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THE FINANCIAL RECORD-KEEPING PRACTICES
OF U.S. FARM OPERATORS
AND THEIR RELATIONSHIP TO
SELECTED OPERATOR CHARACTERISTICS

by

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Abstract

This paper documents the use of various record-keeping practices by U.S. farm operators. The data comes from the 1987 Farm Costs and Returns Survey, a statistically representative sample of U.S. farm operators. Distributional results are presented and discussed by region, by operation's economic characteristics, and by operator's personal characteristics.

Key Words: ledger, workbook, computer, shoebox, record-keeping service, Farm Costs and Returns Survey, representative sample

Much has been written about how farm or ranch operators ought to keep their financial records for either tax or management purposes, but there is little documentation of their actual record-keeping practices. A special study attached to the 1987 Farm Costs and Returns Survey (FCRS), a U.S. nationwide survey to collect farm financial data, provided information which helps to fill this void. This paper presents the results of that study. ^{1/}

The specific purposes of this paper are: 1) to describe the financial record-keeping practices of U.S. farm/ranch operators, as indicated by the FCRS, and 2) to profile selected characteristics of U.S. farm/ranch operators as related to their record-keeping practices. These characteristics are region, economic class, type of farm, operation type, operator's primary occupation, age and educational level, as well as the operation's debt-to-asset ratio and government program participation. As a summary of statistically representative U.S. level data and a documentation of the adoption of various farm record-keeping practices including, but not limited to, computer use, this study presents a broader base of information than formerly available in the literature.

Literature Review

Instruction regarding the methods, content, use in farm managerial decision-making of well-kept farm financial records is widely available to farm operators. It can be found in farm management textbooks (see, for instance, Calkins and DiPietre or Osburn and Schneeberger), bulletins of the Cooperative Extension Service (Guenther and Wittman is one fine example), and the farm press (e.g., Allen in Successful Farming). In addition, as computers have reached the farmstead, articles have appeared which advise operators regarding the advantage of the technology in many capacities, from production and bookkeeping assistance to managerial decision-making. See, for example, Grant, or the entire mid-March, 1988, issue of Farm Futures magazine. A poll published in that issue (pp. 10L -10M) found that 31% of its readers who responded to a random telephone survey owned computers. These farmers tended to be younger, better educated, and operators of more acres than those who did not own a computer. Over 90% of them used their computers for bookkeeping.

^{1/} The study was designed to identify and understand factors which may be useful in improving data collection methods for the FCRS.

In fact, the advent of computers on the farm has prompted academic research into their adoption by farm operators. Documentation available concerning the financial record-keeping practices of farm operators has tended to be geared towards understanding the factors that determine computer ownership and usage. These case studies were localized, of a particular subsector, and based on non-statistical samples.

Lazarus and Smith studied 335 New York dairy farms that participated in a dairy farm business summary (DFBS) and analysis program and who responded to a pair of environmental surveys. The authors recognized that their sample, consisting of DFBS participants who were likely to be better managers, could not be considered to represent all New York dairy farms. They found that 15% of the subjects owned a computer, two-thirds of whom used it for accounting purposes. Computer owners were younger and better educated operators of larger dairy herds, but were somewhat less likely to be involved in partnerships or corporations. The study also found that while 81% of the farms used tax preparation services routinely, half that number used broader accounting services on a regular basis.

Putler and Zilberman's study (1986) of adoption of computer technology among California farm operators was based on two data collection efforts: 1) interviews with 20 extension agents regarding their perception of computer usage by size and type of farm, and 2) a survey of farmers attending an agricultural computer fair. Computer use was found to increase with farm size and complexity and with the operator's education level. Their primary use was for record-keeping.

In a mail survey of farm operators in Tulare County, California, Putler and Zilberman (1988) further substantiated higher computer use among larger farms and better educated operators. These computers were more likely to be used for accounting purposes than for production management purposes, especially among larger farms and crop producers.

In a more general study by the Idaho Cooperative Extension Service, a mail survey was conducted on a systematic sample of 1500 Idaho farm/ranch operators regarding their use of recommended practices in their operations. Although troubled that their response rate of 31% may not

have provided adequate representation of Idaho farmers and ranchers, Rowe and Guenther found that half the respondents usually kept production records for their livestock and/or crops, and half to three-quarters of them prepared annual budgets, calculated net worth and/or profit-and-loss statements. Also, 40% developed cash flow analyses, while only 17% conducted enterprise analyses. The survey also determined that 15.4% owned computers, although no indication of farm use was obtained.

