.

Unfortunately, FCS MA computer systems currently do not allow FSOs to share information on business leads with other FSOs or with management. Also, the effectiveness of managing new money accounts (prospects) is not known or tracked in any meaningful way. While the nature of the financial products they sell requires tremendous amounts of data to be collected for loan applications, customer contact data is not collected in any formal way, and marketing and selling activities are not automated to any significant degree.

FCS MA management first recognized the need for better tracking of customer contact data and automating sales force tasks in the late 1990's when a system called ACT! was implemented. ACT! is a popular stand alone sales contact management software system that tracks customer contact information, assists in management of customer communications, offers calendaring of customer contacts and service tasks, and provides for a variety of summary reports on sales/contact activity. However, ACT! was not designed to be integrated with FCS MA accounting or lending systems. Management decided on a conservative, demand-driven roll-out for ACT!. They made ACT! available to interested FSOs, and assumed that other FSOs would begin using the new system as they realized the software system's value.

ACT! received a lukewarm response within the organization. Because ACT! was not integrated into FCS MA's other information technology systems, senior FSOs did not find the system especially helpful. These superior FSO performers saw little value in taking the time to enter data when 'they were doing a great job already'. And, less experienced FSOs (those who would benefit most from the ACT! system) followed the senior FSO lead and did not use ACT!. Another problem with ACT! initially was that it did not synchronize with the central corporate ACT! database properly, leading to much frustration by those FSOs who did want to use the program.

Management became more proactive and attempted to encourage FSOs to use ACT!. However, given that most of the benefits were local and remained with the FSOs, management was not getting much useful information from the ACT! system either. Therefore, mandating the use of ACT! seemed hardly appropriate (many FSOs were truly doing a good job with their existing systems), and for similar reasons, encouraging the use of ACT! through a reward system appeared self-defeating. Over time, a few FSOs did begin using ACT! and most all who did benefited from it. For example, one FSO ultimately had 1200 contacts in the ACT! system and used ACT! very effectively in improving her relationships with farmer customers.

Even though some FSOs had good experiences with ACT!, management decided that ACT! did not fit the company's needs more broadly. The software created additional work and offered employees little benefit. While FCS MA management had decided to pursue other options, ACT! continued to be used in a variety of

places around the organization. In the end, most FCS-MA employees found ACT! an inconvenience which quickly went away. But the failed attempt did set a negative precedent for future software implementations within the decentralized FCS-MA organization.

Despite the problems with the ACT! implementation, FCS MA needed some type of information system to support their desired customer relationships. The internal communication processes at FCS MA were just too inefficient to meet the goals of their CRM program. The current systems and processes did not capture business intelligence, redundancies were normal, and communication gaps resulted in mistakes and embarrassments in front of the customers. Figure 2 shows the complex maze of technology and communication links that FCS MA employees must work through.

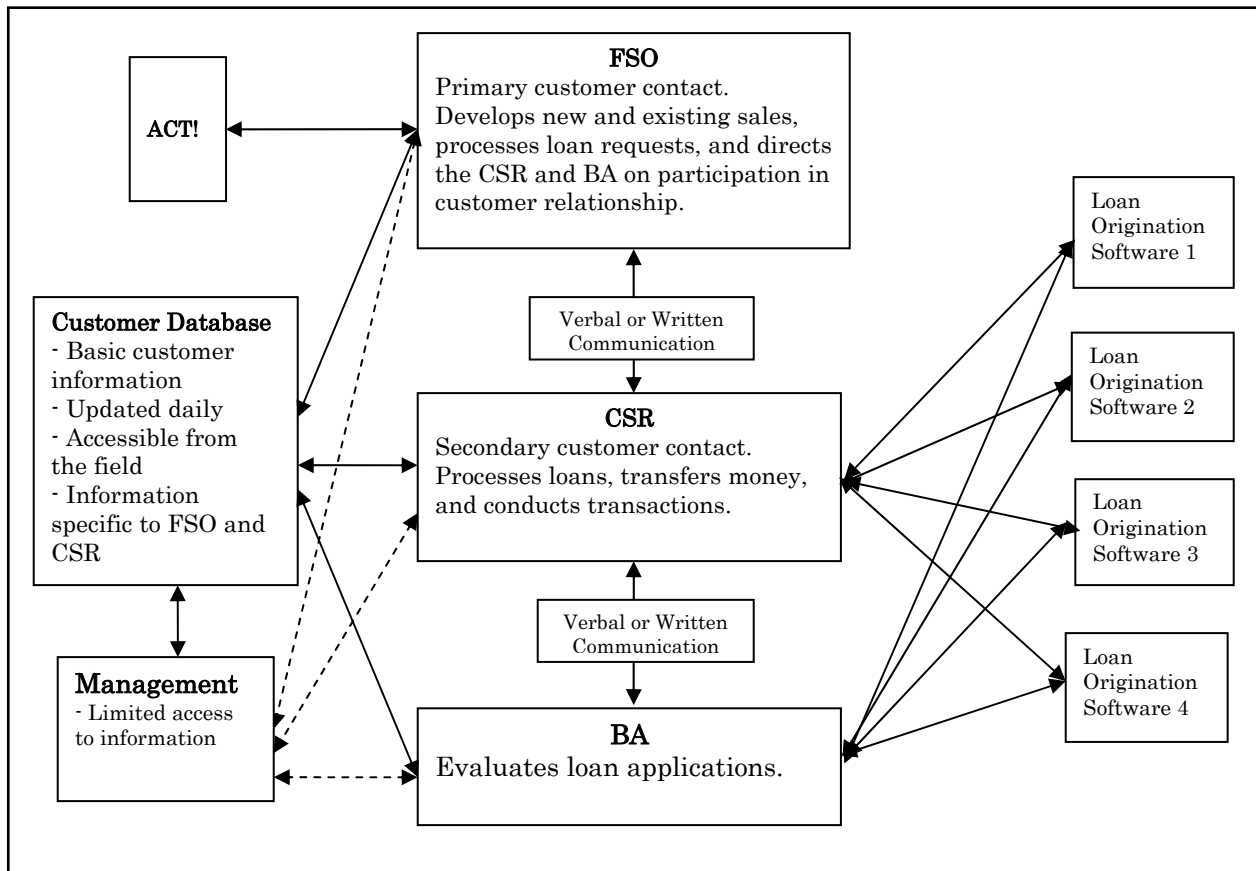


Figure 2: Internal Communication Using the Current Processes and Technology

Working toward a SingleView

Building off their market segmentation and field sales strategy, FCS MA began moving toward a more formal CRM strategy in 2002. The organization was already

pursuing targeted marketing strategies aimed at specific customer segments. The FSOs were already working toward developing tailored solutions for commercial agricultural accounts. But, working with a diverse set of customers and managing the myriad of organizational touches with accounts was a real challenge. And, ACT! just did not meet the firm's needs. In addition, the organization was growing quickly, and providing systems to accommodate significant numbers of new FSOs, CSRs, and BAs was a reality (more than 100 new hires in these areas were expected over the next few years). After the ACT! experience and recognizing the demands growth would create, the need for an integrated software system was even more obvious.

