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COMPETENCIES IN AGRICULTURE NEEDED BY MALES EMPLOYED IN WHOLESALE FARM MACHINERY DISTRIBUTION.

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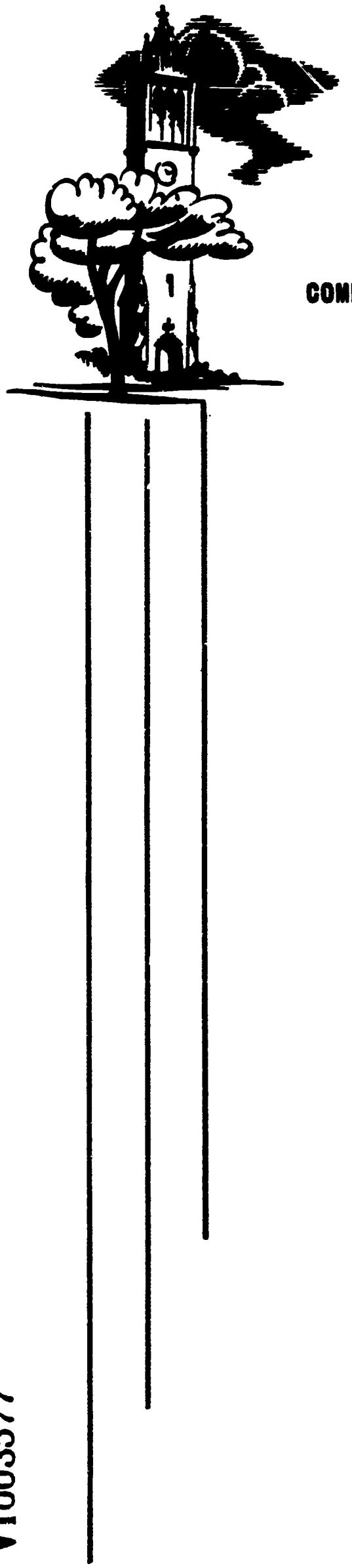
PUB DATE SEP 64

EDRS PRICE MF-$0.25 HC-$0.72 16P.

DESCRIPTORS- *AGRICULTURAL SKILLS, *EMPLOYMENT OPPORTUNITIES, JOB ANALYSIS, *AGRICULTURAL MACHINERY OCCUPATIONS, *EDUCATIONAL NEEDS, SURVEYS, OCCUPATIONAL SURVEYS, IOWA,

LISTS OF 39 AGRICULTURAL AND 37 NONAGRICULTURAL COMPETENCIES, ABILITIES, AND UNDERSTANDINGS NEEDED BY MALES EMPLOYED IN WHOLESALE FARM MACHINERY DISTRIBUTION WERE DEVELOPED BY 18 SELECTED EMPLOYEES OF WHOLESALE FARM MACHINERY FIRMS AND SENT IN QUESTIONNAIRE FORM TO 180 EMPLOYEES OF WHOLESALE FARM MACHINERY FIRMS THAT WERE COOPERATING MEMBERS OF THE IOWA EQUIPMENT CLUB IN DES MOINES, IOWA. EACH EMPLOYEE RATED THE DEGREE TO WHICH THE COMPETENCY WAS NEEDED IN THE JOB AND THE DEGREE TO WHICH HE POSSESSED THE COMPETENCY. TO DETERMINE PRESENT AND FUTURE EMPLOYMENT OPPORTUNITIES, AN ADDITIONAL FORM WAS SENT TO 16 BRANCH OR OFFICE FIRM MANAGERS. SOME FINDINGS WERE--(1) OF THE 145 EMPLOYEES RESPONDING, 73.8 PERCENT WORKED FOR MAJOR COMPANIES WITH COMPLETE LINES OF MACHINERY, 17.9 PERCENT FOR MAJOR COMPANIES WITH INCOMPLETE LINES OF MACHINERY, AND 8.3 PERCENT FOR SHORT LINE COMPANIES, (2) NEARLY ONE-HALF OF THE RESPONDENTS WERE EMPLOYED IN SALES, AND ABOUT ONE-FOURTH IN PARTS AND SERVICE AREAS. AGRICULTURAL COMPETENCIES HAVING THE HIGHEST MEAN RATING WERE IN THE ABILITY TO CONDUCT AGRICULTURAL TRAINING SESSIONS FOR OTHERS, (2) THE UNDERSTANDING OF AGRICULTURAL ECONOMICS AND THE FARM ECONOMY, (3) THE UNDERSTANDING OF FARMERS CREDIT SOURCES, (4) THE UNDERSTANDING OF NEW IDEAS AND TRENDS IN FARM OPERATION, AND (5) THE UNDERSTANDING OF MACHINE CAPABILITIES. THE MOST IMPORTANT NONAGRICULTURAL COMPETENCIES WERE (1) THE ABILITIES TO FOLLOW INSTRUCTIONS ACCURATELY, MAKE DECISIONS BASED ON FACTUAL AND OBJECTIVE REASONING, AND ACCEPT RESPONSIBILITY, AND (2) THE UNDERSTANDINGS OF PERSONAL DISCIPLINE AND SALESMANSHIP. EMPLOYMENT HAD INCREASED BY 5 PERCENT BETWEEN 1958 AND 1963 BUT WAS EXPECTED TO DECREASE BY 1.2 PERCENT BY 1968. THE ESTIMATED ANNUAL EMPLOYEE REPLACEMENT NEED IN THE WHOLESALE FARM MACHINERY DISTRIBUTION IN THE IOWA AREA WAS SEVEN PERSONS. THE RESULTS IMPLIED THAT--FARM BACKGROUND, AGE, AND YEARS OF VOCATIONAL AGRICULTURE DID NOT HAVE A STRONG INFLUENCE ON EMPLOYMENT AS A MANAGER IN WHOLESALE FARM EQUIPMENT DISTRIBUTION, AND SECONDARY VOCATIONAL PROGRAMS SHOULD CONSIDER INCLUDING MANAGER, SALES, PARTS AND SERVICE, AND ACCOUNTING AND CLERICAL TRAINING. (WB)