Procedures

The research reported here summarizes data collected from a statistically representative sample of U.S. farm operators selected for the 1987 Farm Costs and Returns Survey. FCRS is an annual multiple frame (area and list) survey conducted by the National Agricultural Statistics Service of the U.S. Department of Agriculture, in which whole farm detailed expenditure and income data are collected from a stratified random sample of U.S. farm/ranch operators. The 1987 survey was conducted during February and March of 1988, following careful development and pretesting of the questionnaire and intensive training of survey statisticians and interviewers. All data were collected during personal interviews, and edited and reviewed at the State and national levels. Two questions regarding farm operators' current record-keeping practices were added to the detailed expenditure version of the FCRS questionnaire. The sample size for this version was 7,298, of which 6,797 qualified as farms. An operation qualified as a farm if it sold or would normally have sold at least \$1000 of agricultural products in 1987. This number expands statistically to an indication of 1.69 million U.S. farm operations, which is less than the official USDA estimate of 2.17 million farms (USDA). (The FCRS farm number estimate is traditionally biased downward due to undercoverage of smaller operations (Morehart, et.al.,p. 54).) The results reported herein are expressed as percentages of the FCRS indication of the farm population.

In addition, this study's description of farm operators' record-keeping practices is not limited to merely quantifying farm computer use. FCRS respondents were asked whether or not they used or subscribed to a farm record-keeping service. If yes, they were asked to identify the type of provider from the following list: Cooperative Extension Service, a farm business/farm management association,

an accountant on a regular basis (not just for taxes), a private sector farm management or information service, a producer organization, or some other provider.

Respondents were then asked to categorize their own personal method of keeping track of farm expenses and income, regardless of service use, selecting from among the following: a general ledger or personal notebook, a formal farm records workbook or account book, a computer, or some other method. No distinction was made between single entry journal and double entry ledger systems, between cash and accrual basis accounting systems, nor between whole farm and enterprise systems. Formal records workbooks were defined to be pre-printed with farm-specific account headings. Identity of the workbook provider was asked in a follow-up question. Computer use was obtained for financial record-keeping only; no other indication of computer ownership was obtained. Computer users were asked to identify their software. The "Other Method" category included the proverbial "shoebox" or some so-called less organized manner of keeping receipts, invoices, bills of sale, etc.; although practices related to the operator's checkbook, check register, bank statements, cancelled checks or check stubs were specified separately. Organized filing systems were also distinguished.

Descriptive statistics were calculated using sampling weights (which incorporate adjustments for nonresponse). Operator's own record-keeping method and service use were cross-tabulated with each other, as well as with socio-economic variables, such as farm production region, economic class defined by gross value of sales, type of farm, type of operation, operator's primary occupation, age, and educational level, as well as operation's debt-to-asset ratio and government program participation. All results have been reviewed to identify patterns of record-keeping practices as related to these characteristics. In addition, providers of these various services and products to farm operators have been summarized.

Results and Interpretation

Table 1 summarizes the financial record-keeping practices of U.S. farm operators as indicated by the 1987 FCRS. General ledgers or personal notebooks were selected by 56.1% of U.S. farmers as their own personal method of keeping track of their farm expenses and income. Nearly 16% used a

formal farm records workbook, and just less than 3% used a computer. The remaining 25.2% used some other method of record-keeping. Over half of these used a shoebox or some less organized method of keeping receipts, invoices, and bills of sale, accounting for an estimated 14% of U.S. farmers. Another one-quarter of those falling in the "Other" category kept track of their finances merely through their checkbooks. Approximately one out of ten of the "Others" had a filing system for their farm financial information. Included, as well, in the "Other" category were 34 operations, an estimated 1% of U.S. farm operators, who claimed "no method" in response to this question. This suggests that these operators did not consider whatever they did to keep track of expenses and income to have been a "method." The balance of the category was made up of operators who reported some lesser used method.