From early on, the most senior levels of management were involved in discussions and decisions about the overall initiative. FCS MA management believed that implementing a successful CRM program of this size and scope would require improved technology systems to track, communicate between, and integrate all aspects of the FCS MA organization. FCS MA's information systems more broadly needed an overhaul. And, the decision was made to pursue CRM capabilities as part of a larger systems redesign. As the discussions progressed, the huge financial and time commitments of such a system soon became obvious.

Early in the process, FCS MA looked outside to get an external perspective on their requirements and systems which would deliver to those requirements. A consulting firm was chosen based on experience with peer-type applications to provide this external perspective. While their early recommendations were more extensive than FCS MA viewed desirable, the consultant brought considerable value to the overall project in terms of systems definition and scope. This consulting project, building on extensive FCS MA input, surfaced the following business needs for a new software system:

- Centralize the business onto one technology system. This includes accounting, lending, and business development.
- Be accessible and usable by all 750 FCS MA employees. Employees must need to, and want to, use this system – real benefits must exist. Over 200 FSOs and 350 CSRs will use the software.
- Capture and possess intelligence. A single source must exist for looking up, managing, and serving customers. This will reduce processing time and errors.
- Reduce redundant work. The current system requires duplicate entry and is not integrated. The new system must allow for single entry and visibility by all.

- Gain information on prospective customers and the lending market. Seventy percent of new money opportunities come from loan officer/customer relationships, but little or no 'new opportunity' data is stored within the organization. The new system must help track and identify potential new business. The new system must help FCS MA management better understand the lending market.
- Increase service without disruptions. The current customers should receive better service in the form of reduced processing time. Loan officers will better serve current customers by having quick access to all account information.

FCS MA began developing an in-house system specially designed to meet their needs, but in-house development was abandoned when new semi-custom CRM software systems became available. In the end, FCS MA opted for a custom database shell which utilized commercially available modules to meet the dual demands of customization and cost efficiency. They called the new system SingleView because ultimately, FCS MA wants a 'single view' of their customers available throughout the organization. This semi-custom system is designed to organize and manage information critical to running and expanding the business by integrating accounting, loan management, and business development activities.

For the CRM strategy to be successful, this new technology must be successful. One aspect of the SingleView system is Microsoft CRM (MS-CRM), the commercially available module that FCS MA selected for managing data on customers and potential customers. MS-CRM will help create an organized data base of all customers, leads, and contacts. The CRM system will log all customer contact while giving the entire organization access to important customer information. The capabilities of MS-CRM will help FSOs, CSRs, BAs, and management both better communicate and better serve customers.

The MS-CRM component of the SingleView system will allow FCS MA to generate business intelligence through quick and easy customer information entry. This information will, in turn, allow for much easier reporting and information sharing. The MS-CRM and the larger SingleView system will be used by the entire FCS MA organization. Decentralized data entry will allow everyone from the CSRs to management to look at account activity in real time. All employees will have a single management and customer contact tool. Sales metric tracking and reporting will be a part of the early capabilities of the system. The commercial farmer CRM segment will see fewer "fumbles", and large accounts with multiple entities will be easier to manage. Finally, small loan applications will be approved faster. Figure 3 shows the simplified internal communication flow between employees and databases.

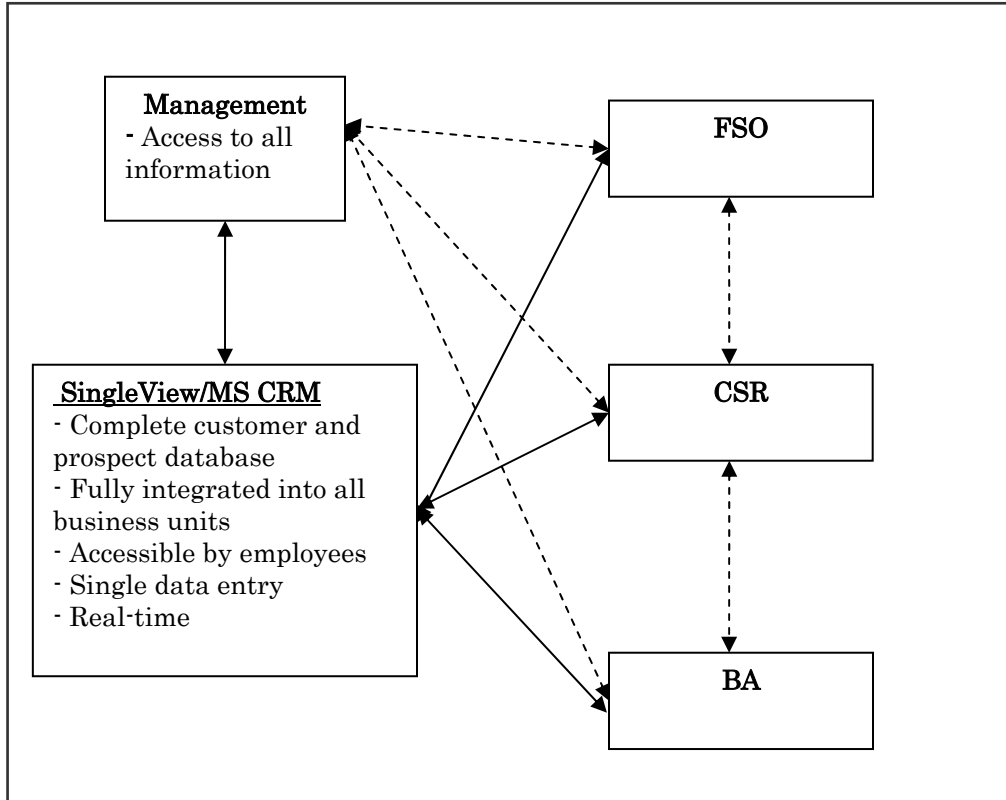


Figure 3: Internal Communication Using the New SingleView System

Eventually, SingleView will hold all customer information on a company intranet system (data warehouse). From customers seeking home loans to commercial farmers, all customers should realize faster processing time and more precise service because SingleView will ultimately connect to loan application process and loan approval software, which is currently handled by four separate software systems. This new system will offer the potential to support the development of a call center longer term.

Many individuals inside and outside the organization were involved in the development of the system. Externally, extensive discussions were held with AgriBank, the wholesale lender and provider of business services for FCS MA. Internally, a cross-functional team of 25 FCS MA employees was assembled to discuss and surface functionality issues for the project. The role and organization of this team evolved over time, but the group (and subsequent sub-groups) provided crucial insights into the overall project. The initial rollout was scheduled for fall of 2004 but was subsequently pushed back to July 2005. A beta test project was begun in May 2005 at four offices, one in each of the four states served by FCS MA. These four sites were primarily charged with final testing and fine-tuning of the near ready-to-launch system. Once the system is rolled out, FCS MA management fully

expect utilization of system functionalities to pick up speed as users become more comfortable with the system and the ‘wins’ become more evident.

The vision for FCS MAs CRM program and SingleView is clear. SingleView will centralize the business onto one technology system, be accessible and usable by all 750 FCS MA employees, capture and possess customer intelligence, reduce redundant work, help gain information on prospective customers and the lending market, and increase service without disruptions. FCS MA will use the new technology to better serve their customer segments while focusing on cost and efficiency.

