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ALTERNATIVES FOR PRODUCTION AND DISSEMINATION OF OUTLOOK

H.B. Huff, S.R. Johnson, and A.W. Womack*

1. Introduction

Agricultural information, production and dissemination systems are undergoing important changes. These changes have been induced by the technology for information production and dissemination, different clientele and requirements of these clientele and different organizations of the delivery and information generation systems. Reactions of land grant institutions, governments, private and other brokers of outlook to these changes have been quite different. There are, however, valuable themes that have evolved in the information development and transmission processes. These themes point to adoption of technologies and organizations on both generation and distribution sides that have important implications for the existing outlook production and dissemination systems.

This paper provides a summary and synthesis of information obtained from an informal 1982 survey of selected firms and institutions engaged in the production and dissemination of outlook, data systems, and market information. The intention is to identify attractive approaches for generating forecasts used in outlook. Also, technical methods of delivering outlook through voice, printed, and digital networks are reviewed. Finally, the manner in which outlook is packaged is discussed. There are numerous methods for packaging forecasts or key indicators for agricultural markets. They can be presented directly or more

specially packaged to aid producers, processors, and other agents in the industry with particular decisions.

Firms and institutions surveyed are listed in Table 1. These included eight universities, the USDA, and seven private vendors of data bases and outlook or forecasts for agricultural markets. The universities are largely from the Midwest. This selection was intentional. These universities are engaged in delivering outlook on major grain, livestock, and oil seed commodities. Extensive outlook programs are in place also in states that have important specialty crops. These were not included because the commodities and producers serviced require outlook that is developed and delivered using alternative systems.

Vendors were chosen to reflect the diversity of outlook provided by the private sector. They range from vendors with large-scale econometric models and extensive data bases to vendors who specialize in information generated from direct input by producers and processors. The USDA outlook generation and dissemination process was reviewed also because of its scope and importance for outlook of universities and the private sector.

2. Survey Summary

This summary is intended to provide an overview of the types of outlook delivery and generation systems in private, university, and government settings. Types of institutions are discussed individually. Information is provided on systems in place, the production technology, and finally, the resources devoted to outlook.

Table 1

FIRMS AND INSTITUTIONS

Types of Suppliers	Firms/Institutions
University	University of Illinois
	Iowa State University
	Kansas State University
	University of Minnesota
	Purdue University
	University of Missouri-Columbia
	Virginia Polytechnic Institute and State University
	University of Wyoming
Government	U.S. Department of Agriculture
Private Vendor	The Brock Report
	Chase
	Doane
	ProFarmer
	The Source
	Specialized Data Systems
	Wharton

Universities

Outlook systems within the university setting are quite diverse. They range from universities with the entire outlook process organized within the extension division to universities that have only individuals with teaching and research appointments involved in outlook. Also, the scope of the outlook programs is wide-ranging. The highly organized digital network-based program at the University of Wyoming is one extreme. At Wyoming, farmers are provided outlook, data and decisions aids delivered by telephone to home terminals. At the other end of the spectrum are universities using conferences and printed material as major methods for dissemination.

The same level of diversity exists for outlook production methods. Most universities depend heavily upon the USDA for both outlook and data. As well, they utilize balance sheets extensively, especially for grains and oil seeds. In some universities, trend, technical analysis, and charting methods are utilized to incorporate information from futures markets. In all of the universities considerable judgment is applied in the processing of outlook for particular clients.

Resources devoted to outlook at the universities range from an extensive number of programmers and systems analysts at Wyoming to situations where only a senior staff person and perhaps a clerk is involved. Where there is a large resource commitment to the outlook, user charges are common. In general, the survey suggested that user charges can be made, and that substantial revenues can be obtained from such charges by public institutions. Revenues are generated from user charges by specializing the delivery of outlook. Public responsibilities of these institutions are discharged by making general outlook available through print and voice networks. Charges are applied for outlook differentiated by

(1) time of delivery and

(2) specialized packaging for different groups of industry agents.