Table 1 also shows that farm financial record-keeping service users made up less than 12% of the U.S. farm population indicated by the 1987 FCRS. Follow-up questions identified that nearly two-thirds of these services were provided by accountants. Though some respondents or interviewers may have confused this category with tax preparation services, this estimate of routine accounting assistance does not seem out of line with indications from studies cited earlier. The second most common service providers were farm business/farm management associations (FBFMA), at 12.3%. FCRS indicated that 7.7% of record-keeping services were provided by private sector farm management or information services, and nearly 7% by Extension Service or other educational programs. Producer organization involvement in this field was quite minimal, limited mainly to Farm Bureau. The remainder of service providers included financial institutions, lawyers, and farmer's friends.

Service users tended to use formal workbooks and computers for their own personal method of record-keeping more than non-users do, as shown in Table 1 - - workbooks being used 50% more often and computers nearly twice as much. Though general ledgers were used almost equally by service users and non-users, other less organized methods, such as shoeboxes, were used substantially less by service users.

Information obtained in follow-up questions identified workbook and computer software

providers. The primary provider, accounting for one out of four formal farm records workbooks used by U.S. farm operators, was the Cooperative Extension Service or another educational program, such as community college or vo-ag programs. Other public sector agencies were major workbook providers, with 11% obtained from the Farmers Home Administration and 7% from Farm Credit Services such as Production Credit Associations and Federal Land Banks. Financial institutions were specified as providers of 8% of the workbooks used by farm operators, while another 6% came from FBFMA's. Other workbooks included those from accountants, Agrifax, Farm Bureau, H&R Block, "Ideal"-brand, or the "National Farmers Income Tax Record." These accounted for more than one-fifth of the workbooks used by farm operators. The remaining workbooks were obtained from agricultural businesses, producer organizations, and a variety of other sources.

At barely 3%, computer use by U.S. farm operators cannot be reliably detailed further. In response to the question identifying their accounting software, many farm operators didn't know, or they reported their brand of computer. It may be notable, however, that a substantial number of those who described their software appeared to have written their own accounting programs. This suggests that available software programs may not always fit a farm operator's particular needs without special adaptation, as noted by Goodger, et. al., in an evaluation of software for dairies.

Tables 2, 3, and 4 display the results of the summaries of farm operators' record-keeping practices as related to various operator characteristics. The regional distribution appears in Table 2. Use of formal farm records workbooks was most popular in the Midwest, with 20 to 30% of the farm operators in the Lake, Corn Belt, and Northern Plains regions using them. This may reflect the relative strength of the Extension Service, which is the primary provider of workbooks nationwide, in these States where agriculture is intensive and family farms dominate. Computer use was greater in the Pacific region than any other region, at 4.6%, as was service use at 16.2% (Note that the survey considered an in-house accountant as service use.) This was likely due to the prominence of corporate farms and the larger size and greater complexity of agricultural operations in this area, as noted in the study by Putler and Zilberman (1986). Notable, as well, was the prevalence of shoebox and other less

organized methods of record-keeping in Appalachia, the Delta, and the Southern Plains, where approximately two out of five operators fall in this category.

Table 3 distributes operators' record-keeping practices across several economic characteristics, such as economic class, type of farm, operation type, debt-to-asset ratio, and government program participation. While general ledger use decreased only slightly as economic class rose, formal workbook use peaked at about 30% of the operators with gross value of sales between \$40,000 and \$250,000. Computer use and service use rose substantially with economic class, with 15% of farm operators with sales over \$250,000 using computers for record-keeping and nearly 40% of them using some type of service. Less organized systems in the "Other" category were the primary method of farms with sales less than \$40,000.

Farm operators who identified more than half their gross value of sales as being derived from crops appear to have been better financial record-keepers than those who derive over half their sales from livestock, with a slightly larger proportion of crop farmers using workbooks, and over twice that of livestock farmers using computers. These results are again in line with Putler and Zilberman (1986), who contended that livestock farmers owning computers initially used them for managerial applications and were slower to adopt them for accounting applications, while crop farmers practiced the reverse. The authors (1988) corroborate this further by indicating the lack of production decision aids for crop farmers, making them more inclined to use their computers for accounting purposes.

Corporations and partnerships utilized computers more than individual operations, 15.4% and 5.4% respectively. One-third of all corporations used a record-keeping service, possibly their own paid bookkeepers. These results probably reflect the need of corporations to meet more stringent record-keeping requirements for tax purposes.

Computer use tripled, service use doubled, and workbook use rose by two and one-half times as operators' debt-to-asset ratios rose from zero (for operators with no debt) to over 0.4. Analogously, general ledger use dropped steadily as the debt-to-asset ratio increased, and shoebox use fell from 25% of those with low ratios to 16% of those who were more highly leveraged.