# COMPETENCIES IN AGRICULTURE NEEDED BY MALES EMPLOYED IN WHOLESALE FARM MACHINERY DISTRIBUTION

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION



Sep-64

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in cooperation with

Vocational Agriculture Section
Division of Vocational Education
State Department of Public Instruction
Des Moines, Iowa

*This is an abstract of a thesis submitted to Iowa State University of Science and Technology by Robert Haworth Maxwell in partial fulfillment of the requirements for the degree of Master of Science in September of 1964.*

*The study is one of a series conducted by the Department of Education of Iowa State University of Science and Technology with the assistance of graduate students in agricultural education in cooperation with the Iowa Agriculture and Home Economics Experiment Station and the Vocational Agriculture Section, Division of Vocational Education, State Department of Public Instruction.*

*This abstract was prepared by Robert H. Maxwell with the assistance of Alan A. Kahler and Roy D. Hickman, research assistants for the Iowa Agriculture and Home Economics Experiment Station Project 1253, under the direction of Professor C. E. Bundy.*

# COMPETENCIES IN AGRICULTURE NEEDED BY MALES EMPLOYED IN WHOLESALE FARM MACHINERY DISTRIBUTION

By

Robert Haworth Maxwell

## Purpose of the Study

The purposes of this study were to determine the agricultural competencies needed by males employed in wholesale farm machinery distribution and to determine the number of employment opportunities in those occupations in Iowa. Other purposes were to determine the competence needed and possessed in the agricultural competencies, determine what factors may have influenced the degree of competence needed and possessed and to determine the degree of competence needed and possessed in nonagricultural abilities and understandings.

## Method of Procedure

Eighteen selected employees of wholesale farm machinery firms serving as a panel of specialists developed a list of agricultural and nonagricultural competencies needed by males employed in wholesale farm machinery distribution. This list was put into questionnaire form and mailed to all employees of wholesale farm machinery firms that were cooperating members of the Iowa Farm Equipment Club in Des Moines, Iowa. These employees evaluated the degree each competency was needed for success in his job, and the degree he felt he possessed each competency. An additional form was sent to the 16 branch or office managers of wholesale farm machinery firms in the Iowa area to determine present and future employment opportunities in the industry.

## Findings

A total of 145 usable responses were obtained from a mailing of 180 questionnaires. Approximately 73.8 percent (107) were employed by major companies with complete lines of machinery, 26 (17.9%) by major companies with incomplete lines of machinery, and 12 (8.3%) by short line companies. Nearly one-half of the respondents (46.2%) were employed in the sales area, and less than ten percent in the managerial, product education and dealer development, credit and collections, and accounting and clerical areas. About one-fourth (23%) of the respondents were parts and service employees.

Of the 39 agricultural competencies listed, 7 were abilities and 32 were understandings. Of the 37 nonagricultural competencies, 17 were abilities and 20 were understandings.

The mean scores of all employees for the degree agricultural competencies were needed ranged from 1.3 to 2.9. The five agricultural competencies that had the highest mean scores for all employees were the ability to conduct agricultural training sessions for others, and the understandings of agricultural

economics and the farm economy; farmers credit sources; new ideas and trends in farm operation; and machine capabilities.