Table 2 summarizes the information on outlook generation for grains from the universities. Methods for generating outlook identified in the survey are listed in column one. These include: econometric models, time-series models, trend analysis, balance sheet analysis, charting and technical analysis, and finally, judgment. The second column in Table 2 indicates the number of institutions utilizing these techniques. These range from 1 to 7 as there were a total of seven universities actually surveyed. Wyoming was included to provide information on delivery only. The final column in Table 2 reports the average percentage of time reported as allocated to these techniques by the universities. The figure is intended to reflect the university outlook generation effort as a whole for grain markets.

The final column in Table 2 indicates that sampled universities employed balance sheet analysis, charting and trend analysis as well as judgment quite heavily. This is apparently related to the support of university outlook by the USDA. The more detailed results of the survey showed that the econometric models frequently tend to be single-equation rather than industry-wide. Moreover, these models are designed largely to specialize USDA information to particular localities or producers. In short, the information on production methods indicated that university programs are strongly influenced by USDA data bases and outlook.

Dissemination methods for the universities surveyed are summarized in Table 3. This table utilizes a classification system that reflects the medium employed. The three media are:

(1) print,

(2) voice/TV, and

Table 2

OUTLOOK GENERATION METHODS FOR GRAIN

Method	Number of Universities Using Method	Avg. Percent of Use/All Universities
Econometric Models	7	22
Time-Series Models	0	0
Trend Analysis	0	0
Balance Sheet Analysis	7	36
Charting and Technical Analysis	5	18
Judgment	7	24

Table 3

OUTLOOK DISSEMINATION METHODS

Medium	Method or Instrument
Voice/TV	Meetings and Conferences
	Radio Tapes
	TV Tapes
	Telephone Conferences (One-Way)
	Telephone Conferences (Two-Way)
Print	Popular Magazine Supplements
	State Publications
	Direct University Publications
Digital	On-Line Systems
	Batch Access
	Interactive Processors

(3) digital.

The printed medium is the most significant form of outlook dissemination. Three general types of instruments were used in this medium by universities. The newest print media development was dissemination of outlook through magazine supplements. Popular farm magazines have high circulation. A number of states supply outlook inserts for these magazines. These inserts provide an annual or bi-annual outlook assessments. In addition, there are publications by state governments or agriculture departments. These state publications function more as annual statistical summaries with minimum current outlook focus. However, they are an important data source for the industry. Finally, direct university publications are used for disseminating outlook. If there is anything new about these publications, it is a tendency to supply them more frequently and to specialize them for particular producers or industry agents.

A marked expansion has occurred in the voice/TV medium. One reason is the increased expense of outlook meetings. In the past, outlook has been delivered in conferences and meetings organized by local extension agents. The cost of servicing these meetings in the face of the developing communication technology has resulted in important shifts to the voice/TV medium. Radio tapes are now commonly supplied by the universities. The same is true for TV. These tapes are played by AM and FM radio stations and TV stations serving the agricultural community.

Telephone answering services with tapes for callers are available at selected universities. A more interesting development for telephones is the two-way conference system in place in several universities. These systems feature simultaneous presentations of outlook in local areas with a telephone hook-up to the state extension or university office. These university or extension personnel answer questions and cooperate with the local agent in the presentation of the

outlook. The two-way dialogue has proved popular in the states that have tried this method of delivery.

Government

Only one government institution was studied, the Outlook and Situation Information System (OASIS) of USDA. This system was developed for two general purposes. The first was to coordinate the outlook and policy analysis within the USDA. That is, to assemble and make available a common data base and a common outlook, cross-checked between and among commodity markets. Various methods are used to produced the USDA outlook. For some commodities, extensive econometric models are employed. For others, balance sheet methods are utilized. In all cases, judgment of commodity specialists is employed. The OASIS system allows these judgments to be incorporated systematically into the outlook.

Dissemination methods for the USDA are standard. Outlook and Situation Reports are published regularly. Outlook news releases are also routinely made available. The objective of the news releases is to provide rapid public access to information on impacts of external events and policy on agricultural commodity markets. The USDA is also experimenting with several universities linking by computer to the OASIS data bank. This experiment has been only moderately successful due largely to insufficient resources at the universities and within the USDA to make this transfer efficient. The advantage of an effective computer linkage with the OASIS system would be more timely access to USDA data and forecasts. Presently, a number of universities have utilized commercial vendors for this information to obtain more immediate access to available USDA data and forecasts.