Implementation – People, Process, Technology

FCS MA management knows that integrating the SingleView and MS-CRM system into the daily operations of the FSOs and CRMs will be challenging. The beta test confirmed that the technology is ready for the “go live date”. New work processes are in place to ensure that SingleView will allow for all key “business essential” functions. Finally, but most importantly, FSOs and CSRs are being trained and prepared to embrace the technology under all circumstances. Unlike ACT!, SingleView must be used to its full potential, by everyone in the organization, to execute the organization’s CRM strategy.

Creating a culture where the FSOs and CSRs embrace SingleView has been a priority of management from the beginning. FCS MA management realizes that FSOs and CSRs are motivated differently. For example, FSOs are motivated to identify potential customers and sell loans. Therefore, highlighting the capabilities of identifying new customers and new loan opportunities is a top priority for “selling” SingleView to the FSOs. CSRs want to quickly process loans and look up/access information when necessary. Therefore, highlighting the software’s functionality is a top priority for “selling” the system to the CSRs.

Three major SingleView “wins” have been shared with company employees. First, the integration of MS-CRM and MS Outlook has been seamless, meaning that users will have access to all MS-CRM functions simply by opening MS Outlook. (MS Outlook was already in use throughout the organization as an e-mail system and scheduling tool.) This systems integration should appeal to the CSRs. Next, SingleView was utilized to sort through a purchased FSA database of 49,000 full-time farmer, non-customer prospects, to identify high-priority prospects. The marketing/sales campaign based on these data resulted in \$65 million of new business for FCS MA. This win highlighted how FSOs can use SingleView to develop new business. Finally, SingleView was used for a loan conversion look-up exercise, saving customers literally millions of dollars and increasing FCS MA’s profit when loans were renegotiated to take advantage of new, lower interest rates.

Using SingleView to its fullest potential requires each user to be comfortable with the system. Therefore, management has pro-actively developed a four-phase training approach. The first phase is a conference that sets the direction for SingleView. The new tools and their potential are explained, and each FSO and CSR is given an hour of hands-on training. The second phase makes use of computer based training modules, which management believes have been quite successful. Webinars, in which experts answer questions, make up the third phase. The fourth and final phase is regional meeting roll-outs, supported by each individual FCS MA office. At this point, training phases one and two are complete.

Management knows that even with their proactive approach, several issues may negatively influence FSO and CSR attitudes toward, and use of, the new technology. First, while FCS MA's systems and technology group has grown from 15 employees to 27 employees, it has been strained by the massive workload of the roll-out. Systems requirements and problems with speed ultimately required upgrades to servers, and the original "go live date" was pushed back by several months. Next, systems restrictions will make the SingleView system virtually unavailable when FSOs are out of the office in the field, and dial-up use may be limited or slow. Therefore, maintenance of the estimated 250,000 database entries could become a tedious end-of-day or end-of week project, instead of a real-time management exercise. Furthermore, competition between FSOs may reduce the incentive to keep all information updated, because of fear that a customer will be 'stolen' or persuaded to change to a different FSO. Most importantly, the corporate culture at FCS MA is nurturing and decentralized, so, if FSOs and CSRs do not embrace the new technology, forced use and mandates might create resentment and more adoption problems.

Possible approaches to ensure that SingleView and MS-CRM are integrated into the daily activities of the FSOs and CSRs include a plan to have FSOs and CSRs isolate and work on key skills, which require the use of SingleView. Alternatively, upper level management could rely on SingleView for reports that are now compiled verbally through weekly meetings, meaning that only results from FSOs and CSRs using the software would be recognized. Whatever the solution might be, the FSOs and CSRs must embrace the use of SingleView and MS-CRM to fully execute the organization's CRM strategy.

A Perspective from the Users in the Field

An FSO and a CSR involved in the SingleView pilot program shared their views on SingleView. They have 'heard' the proposed benefits of SingleView communicated in the training sessions. However, they have some concerns. Reduced data access and lost speed, security issues, and start-up and training issues are on their minds. The reduced data access and lost speed concern tops their list. With SingleView, an FSO cannot lookup loan information at a customer's location, which is a capability of the

current system. Furthermore, the new system response speed is slower for the CSR, so calls from customers or FSOs in the field cannot be answered instantaneously, as they were before SingleView. (The data are, of course, more current with SingleView.)

The users are also concerned about internal security issues. As proposed, every FSO and CSR will have access to every customer's account and every prospect's information. The users question whether all FSOs and CSRs should be able to see every borrower's information. Second, any employee could potentially leave the company with FCS MA's entire customer database, including potential customer lists. The users final concern relates to numerous start-up issues and what they perceive as a general lack of communication and training. The start-up issues range from error messages to reporting problems, and the training to date was described as an overview, not in-depth or sufficient.

Even though the concerns and emotion are real, the users do articulate some of the benefits they expect to come from SingleView. Moving to a paperless world will mean fewer 'sticky notes', few redundancies, fewer errors, and faster information sharing. Future capabilities, such as a company wide loan origination system, are also recognized as possible with a new system. Still, the users keep wondering how they will ever fully realize benefits from SingleView, and how chaotic their life will be until they do.

Discussion Questions

1. Clearly, FCS MA put in place many of the elements of a CRM strategy before pursuing the technology dimensions of CRM aggressively. What are some of the strengths of their CRM approach to date? What areas could use improvement?
2. Based on what you know about FCS MA, their CRM strategy, their experience with ACT!, and their implementation experience to date, what are the most important benefits you see to this investment – from the customer, firm, and the FSO/CSR perspective?
3. The users interviewed clearly have some concerns about the implementation and use of SingleView. Are their concerns justified? In your opinion, are they unusual or to be expected? More broadly, what challenges from FSOs/CSRs do you expect during the roll-out?
4. Compare and contrast what you know about the ACT! experience with what you know about the SingleView experience. How are the technologies similar or different? How is management's approach to the implementation and the need for the system similar or different?

5. Use what you know about FCS MA, their CRM program, and their technology implementation to date to develop a roll-out plan for the new SingleView system. At this point, what should be done to make sure the new technology is used to help meet the goals of FCS MAs CRM program?

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Analyzing Risk and Uncertainty of New Product Marketing: The Case of eMerge Interactive and VerifEYE®¹

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Abstract

This teaching case focuses on the application of decision tools to assist managers making choices in an uncertain business climate. The case considers the difficult task of introducing a new product into the market. Under consideration is a sophisticated, surface-scanning technology that has applications in the food processing, food retail, and health industry sectors. Management of eMerge Interactive is faced with uncertainties in legislation, demand, and competitor response. The case can be used as part of a course in strategy and/or risk management where tools such as influence diagrams, scenario and payoff matrices, decision trees, and real options are introduced.

Keywords: risk management, influence diagrams, payoff matrices, decision trees, and real options

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¹ Though eMerge Interactive and the VerifEYE technology are genuine, the financial numbers used in this case are hypothetical. The numbers are used for teaching purposes only and are unlikely to reflect reality for eMerge Interactive. The authors would like to thank members of the AGECE 690D course for their helpful comments and suggestions. This case builds upon a detailed case analyzing the future direction for eMerge Interactive Inc. written by John Foltz at the University of Idaho.