Operators who indicated government program participation, including receipt of Payment-in-Kind certificates or participation in Commodity Credit Corporation loan programs, appear to have been better financial record-keepers than those who did not participate in government programs. Workbook use among government program participants was nearly three times as much, computer use was more than double, and service use was over 50% more than non-government program participants. "Shoebox" use among those who participated in government programs was nearly a third of that by those who did not participate in government programs. Noting that almost 60% of government program participants were crop farmers indicates an interaction between these two groups, linking their findings.

The results concerning debt-to-asset ratios and government program participation raise more questions than they provide answers regarding cause and effect. Do better records enable operators to make "better" decisions concerning these two variables, to bear more debt or to take advantage of government programs, or are good records a requirement imposed upon operators by loan distributors and government program deliverers?

The relationships between operators' record-keeping practices and such personal characteristics as occupation, age, and educational level appear in Table 4. Operators whose primary occupation was farm/ranch work tended to use workbooks more and shoeboxes less. Hired managers were more likely to use computers and services. Their utilization of "Other" less organized methods was quite high at 35%. This may be because a hired manager's responsibility is to oversee day-to-day farm operations, and he may simply pass along the financial data to someone else in the operation who is responsible for keeping records.

Younger farm operators, those under 45 years of age, were substantially more likely to use computers and workbooks than older farmers, although workbooks were also favored by operators aged 55-64 years. Shoebox use increased steadily with age, with nearly a third of operators aged over 64 using such less organized methods. Service use was relatively constant, at about 14%, among operators aged under 55 years.

Finally, better educated farm operators used more sophisticated methods of keeping their

financial records. Generally, workbooks, computer, and service use all increased with education level. Computer use rose sharply among those who had more than a high school education, and workbook use became more common among those who had completed high school. This suggests the use of knowledge gained in high school vo-ag programs and college. Those who did not complete high school relied quite heavily on their shoeboxes, at nearly 40%, while little more than half used even a general ledger.

Summary and Conclusions

This study differs from previous work since it is based on a statistically representative sample of U.S. farm operators. In addition, it considers other financial record-keeping practices besides computer usage. Although it turns up few surprises relative to commonly held professional beliefs, it does provide solid documentation of farm operators' record-keeping practices. For example, where the case studies cited earlier show farm adoption of computers as high as 15 or 30%, this study's figure of 3% is based on sampled observations representing all U.S. farmers. Nevertheless, among the subgroups over-represented in previous case studies -- corporations, and those in higher economic classes, or with younger and better educated operators -- computer use did range from 5 to 15%. In addition, formal workbooks had a solid following among operators in the Midwest, in middle economic classes, and among younger and middle-aged farmers with high school educations or better. Service use was mixed, though more popular with larger farms. Workbooks, computers, and services also exhibited greater use among operations with higher debt-to-asset ratios or among government program participants. The consistency of general ledger use by 50 - 60% of U.S. farm operators seems to suggest that records were kept primarily for tax purposes, and less for managerial decision enhancement. Finally, shoebox use at less than 15% of the U.S. farm population may be considered a positive finding by some.

Studies such as this do not directly measure the appropriateness of a farm operator's financial record-keeping practices to his particular operational situation. Nevertheless, reports of the distributional characteristics of farm operators relative to their record-keeping practices provide background material

that, subject to interpretation, may be helpful in defining future research needs and identifying areas for program development. Assuming that farm operators choose their financial record-keeping method based on factors related to their needs and ability, subgroups identified here as tending to adopt more sophisticated record-keeping practices were likely those most needing them. They tended to be in higher economic classes, corporations, more highly leveraged operations, or government program participants. The use of more advanced record-keeping methods by younger, better educated farm/ranch operators or hired managers indicates that farmers adopt such practices as they gain the ability or perceive the need to use them. Therefore, while it appears that operators are moving up the learning curve with regard to their record-keeping practices, there is still ample room for improvement.