The final dissemination method is the telephone recording. Telephone recordings provide access to frequently updated tapes on outlook. An advantage is that outlook is made available on a more timely basis. The disadvantage is the long-distance telephone cost, and importantly, the difficulty of providing complete updates of relevant outlook including government program changes and data systems via telephone. There is little indication that the USDA is exploring new and alternative ways of disseminating outlook information. It would appear that USDA sees its role as providing data bases and outlook to universities and private institutions who in turn disseminate it to specialized users. News releases are the method most commonly used to disseminate information with implications for commodity markets and larger groups in agriculture.

Private Vendors

Private vendors surveyed are quite different in terms of the methods used for generating forecasts and outlook. Vendors using the most extensive and comprehensive modeling systems among those reviewed were Chase and Wharton. Both of these vendors had extensive data systems and econometric models that are utilized in developing outlook. Models are solved for future time periods. Then, the forecasts from the model solutions are "tuned" by commodity specialists. The models and the data system are accessible in print, digital computer hook-up, or outlook meetings. That is, these two vendors use print, voice, and digital dissemination media.

A second type of vendor reviewed is The Source. This vendor provides access to a computerized data base. Current market information is available with approximately a two-and-one-half-minute lag. No agricultural outlook is transmitted in the system. There are options for the users to interact with the data base through use of proprietary computer programs executed by the source

computer. However, most of the users of The Source simply download the data base or portions of the data base into video devices. It is emphasized that The Source is not designed specifically for agricultural information. In fact, the commodity market information is a rather small portion of the available data base. The Source is a general-purpose data base for access by diverse users ranging from travel agents to commodity traders to individuals developing and executing computer programs utilizing the data base.

ProFarmer is in some respects similar to The Source. It is also largely a data base of current market information complemented with price forecasts and a general outlook. In addition a marketing analysis service is provided. The information is transmitted by telephone hook-up. The communication system of ProFarmer is one-way. That is, participants can access the data base, outlook, and market advisory service, but they cannot interact with it. Thus, ProFarmer provides a specialized data base that can be accessed by telephone.

The other private vendors studied include Doane; Specialized Data Systems, Inc.; and The Brock Report. The Brock Report is a market analysis service for commodity traders. The report is available in print and by telephone access to frequently updated tapes. The Specialized Data Systems approach is to utilize farm records. In this sense, Specialized Data Systems and Doane are similar. Both produce forecasts and outlook that reside to a large extent on information from producers who participate in a management service. This approach is novel in that current and specialized producer based input is provided in the outlook process. For example, this more current input is reflected in surveys of farmers on planting and yield. Thus, these systems can provide timely production information for outlook.

Table 4 summarizes the private vendors by type. It includes information on production methods for outlook and dissemination. The diversity of the

Table 4

OUTLOOK DISSEMINATION AND GENERATION
FOR PRIVATE VENDORS

Type of Vendor	Production Method	Dissemination Method
Forecasting Firms		
Chase	Econometric Models	Outlook Conferences
Wharton	Data Base Assembly	Printed Outlook
		Digital Interconnect
Data Base/Management Service		
Source	Charting	Telephone Access
ProFarmer	Trend Analysis	Frequent Printed
Brock Report	Data Base Assembly	Circulars
	Specialized Decision Aids	Management Service
Farm Record Based		
Doane	Farm Records	Management Service
Specialized Data Systems	USDA Data/Outlook	Regional Specialized
		Outlook
		Printed Outlook and
		Farm Assessments

private vendors in markets they serviced, the dissemination method, and the information bases for outlook is striking. The success of these vendors and the entry into the field would suggest that specialized outlook information can be distributed on a commercial basis.

3. Outlook Production Systems

Production systems for outlook can be viewed as including three major components (see Figure 1). The first is the data or information base on which the outlook resides. It is, in fact, best to call this an information base since some components are not available in a transmittable form. For example, commodity specialists produce outlook through judgmental input that resides on a particular information base. They process this information in ways that are special to the individual involved.