IAMA Agribusiness Case 9.3.B

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Introduction

William Mies, the Vice-President of National Accounts for eMerge Interactive, was listening in on the second quarter results report on August 9, 2005. Dave Warren, CEO and President of eMerge Interactive, indicated that, "The medium- to longer-term outlook for our VerifEYE technology remains positive." Mr. Mies knew that testing by independent parties, including the USDA, indicated that VerifEYE significantly reduced visible and non-visible contamination on meat carcasses. With this outlook he was optimistic that investors would be willing to overlook the lower than expected short-term revenues for the significant long-term potential offered by the VerifEYE technology.

The future potential of VerifEYE and how best to capture the value created by the technology has been weighing heavy on the minds of Mr. Warren and his management team. They know the market for this scanning technology is fraught with many uncertainties including government mandates, consumer demand for scanned products, and the innovative responses of competitors. Although management wants to capitalize on the incredible value they believe lies in VerifEYE, they also know they need to limit their downside risk with the introduction of the product to remain an attractive investment.

As the conference call for the results report wrapped-up, Mr. Mies began to think about the challenge Dave Warren had issued him the day before. Confident that the future was bright, Mr. Warren asked Mr. Mies to begin quantifying some of the risks that they faced in rolling-out their VerifEYE technology. Mr. Warren charged Mr. Mies with developing a presentation addressing these market uncertainties, and asked that he be ready to share his findings with the senior management team next week.

eMerge Interactive Background

Located in Sebastian, Florida, eMerge Interactive is a start-up company attempting to bring information and traceability technology to the animal protein market. Incorporated as eMerge Vision in 1994, the company conducted an initial public offering in February 2000 raising \$130 million (www.emergeinteractive.com). These proceeds were used to fund three primary product areas: cattle marketing, an online agricultural products store, and a feedyard information management system. Adoption of these products was slower than anticipated and plans never fully materialized. In May 2001, eMerge discontinued its online store and halted development of many technical operations.

In August of 2001, a new management team headed by President and CEO Dave Warren took responsibility for the operations and strategic direction of eMerge. Mr. Warren has extensive experience in the livestock industry. He became president of

Allflex USA, Inc. (www.allflexusa.com) in 1990 and helped that company establish itself in North America. His experience within the livestock industry exceeds 30 years of sales and management expertise, and he used this knowledge to build a skilled management team (Table 1).

This new team pared back the cattle and online operations, and shifted focus to two products: CattleLOG and a yet unnamed fecal detection tool. It was these two products that appeared to have the most potential in ensuring eMerge’s future success, and so commercialization of both product lines was pursued.

CattleLOG is the name for a suite of products and services designed to allow for greater communication of individual animal data between producers and processors. These products include data collection software that operates on a user’s PC and a separate online data reporting service. This product allows producers, feeders, and packers to analyze individual animal data collected at all stages of production. The program is suitable for large, high volume cattle feedyards and smaller operations making it attractive to most cattle ranchers.

Management named the fecal detection system VerifEYE® and began working with meat processing plants to install it through a signed developmental agreement. As well, a handheld version of VerifEYE® was launched and received considerable interest in the U.S. and abroad.

Today, eMerge is divided into two business units: CattleLOG® and VerifEYE®. Their mission is to deliver innovative technologies to new industries in a manner that creates new value for the industry and consumers. Management continues to grow revenues while controlling costs (Figure 1).

Table 1: eMerge Interactive Management Team

Executive	Leadership Role	Experience
David C. Warren	President and CEO	More than 30 years of sales and management experience in the livestock industry including time with Allflex USA and Fermenta Animal Health
Robert Drury	Executive V.P. and Chief Financial Officer	More than 10 years of finance expertise including time with the Ag Chemical Division of FMC Corporation and Pepsi Co.
Mark S. Fox	Executive V.P. Technologies	More than 20 years experience in software design, development, and management including time with Professional Software Consultants/Intentia Americas and Cerner Corporation
William Mies	Vice-President National Accounts	More than 30 years of experience in the livestock industry including a key role in creating, and then advising, the National Beef Quality Assurance Program

Source: eMerge Interactive, Inc. corporate website

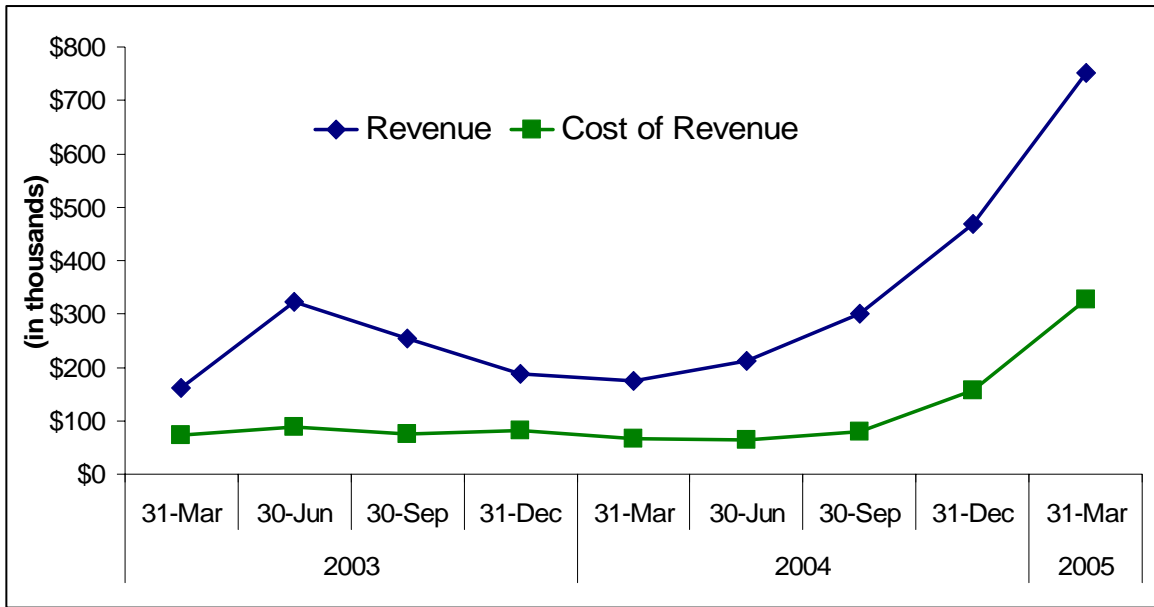


Figure 1: eMerge Quarterly Revenues and Cost of Goods Sold
 Source: SEC filings

The VerifEYE Technology

According to Mr. Warren in an interview with *The Wall Street Transcript*, “Today each packing plant has a series of interventions that attempt to remove contamination on the animal. Through the slaughter process, there are several areas where either fecal matter from the hide or from the ingesta of the animals can contaminate the beef. After the interventions, you have a USDA inspector who is part of USDA’s Food Safety Inspection Service or FSIS, to give USDA approval for the carcass. The problem is that the inspector can only see what the human eye can detect. VerifEYE uses a fluorescent response technology that provides the ability to detect microscopic or invisible amounts of contamination that could be harboring the deadly bacterial pathogens. Workers and inspectors now have a new technology to enhance their detection efforts.”

eMerge’s VerifEYE technology gives users the ability to detect the organic contaminants that carry bacteria (such as E.Coli) on animal carcasses and hand surfaces. The VerifEYE Food Safety Technology can detect the organic contaminants by fluorescence. This gives users the opportunity to be more efficient in their practice. For example, in the meat processing industry, workers can be more precise in their trimming job and waste from over-trimming can be reduced. Furthermore, chemical treatment of non-contaminated meat is unnecessary. Expenses and reputation problems caused by possible recalls can also be avoided. The technology can be incorporated in a hand-held scanning unit that users can use to scan carcasses.