**Table 1: Distribution of U.S. Farm Operators
by Methods of Record-Keeping**

	Operator's Own Method				U.S.
	General ledger/ personal notebook	Formal workbook	Computer	Other	
	----- % -----				---- % ----
Service					
Non-user	56.2	14.9	2.6	26.2	88.6
User	54.8	22.8	5.1	17.4	11.4
U.S.	56.1	15.8	2.9	25.2	100.0

Table 2: Distribution of Users by Region

Region ^{1/}	Proportion of U.S. farm operators	Operator's Own Method				Service	
		General ledger/ personal notebook	Formal workbook	Computer	Other	Non-user	User
	----- % -----	----- % -----				---- % ----	
Northeast	8.2	55.4	18.6	2.9	23.1	84.9	15.1
Lake	11.6	59.3	20.1	3.2	17.4	85.3	14.7
Corn Belt	21.6	56.3	27.6	3.2	12.9	88.6	11.4
Northern Plains	8.7	56.0	28.0	3.8	12.2	88.5	11.5
Appalachian	13.3	47.6	9.4	1.7	41.4	95.4	4.6
Southeast	6.6	66.0	3.0	1.7	29.3	88.6	11.4
Delta	5.3	49.1	5.3	1.9	43.8	85.7	14.3
Southern Plains	11.1	53.5	6.5	2.0	38.0	93.5	6.5
Mountain	6.3	65.8	10.4	3.7	20.1	85.6	15.4
Pacific	7.4	58.2	6.6	4.6	30.6	83.8	16.2
U.S.	100.0	56.1	15.8	2.9	25.2	88.6	11.4

^{1/} U.S. farm production regions are: Northeast: CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT; Lake: MI, MN, WI; Corn Belt: IL, IN, IA, MO, OH; Northern Plains: KS, NE, NK, SD; Appalachian: KY, NC, TN, VA, WV; Southeast: AL, FL, GA, SC; Delta: AR, LA, MS; Southern Plains: OK, TX; Pacific: CA, OR, WA; Mountain: AZ, CO, ID, MT, NV, NM, UT, WY.

Table 3: Distribution of Users by Economic Characteristics

	Operator's Own Method				Service		
	Proportion of U.S. farm operators	General ledger/ personal notebook	Formal workbook	Computer	Other	Non-user	User
	----- % -----	----- % -----	----- % -----	----- % -----	----- % -----	----- % -----	----- % -----
U.S.	100.0	56.1	15.8	2.9	25.2	88.6	11.4
Economic Class:							
\$1,000 - \$9,999	44.1	55.7	5.4	1.3	38.6	95.2	4.8
\$10,000 - \$39,999	23.5	58.7	17.4	1.3	22.6	90.1	9.9
\$40,000 - \$99,999	15.6	57.0	30.9	3.3	8.8	86.1	13.9
\$100,000 - \$249,999	11.7	55.6	29.1	5.9	9.3	75.9	24.1
\$250,000+	5.1	54.3	22.2	14.9	8.7	60.8	39.2
Type of Farm:							
Crop	40.1	56.7	17.6	4.2	21.5	88.1	11.9
Livestock	59.9	55.7	14.6	2.0	27.7	88.9	11.1
Operation Type:							
Corporation	2.3	60.0	12.1	15.4	12.5	67.1	32.9
Partnership	6.2	61.2	17.4	5.4	15.9	77.0	23.0
Individual	91.4	55.6	15.8	2.4	26.2	89.9	10.1
Cooperative	0.1	1/	1/	1/	1/	1/	1/
Debt-to-Asset Ratio:							
No debt	43.4	58.3	10.1	1.4	30.2	91.9	8.1
.01 - .40	39.7	54.5	18.2	3.9	23.4	87.6	12.4
.41 +	17.0	52.5	25.4	4.5	17.6	84.1	15.9
Government Program Participation:							
No	63.9	56.3	9.5	1.8	32.4	90.1	9.1
Yes	36.1	55.7	27.0	4.9	12.5	84.5	14.6

1/ There were too few observations on cooperatives to present reliable estimates within this category. These estimates are not reported.