A second component of the production system is the forecast processor. Here, data bases are transformed to a set of forecasts. The forecast processor combines forecasts with other decision aids and the data bases and specializes them to service particular outlook clients. Outlook can be provided in either direct form or further incorporated into a decision processor. Decision processors specialize the outlook for particular decision functions of the clients. Examples of the latter would be recommendations on marketing strategies, participation in government programs and production alternatives.

The different university, private, and government outlook delivery systems emphasize different aspects of this production process. It is clear from Section 2 that major components of the information base for outlook are:

(1) USDA statistics,

(2) organized market information (both futures and spot),

(3) trade information,

(4) judgmental input, and

(5) information obtained directly from producers or agents.

Most of the universities and private vendors use the USDA data base and organized market information as major inputs. They then design their own data bases to serve their specific customers and/or clients. Usually, these data bases reproduce market information and portions of the USDA data base. Additionally, commodity specialists are used who have information particular to the production region and clients. The objective is to process the data so that they present useful input for client decisions.

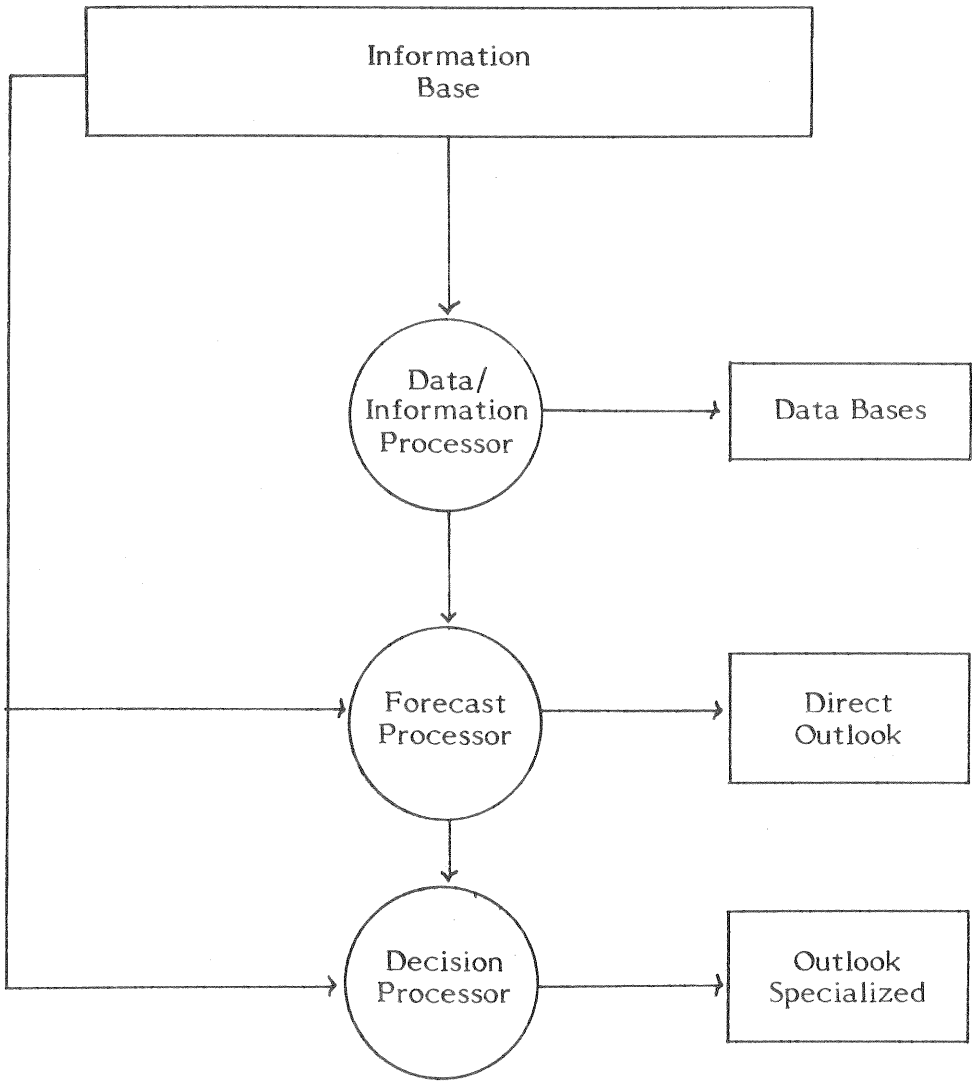
Processing of the information bases can be complicated or quite direct. The Source simply transmits data. On the other hand, for some forecasting firms, large-scale econometric models are employed to process the data base so that forecasts can be generated that are consistent across commodity markets. Also, complex processing is undertaken by universities who supplement generally available data bases for commodity future markets and the USDA with commodity specialist input.