Carcass Scanning Unit



Hand Held Unit (SOLO)



Hand Scanning Unit

Figure 2: VerifEYE Units

Source: www.verifeye.net

In the healthcare industry, a hand scanning unit can help reduce food-borne illness outbreaks and the spread of disease by reducing improper hand hygiene. The technology can also be used to scan workers' hands after washing them to detect whether organic contaminants are present.

eMerge Interactive Goals and Strategies for VerifEYE

According to their website, the VerifEYE Food Safety Group is dedicated to developing and marketing cutting-edge products that improve food safety in the meat/food processing, food retail and foodservice industries to achieve the highest levels of food safety for all American households. To accomplish this, they continue to dedicate resources, in particular their skilled research and development team, toward innovation of products that can reduce food borne illness and improve quality of life.

Support for the VerifEYE technology has come from industry, academia, and government alike. Executives at Excel Corp., Rosen Meat Group, and ABC Research Corp. have provided endorsements; positive reports have also come from the University of Florida and The Handwashing Leadership Forum. Most recently the Secretary of Agriculture awarded the Secretary's Honor Award to the inventors of VerifEYE for "Enhancing Protection and Safety of the Nation's Agriculture and Food Supply."

Potential VerifEYE Customer Sectors

According to the United States Department of Agriculture 32.7 million head of cattle are slaughtered and processed into 24.7 billion pounds of beef, which accounts for more than half of the 45.6 billion pounds of red meat (beef, veal, pork, and mutton) produced each year. There are 855 red meat slaughter plants in the U.S. under federal inspection. More than 80 percent of these plants slaughtered at least one head of cattle in 2004, with the remainder of these plants processing exclusively hogs and sheep. Just 13 plants (under 2 percent), however, processed more than 52 percent of the head of cattle slaughtered (Figure 3).

Generally speaking U.S. red meat processing is highly concentrated among the five largest processors. The largest player, Tyson Foods, alone accounts for more than 30 percent of the volume of beef processed (Figure 4). The next four (Excel, Swift, National Beef, and Smithfield) account for another 67 percent of the industry, and each of them are also involved in the poultry and pork processing sectors – enterprises that also stand to benefit from the carcass scanning technology. The management of eMerge Interactive has established relationships with several of these processors. eMerge is open to leasing and/or selling the VerifEYE units to processors. They offer extensive servicing of the units once they are installed.