Table 4: Distribution of Users by Operator's Personal Characteristics

	Proportion of U.S. farm operators	Operator's Own Method				Service	
		General ledger/ personal notebook	Formal workbook	Computer	Other	Non-user	User
	---- % ----	----- % -----				--- % ---	
U.S.	100.0	56.1	15.8	2.9	25.2	88.6	11.4
Operator's Occupation:							
Farm/ranch work	59.5	56.8	20.6	2.9	19.7	86.9	13.1
Hired farm/ ranch manager	1.3	43.8	14.4	6.6	35.2	72.6	27.4
Other	39.2	55.4	8.6	2.7	33.4	91.6	8.4
Operator's Age (in years):							
Less than 34	12.2	52.5	23.1	5.3	19.2	86.7	13.3
35 - 44	19.3	55.5	18.3	5.6	20.6	85.9	14.1
45 - 54	24.0	59.2	14.1	2.9	23.8	86.2	13.8
55 - 64	22.2	54.0	17.0	1.4	27.7	88.5	11.5
65 and over	22.2	57.2	10.4	0.7	31.7	94.5	5.5
Operator's Education Level:							
Did not complete high school	25.6	52.0	11.0	0.2	36.8	94.0	6.0
Completed high school	41.8	58.5	17.5	1.7	22.3	88.5	11.5
Some college	19.5	58.7	17.5	5.4	18.5	84.8	15.2
Completed college	8.8	51.9	16.3	8.6	23.2	83.0	17.0
Beyond college	4.3	53.2	19.4	7.3	20.1	85.2	14.8

References

- Allen, D. "The Joys of Paperwork." Successful Farming. DesMoines, IA: Meredith Corp., v. 85(11), Sept., 1987, pp. 26-27.
- Calkins, P.H., and D.D. DiPietre. Farm Business Management: Successful Decisions in a Changing Environment. New York: Macmillan Publishing Co., Inc., 1983.
- Farm Futures. Milwaukee, WI: AgriData Resources, Inc., v. 16(5), Mid March, 1988.
- Grant, J. "Making the Software Choice: Decision Points for Choosing Farm Accounting Software with a Comparison of Six Major Programs." AgriComp. Columbia, MD: AgriComp. v. 3(3), Nov./Dec., 1984, pp. 34-39.
- Goodger, W.J., T. Bywater, B. McCake, and J. Galland. "An Evaluation of Record Keeping Systems on Large Scale Dairies." Proceedings: May 23-25, 1984, 2nd Symposium on Computer Applications in Veterinary Medicine. American Veterinary Computer Society, College of Veterinary Medicine, Mississippi State University, 1984, pp. 35-37.
- Guenther, J.F., and R.L. Wittman. "Selection and Implementation of a Farm Record System." Western Regional Extension Service Publication WREP No. 99, Cooperative Extension Service, Washington State University, January, 1986.
- Lazarus, W.F., and T.R. Smith. "Adoption of Computers and Consultant Services by New York Dairy Farmers." Journal of Dairy Science. 71(1988): 1667-75.
- Morehart, M.J., J.D. Johnson, and D.E. Banker. "Financial Characteristics of U.S. Farms, January 1, 1988." Washington, D.C.: U.S. Department of Agriculture, Economic Research Service Agriculture Information Bullitin No. 551, October, 1988.
- Osburn, D.D., and K.C. Schneeberger. Modern Agriculture Management. Reston, VA: Reston Publishing Company, Inc., 1987.
- Putler, D.S., and D. Zilberman. "The Use of Computer Technology in California Agriculture." Working Paper No. 399, University of California Agricultural Experiment Station, Working Paper No. 399, March, 1986.

_____. "Computer Use in Agriculture: Evidence from Tulare County, California." American Journal of Agricultural Economics. 70(1988): 790-802

Rowe, C.M., and J.F. Guenther. "Agricultural Producers' Use of Recommended Practices in the Farm or Ranch Operation." Idaho Cooperative Extension Service Bulletin No. 674, University of Idaho, March, 1988, pp 4, 9-10.

U.S. Department of Agriculture, National Agricultural Statistics Service. Crop Production. Washington, D.C., August, 1987.

Operators are represented by special characters or by keywords. For example, the multiplication operator is represented by an asterisk (*) and the operator that tests for nulls is represented by the keywords IS NULL. This chapter contains these sections: Unary and Binary Operators. A logical operator combines the results of two component conditions to produce a single result based on them or to invert the result of a single condition. Table 3-5 lists logical operators. Table 3-5 Logical Operators. Consider these two queries and their results: SELECT part FROM orders_list1; PART Banks, telecom operators, and travel companies use this strategy effectively on a regular basis. Who is A Customer Relationship Manager? A customer relationship manager is someone who is responsible to maintain long and healthy relationships with the existing customers. He analyzes and uses the pool of data effectively to form strategies to increase the longevity of the customer relationship, address existing customers' queries and complaints, make low-profit customers more profitable, etc. What Is A CRM System? A CRM system is a (software) tool which helps you to save and keep the business re...