In most cases, the forecasts obtained from processing the data bases are not used directly. The forecasts are somehow modified before they become a part of the outlook. This processing can include modifying forecasts to preserve internal consistency, changing the forecasts to a time frame consistent with delivery instruments, and other types of specialization. Specialization can occur both for the direct forecasts and for forecasts utilized in supporting particular decisions aids. For this reason, the decision processor component was added in Figure 1.

Decision processors take direct outlook and process it into a form more valuable for particular clients. These clients may include those interested in futures trading, feedlot operators, agricultural processors, and other groups of

Figure 1

COMPONENTS OF THE OUTLOOK PRODUCTION PROCESS



industry agents. Telecommunications and digital networking technology are making it increasingly possible to produce outlook more specific to client interests. That is, with the introduction of these new production and transmission technologies, direct and processed outlook forecasts can be incorporated into particular decision models. The decision models provide outlook within a frame of reference that is easy to understand for the client and focuses it on key decisions.

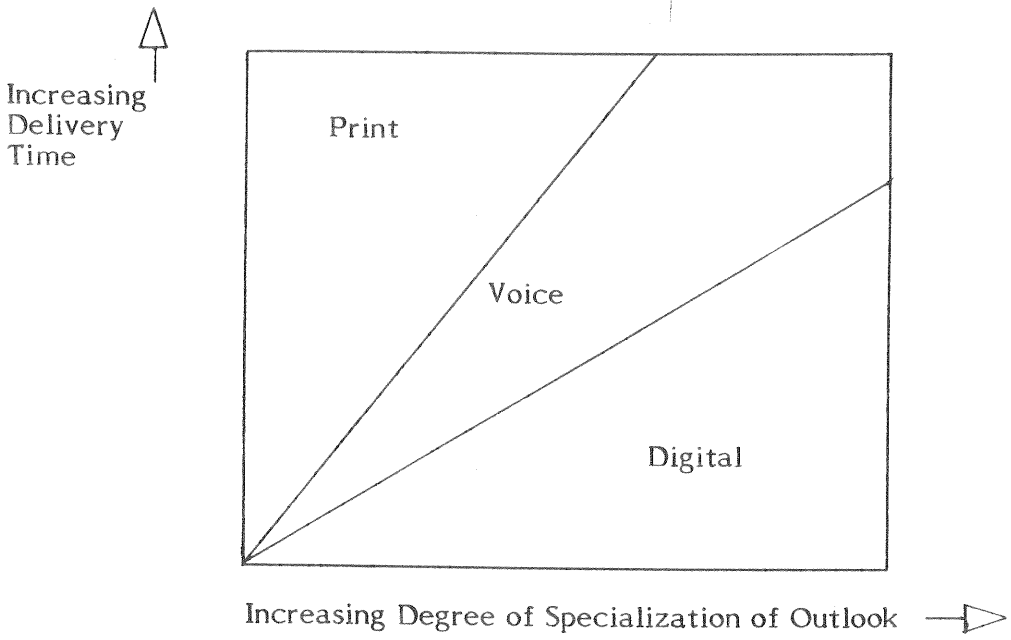
4. Dissemination Systems

There are essentially three media for disseminating outlook: voice (direct contact, radio, and TV), print, and digital. A number of factors influence the appropriate choice of media for delivering outlook. The factors discussed in the present context are cost per customer (or client), timing for delivery, and degree of specialization. Figure 2 presents a stylized representation of the choice situation. On the vertical axis in Figure 2, delivery time is measured. As delivery time increases, other things equal, printed media become more attractive for dissemination. On the other hand, again other things equal, as the degree of the specialization of the outlook to meet needs of clients increases, the digital media is more attractive. The figure assumes a constant number of customers and a constant cost per customer. Obviously, with different numbers of customers and different cost figures, the partitions of the space for printed, voice, and digital media would change. However, the figure is useful for planning delivery of outlook.