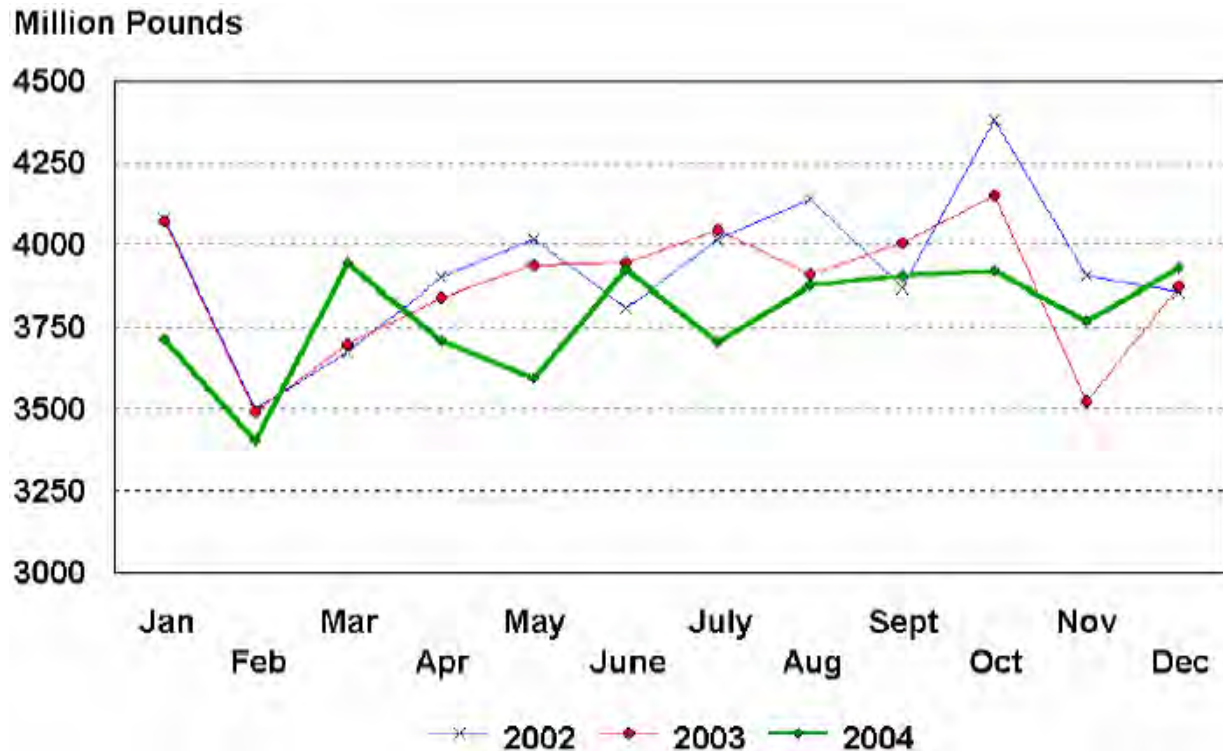


Figure 3: U.S. Monthly Commercial Red Meat Production

Source: USDA-NASS

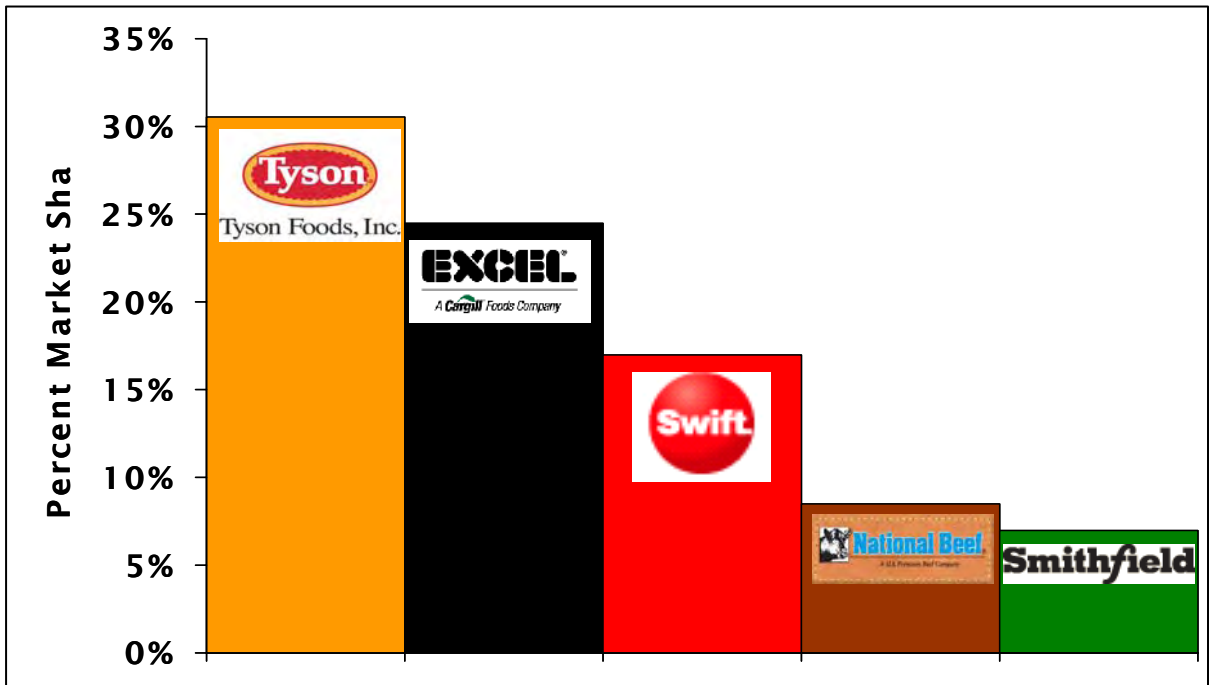


Figure 4: Market Share of the Largest Beef Processors

As noted earlier, other sectors that could potentially benefit from this type of scanning technology are hospitals, nursing homes, day care centers, and food retailers. All of these share the important characteristic that the cleanliness of employee's hands plays a critical role in the quality of a good or service being delivered. The hand scanning unit can detect the same visible and invisible contaminants that could potentially transmit disease among patients, particularly children or the elderly. In fact, eMerge's own research indicates that the VerifEYE Hand-Hygiene System will identify contaminants on contaminated hands which the U.S. Centers for Disease Control (CDC) deems responsible for up to 23% of the estimated 76 million cases of food borne illness each year.

According to the CDC there are nearly 5,800 hospitals and nearly 16,500 nursing homes in the United States. More than 13 million people provide health care services in the U.S. including 5.6 million in hospitals and 1.9 million in nursing homes. Furthermore, the CDC estimates that healthcare-associated infections account for 2 million infections and 90,000 deaths in U.S. hospitals alone. This results in \$4.5 billion in excess health care costs annually. On their website the CDC states that "adherence to recommended infection control strategies can protect patients by reducing infections substantially."

Child day care centers would also find VerifEYE useful in the hand-scanning unit. Because kids are at an increased risk for acquiring some illnesses, this would help child care providers ensure adequate cleanliness by employees. According to the

U.S. Census Bureau there are more than 54,300 child day care providers employing more than 740,000 employees annually. Two other sectors that could benefit from VerifEYE are full and quick service restaurants. Nearly 7 million employees work in more than 366,000 establishments.

The Problem: Managing Market Uncertainty

For this case study you are a member of Mr. Mies's staff and he has come to you to lead this project. You are attempting to assess the market environment that will unfold for the VerifEYE technology. Your discussions thus far have focused your attention on three major sources of uncertainty – government legislation, consumer demand, and competitor response. Vice-President Mies has asked you to frame the analysis and help him prepare to present this information at the next executive meeting. Appendix A summarizes an internal interview Mr Mies has had with Dave Warren that provides additional background and Mr. Warren's perspective on the challenges and opportunities for eMerge Interactive and the VerifEYE technology. You recently had a chance to review some ideas on scenario analysis, payoff matrices, decision trees, and real options and thought they might be helpful in capturing thoughts and framing the analysis and discussion.

Appendix A - An Interview with CEO and President Dave Warren

William Mies (WM): Dave, how are we going to convey to eMerge investors the excitement about the VerifEYE technology that we've been developing?

Dave Warren (DW): I think that this is an incredibly unique product that has the ability to substantially reduce the likelihood of a food borne illness that can be caused when contaminants such as E-coli and salmonella make it through the food supply chain. Just as importantly, the scanning technology has many uses beyond just the food processing industry such as in the health and child care industries and in the food retail sector. Look, as more people start dining out more frequently they are going to increasingly demand food safety from restaurants. This technology can reduce the amount of contaminants that are passed along as the result of poor hygiene on the part of food service employees, child care workers, and hospital staffs. This unique product is patented and our competitor intelligence tells us that competitors are still a ways away from producing competing products. Our guess is that competitors are likely to wait until demand for these types of products begins to materialize before they make a move. This, I think, gives us an excellent opportunity in the marketplace.

WM: What does the roll-out for VerifEYE look like and what is our timeline?

DW: We have already begun working with meat processors that we know very well from our relationships built around our CattleLOG products. However, marketing

this technology is much more difficult for our company when we think about some of these new applications in the food service and health care industries. We are considering a few options and would like to identify within the next year if we can directly market this product or if we need to work with reputable companies that already serve these industries and license the product to them to distribute. I think we need to resolve this decision very soon. Part of what concerns me in this decision is that we aren't sure if there will be government legislation demanding significant improvements in contaminant identification and reduction.

WM: Do you see a mandate coming in the near future?

DW: That's a great question and something we have been considering to great lengths. We have even contemplated waiting until the government has decided on the mandate before choosing a marketing strategy. Right now it seems like the chances of a mandate or no mandate are roughly equal. Bill, it isn't enough to just hypothesize about potential outcomes, but we need to spend time thinking about the likelihood of different scenarios occurring and assigning probabilities to these events. This will enhance our ability to make decisions given what our expertise in the market is signaling. In this case our contacts in Washington have indicated that the mandate is currently in committee meetings with several members of Congress raising some concerns about the implementation costs of a mandate. The benefits appear to be substantial and we are providing that type of information to Congress to help speed the decision. But like I said, right now it seems like a 50/50 chance.

WM: How would this type of mandate impact the profitability of VerifEYE?

DW: First off, I don't think we are going to wait for a mandate. But, if the government chooses to mandate stricter regulations we will be ready. A mandate more or less dictates what demand will be but it also tends to create a lot of competitors trying to fill the same gap. With a government mandated demand, if we can roll out with a partner, my staff estimates the benefits will be in the area of \$60 million or so. But, if a competitor or competitors innovate similar technologies – then we might see profits in the area of \$27 million. And there's probably a 40% chance that competitors are ready with similar technologies. We are more concerned with innovations that would be superior to VerifEYE, which are roughly as likely as similar technologies being innovated. We estimate this would mean negative profits of about \$3 million for eMerge.

Alternatively, if we go with a direct marketing strategy and there is a government mandate, we will maintain more control over the supply chain, but will have to hire additional staff to carry out the marketing activities which will delay rollout and increase the probability of preemptive technologies by about 10%. Without competitors we expect profits to be \$75 million due to the additional influence we'll have in the channel, but similar technologies would cut profits by about \$40 million

from that number, and profits would again be negative \$3 million if we see a better technology introduced into the marketplace.

WM: How do you see the market for VerifEYE if the government does not enact a mandate?

DW: This is a great product and our market research indicates there is some chance that there will be high demand for the VerifEYE technology. We want to be the preeminent company in food safety and we are considering rolling-out the technology with a license agreement despite a 60% chance that adoption will be low in the first few years of its initial offering. With the limited investment of this approach to the market, we'll see some cost savings and lower downside risk. We would expect that if there is high demand, competitors will innovate and produce preemptive technologies about half the time, but we would still be profitable to the tune of roughly \$7 million. There is also a 40% chance that similar technologies will be rolled out at the same time and profits under this scenario are expected to be about \$25 million, but would be about \$63 million if we don't see any competitors in the marketplace.

WM: What if demand is low as you have indicated is a possibility?

DW: Under the license agreement we would pursue, we would see limited exposure. Our competitors would be less likely to innovate into preemptive technologies, and we would anticipate just 30% of the time there would be such innovations and even then we would likely have a loss of about \$3 million. I anticipate about 40% of the time competitors will be in the market with similar technologies. Then it will be dog-eat-dog competition for market share and we might not see any short term profits. But, if no competitors get in, which we would expect to occur about 30% of the time, we would see small profits to the tune of about \$12 million.

WM: If we choose a direct marketing strategy instead what does the future hold if the government doesn't enact a mandate?

DW: This option seems to offer the most upside potential if demand materializes. We would hire the best marketing team possible and would expect a good return on the investment – we would expect an increase in the probability of high demand around 60% of the time. There is no reason to believe that our competitors would innovate with different probabilities than if we used a license marketing strategy, but we would see profits be just \$5 million if preemptive technologies emerge, \$20 million if similar technologies emerge and a homerun of \$68 million if we are the only supplier in the market.

WM: How does this direct marketing strategy look in the face of low demand?

DW: That's a good question and we are working to limit our downside risk. Certainly we wouldn't expect our competitors to react in a different way as a result of our marketing strategy, but with direct marketing we would anticipate some of the costs of the marketing team to be unrecoverable. Thus, with a preemptive technology we might suffer losses of around \$7 million, while under similar technologies we would expect small negative profits. If there were no competitors we might still turn a modest profit of \$20 million or so.

WM: Thanks, Dave, I should have something ready next week for the board.

DW: Thank you, looking forward to the meeting.



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Banning Foie Gras in California

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Abstract

Sonoma Foie Gras is one of three producers of foie gras in the U.S. and the sole producer in California. The company employs the practice of force-feeding ducks and geese to produce this culinary delicacy. The case describes the foie gras industry and pending legislation in California, which would ban the practice of force-feeding ducks and geese as well as the sale of the products of force-feeding birds. Readers are asked to conduct a stakeholder analysis to identify the primary stakeholders and their interests, and to identify alternatives and a course of action for Sonoma Foie Gras.

Keywords: stakeholder management, stakeholder analysis, foie gras

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IAMA Agribusiness Case 9.3.C

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Introduction

On March 1, 2004, Guillermo Gonzalez, owner of Sonoma Foie Gras (SFG), California's sole foie gras producer, pondered the future of the company he owned with his wife, Junny. Gonzalez was concerned about proposed legislation that had the potential to put him out of business. Last month, legislation that would outlaw the force-feeding of ducks and geese was introduced by Senate President Pro-Tem John Burton to the Senate Committee on Business and Professions. The legislation was introduced at the request of animal protection groups including AVAR (Association of Veterinarians for Animal Rights), Farm Sanctuary, Viva!USA, and Los Angeles Lawyers for Animals. In addition to prohibiting the force-feeding of ducks and geese, SB 1520 would ban the sale of products in California that are produced by force-feeding birds.

Guillermo Gonzalez and his wife Junny emigrated from El Salvador to the United States in 1985 to pursue their dream of building a foie gras farm. After arriving in the U.S., Guillermo apprenticed in the Perigord Region of France before opening Sonoma Foie Gras in California's Central Valley in 1986 (Sonoma Foie Gras). SFG uses the traditional method of raising ducks for foie gras. The ducks roam free until they are placed in cages with about 12 ducks per cage (Sonoma Foie Gras). They are then force-fed twice a day by a single feeder for a period of two weeks (Sonoma Foie Gras). Currently SFG has 10 employees with sales of approximately \$3 million (Inc.com). SFG distributes its products primarily to upscale restaurants in California.

Foie Gras History

Foie gras, French for "fatty liver," has its origins in ancient Egypt. The Egyptians probably first tasted the meat of fattened geese along the banks of the Nile River. These geese naturally gorged themselves as a means of storing fat in preparation for their long migration. It is believed that the Egyptians tried to replicate this natural gorging process by force-feeding the geese. Based on scenes from Egyptian tombs, we know that the Egyptians force-fed geese as far back as approximately 2500 B.C. (Ginor et al.).

Over the next two millennia, the fattening of geese spread from Egypt through the eastern Mediterranean to Greece and eventually to Rome (Ginor). After the fall of Rome, foie gras all but disappeared for almost 700 years. However, it is believed that the process of producing foie gras was preserved by Ashkenazi Jews living in Western and Central Europe and eventually reintroduced to Europe during the Renaissance period (Ginor et al.). At first, foie gras was a delicacy enjoyed primarily by royalty. However, by the middle of the 18th century foie gras appeared on the plates of the middle class throughout much of Europe (Ginor et al.).

In the U.S., foie gras is considered a gourmet food. With a rich and buttery taste, it is a delicacy that is often reserved for special occasions. However, modern production methods have lowered the cost of producing some types of foie gras and made it accessible to large numbers of consumers. Foie gras production began in the U.S. as the result of a ban on the importation of raw poultry products during the 1980s. This led farmers in New York's Hudson Valley region to start producing foie gras to fill the void left by the ban on imported foie gras. Today, there are three American companies that produce foie gras, Hudson Valley Foie Gras and La Belle Poultry, both of New York's Hudson Valley, and California's SFG.

Foie Gras Production and Consumption

Two methods of producing foie gras are commonly used, the traditional and industrial methods. The traditional method is more time consuming and costly, however it produces a finer, more highly-valued product. Farms using the traditional method place the birds in cages and keep them together in small groups. The feeder takes the birds one by one and carefully inserts a tube with a funnel on one end into the bird's esophagus. The bird is then force-fed a mixture made up primarily of corn by means of an electrically powered auger. The farmers are very particular about what they feed the birds since the feed has a great effect on the taste of the bird's liver. The process lasts 24 to 31 days for ducks and approximately five weeks for geese. Foie gras produced by this process is sold to fine restaurants and to the gourmet market.

Industrial producers of foie gras place the birds in individual cages that are slightly larger than the birds. They use a pneumatic, or pressurized, feeder to force-feed the birds. This greatly decreases the time needed to feed each bird and allows for careful calibration of the quantity of feed. This process is repeated several times a day for a period of about two weeks for ducks and three weeks for geese. Both types of birds are fed with a mixture of lightly cooked ground corn, fat, salt, and lactic ferment. Compared to the traditional method, this system produces foie gras in fewer days at a lower cost. However, the foie gras is smaller in size and lower in quality than that produced using the traditional method. Industrial foie gras is typically used for canned pâté.