The figure shows that for planning the dissemination of outlook three factors are most important. First, the number of customers should be projected. Given the number of customers and the time frame required by the customers, a decision can be made on appropriate delivery media. As the degree of

Figure 2

OUTLOOK DELIVERY AND CHOICE OF MEDIA



specialization required increases, the print media will differ to voice and digital media. However, as the time frame for the delivery of output increases, voice and digital forms of delivery may differ to printed matter.

The survey indicated a trend toward specialization of outlook. Increased uses of communications and computer technology are leading to alternative delivery forms. If there was one theme in the survey, it was a tendency to move toward voice and digital media for delivering outlook. Both of these delivery systems can service large numbers of specialized customers on a timely basis. In fact, voice and digital systems can accomplish similar functions vis time of delivery. The decision between voice and digital systems concerns the degree of specialization. Using digital systems and interactive computing devices, very highly specialized outlook delivery systems can be managed.

One way to view the problem of outlook dissemination is to consider the media as, in fact, networks. The idea is that there are three networks for delivery of outlook. The print network is appropriate when the timing of the information is not particularly important and large numbers of customers must be served. The voice network can be programmmed to serve large numbers of clients with specialized information on a timely basis. Costs of access and delivery for the voice network, however, become high when the degree of specialization for outlook is increased. The digital network is a viable alternative in this case. That is, programming on the digital network can be highly specialized but delivered on a timely basis. In view of changes in technology for voice and digital networks, defining an outlook system without anticipating the progress in technology is likely to lead to rapid obsolence and programming for a delivery network that is not cost effective.

5. New Developments

New developments for outlook are more related to delivery than to production systems. Computer and communications technology can be viewed as having first touched production systems. Highly mechanized methods of synthesizing and processing information for generating outlook are now available. Production methods will be extended to process the outlook for more specialized users. However, these types of technologies are more easily anticipated. The more complicated aspects of the outlook system design problem concern dissemination.

In outlook dissemination, three ideas came from the survey. First, the idea of the programming and networks suggested in the previous section is important. One should view outlook as being transmitted on three networks. These networks compete for selection as delivery modes in terms of costs, timing, and the effectiveness with which they can serve specialized clients. In fact, these delivery options should be viewed much as television networks in common practice. An important objective in designing the outlook or dissemination systems is to select programming that can be "played" on these networks in the most cost effective manner.

The newest of the alternatives is the digital network. Dissemination systems programmed for this network are relatively new. However, as farmers and other agents obtain microcomputers and similar devices, it is likely that this network will become more attractive for outlook delivery. Costs of microcomputers are falling rapidly. Moreover, larger agricultural producers are acquiring microcomputers for other purposes. With these microcomputers in place, digital networks will become a viable way of disseminating outlook. Importantly, they also will become a way of assembling information from

producers that can be incorporated in generation of outlook. With the digital network, feedback from the users to the processors of outlook can become a more economically feasible alternative.

An important aspect of the digital networks that has not been incorporated effectively in the systems now available is distributed processing. Digital networks presently used and likely in the future involve a transmission via telephone hook-up. But, the telephone hook-up is expensive. Thus, it is important to take advantage of the telephone connect time to transmit as much information as possible. Effective transmission of information and minimization of telephone hook-up time can be accomplished by using networks that emphasize distributed processing. Specifically, processors can be located in regions and with actual clients that automatically access and download information. This information can be transmitted in off-peak periods and by "packing" the signals when transmission must occur during costly time periods. As computer processors become less costly and more widely utilized for outlook and other purposes, systems that feature distributed processing will be more important and cost effective. Designing outlook programming for digital networks that does not not recognize the importance of distributed processing would be an enormous mistake.

The future for outlook delivery and generation is bright. Technology has provided a number of alternatives for processing outlook. The same technology has also generated important options for delivery. The analogy to programming of television networks and the programming for outlook delivery systems should be emphasized. Agriculture institutions, like other governmental institutions, will have to make important decisions as to the clients served and the technology used to disseminate outlook if they are to fulfill their responsibilities for

generating and distributing information that can contribute to the efficiency of the agricultural industry.

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