In the U.S., foie gras is a rapidly growing agricultural niche industry with average annual sales of \$17.5 million (Shepstone). In 2003, U.S. consumption of foie gras was approximately 420 tons, whereas production was almost 340 tons, with imports making up the balance (Shepstone). The total value of U.S. foie gras and related product sales was approximately \$20.4 million in 2003 (Shepstone). The source of foie gras consumed in the U.S. is presented in figure 1. New York producers accounted for an estimated \$14.5 million in sales of foie gras and related products, or 71% by value, followed by California, France and Canada, with 16%, 7%, and 6% of U.S. sales, respectively (Shepstone).

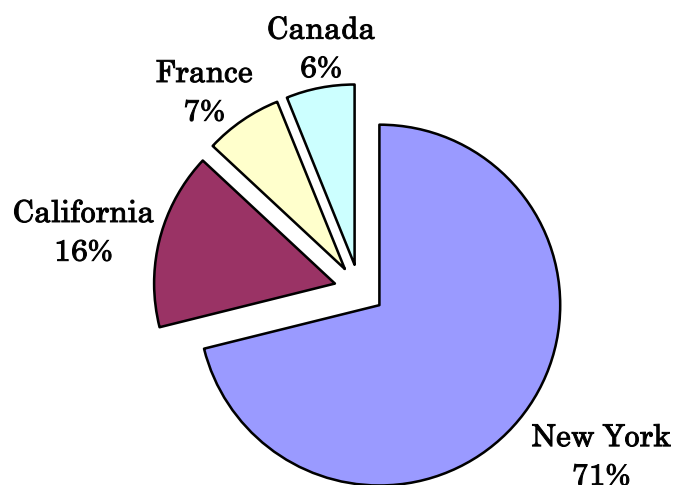


Figure 1: U.S. Foie Gras and Related Products Sales, by Region, 2003
Source: Shepstone

Foie gras is sold in many forms, typically using the French name. Premium foie gras is most commonly sold as either foie gras entier or bloc de foie gras. Foie gras entier is sold whole, whereas bloc de foie gras is made from smaller pieces of liver that have been reassembled. Two other forms of foie gras, which must contain at least 50% foie gras, are mousse de foie gras and pâté de foie gras. Mousse de foie gras typically contains a high percentage of foie gras, which is ground and then whipped so that the resulting product is very smooth. Ingredients, such as truffles, are often added to make mousse de foie gras. Pâté de foie gras is ground into a smooth preparation and commonly mixed with other meat products, such as pork or veal.

Foie gras has traditionally been a high-priced luxury product. However, the lower prices that have resulted from industrial production have made the product more accessible to the average American. Many Americans are first introduced to foie gras as a pâté, the lowest priced and most widely distributed form of foie gras. Foie gras is sold in many fine restaurants, supermarkets, and specialty food retailers.

The Debate over Foie Gras

Many individuals and groups believe that the force-feeding of ducks and geese to produce foie gras is cruel. They claim that the force-feeding is damaging to the health of the birds. After the final force-feeding, the bird's liver will have expanded up to 10 times its normal size. Breathing and walking become difficult as the liver pushes against other organs and liver function in foie gras birds may be severely compromised. The mortality rate of ducks that are force-fed is up to 20 times greater than ducks that are not force-fed (Scientific Committee on Animal Welfare

and Health). Furthermore, animal rights groups object to the raising of birds in close confinement (The Humane Society of the United States).

In the last few decades, foie gras production has been outlawed in many countries either by explicit laws or based on the application of a more general animal cruelty law. In all, more than a dozen countries, most of them in Europe, have banned foie gras production. In 2005, Israel joined the list of countries banning foie gras production. At the time of the ban, Israel was the world's third largest producer of foie gras.

Today, France is the world's largest producer of foie gras, followed by Hungary. On December 16, 1998 the Council of Europe adopted a report by the Scientific Committee on Animal Welfare and Health entitled "Welfare Aspects of the Production of Foie Gras in Ducks and Geese." However, the adoption of this report stops short of an absolute ban on foie gras production. Producers in France have claimed a "cultural exception" to the rules as a means of continuing foie gras production. It is unclear what strategy producers in Hungary, a recent addition to the European Union, will take.

In late 2003, two animal rights groups, the Animal Protection and Rescue League and In Defense of Animals, filed a lawsuit alleging that SFG was in violation of California animal cruelty laws because of its force-feeding of ducks. The lawsuit is currently pending. A similar effort by People for the Ethical Treatment of Animals (PETA) to stop the practice of force-feeding birds in New York failed in 1992.

On February 19, 2004, California State Senator John Burton introduced SB 1520 (California State Senate), which, in part, reads:

"The bill would prohibit a person from force feeding a bird for the purpose of enlarging the bird's liver beyond normal size, and would prohibit a person from hiring another person to do so. The bill would also prohibit a product from being sold in the state if it is the result of force feeding a bird for the purpose of enlarging the bird's liver beyond normal size. The bill would authorize an officer to issue a citation for a violation of those provisions in an amount up to \$1,000 per violation per day."

Supporters of the proposed ban include many animal rights groups. They believe that force-feeding birds is inhumane. Furthermore, they argue that such a practice is unnecessary, since foie gras is a luxury product and not a food staple. Animal rights advocates are working very hard to get signatures and letters in support of the bill.

Producers of foie gras argue that force-feeding is not cruel but is instead a natural process for many birds. They claim that migratory birds, such as geese and ducks, have a physiological aptitude for gorging. Several months before migrating, geese and ducks eat as much as they can to store up enough reserves to endure their long migratory trip. Furthermore, they argue that migratory birds are inherently prone to overeating and that because the birds do not chew their food and lack a gag reflex, the feeding tube does not cause discomfort. Additionally, ducks and geese have very elastic throats, allowing them to swallow large pieces of food, which is then stored in their esophagus prior to digestion. They can therefore easily accommodate the feeding tube. Moreover, producers point out that because the ducks and geese are slaughtered immediately after the force-feeding period, they do not suffer from the ill effects of an enlarged liver. Producers also argue that abandoning current production methods would not be economically viable. To do so would greatly increase the cost of production.

The California Restaurant Association opposes the bill along with several major farm groups. They say it is an attack on free market values. Foie gras is served in about 300 restaurants in California (CBS News). There is currently no economically viable alternative production method to force-feeding.

Despite the efforts of animal rights activists, most consumers remain unaware of the controversy surrounding foie gras. Although sales of foie gras have increased substantially in recent years, the market for foie gras is still small.

The Challenge

Although passage of SB 1520 is far from certain, Mr. Gonzalez believes that passage of the law is a definite possibility. Even if the bill does not pass, SFG must defend itself against the pending lawsuit that alleges the practice of force-feeding violates California animal cruelty laws. Mr. Gonzalez wonders what alternatives are available to his company. Should he fight the ban? Should he attempt to compromise with the animal welfare community and other activist groups? Should he admit defeat and move on? Or are there other alternatives that he should consider?

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