Mean scores for nonagricultural competencies needed by the total group showed that the range was from 2.1 to 3.6. The five most important nonagricultural competencies were the abilities to follow instructions accurately, make decisions based on factual and objective reasoning, accept responsibility, and the understandings of personal discipline and salesmanship.

Mean scores for the degree of agricultural competence was needed by managerial employees ranged from 1.3 to 3.5 as shown in Table 1. The understandings of agricultural economics, government farm programs, farmers credit sources, new ideas and trends in farm operation, and machine capabilities were rated the highest by managerial employees. A range of 1.2 to 3.4 was indicated in the mean scores of managers for the degree of competency possessed.

Mean scores for managerial employees ranged from 2.4 to 3.8 for nonagricultural competence needed as shown in Table 2. Highest mean scores were computed for the abilities to delegate authority, make decisions, accept responsibility, and the understandings of all phases of the wholesale farm machinery business, salesmanship, and business administration. The range of mean scores for nonagricultural competence possessed was from 2.1 to 4.0.

Among product education and dealer development employees, mean scores ranged from .8 to 3.1 for the degree of agricultural competence needed and are presented in Table 1. The ability to conduct agricultural training sessions and the understandings of agricultural economics and the farm economy, farmers credit sources, new ideas and trends in farm operation, and machine capabilities had highest mean scores. The range of mean scores for the degree agricultural competency was possessed by this group was from .8 to 3.1.

Mean scores ranged from 2.2 to 3.8 for nonagricultural competencies needed for product education and dealer development employees and are revealed in Table 2. The abilities to think creatively, plan work and travel efficiently, and accept responsibility; and the understandings of retail farm machinery business, and salesmanship had the highest mean scores. Nonagricultural competence possessed for these employees was indicated by a range of mean scores from 2.1 to 3.5.

Mean scores for the degree agricultural competence was needed ranged from 1.5 to 3.3 for sales employees and are presented in Table 1. The abilities to conduct agricultural training sessions for others, and conduct farm demonstrations of machines; and the understandings of agricultural economics, new ideas and trends in farm operation, and machine capabilities had the highest mean scores. The range of mean scores for agricultural competence possessed was from 1.4 to 3.2.

The degree of nonagricultural competence needed by sales employees ranged from 2.2 to 3.6. These scores are presented in Table 2. The abilities to plan work and travel efficiently, follow instructions, make decisions, and accept responsibility; and the understandings of personal discipline and salesmanship had the highest mean scores. Mean scores for nonagricultural competence possessed ranged from 2.1 to 3.6.

Table 1. Manager, product education and dealer development, and sales employee evaluations of degree agricultural competencies were needed and possessed

| Competencies | Mean scores | | | | | |
|---|---|---|---|---|---|---|
| | Managers | | Product Education and Dealer Development | | Sales | |
| | N[a] | P[b] | N | P | N | P |
| | N=14 | | N=8 | | N=67 | |
| Ability to: | | | | | | |
| Estimate used machinery trade-in values | 2.5 | 2.7 | 1.8 | 2.2 | 2.8 | 2.9 |
| Adjust and repair major farm machines | 1.8 | 2.0 | 1.6 | 1.8 | 2.4 | 2.4 |
| Associate machine parts with machines | 2.3 | 2.2 | 1.6 | 2.0 | 2.5 | 2.6 |
| Locate machine failures -- trouble shooting | 1.5 | 1.6 | 2.2 | 2.2 | 2.4 | 2.5 |
| Conduct training sessions for others | 3.1 | 3.0 | 2.8 | 2.6 | 3.0 | 2.9 |
| Determine machinery replacement programs for farmers | 2.0 | 2.1 | 2.2 | 2.0 | 2.7 | 2.5 |
| Conduct farm demonstration of machines | 2.9 | 3.0 | 2.5 | 2.7 | 3.1 | 3.0 |
| Understanding of: | | | | | | |
| Agricultural economics and farm economy | 3.3 | 3.2 | 3.0 | 2.8 | 2.9 | 2.8 |
| Farm real estate values -- land appraisal | 1.7 | 1.5 | 1.5 | 1.8 | 2.0 | 1.9 |
| Seasonal livestock and crop prices | 2.6 | 2.6 | 1.8 | 2.0 | 2.4 | 2.4 |
| Farm production costs | 2.8 | 2.5 | 2.2 | 2.1 | 2.2 | 2.5 |
| Governmental farm programs | 3.2 | 2.5 | 2.2 | 1.8 | 2.6 | 2.5 |
| Farm taxation and agricultural land tax credit | 2.1 | 1.8 | 1.7 | 1.3 | 1.9 | 1.8 |
| Farmers' credit sources | 3.2 | 3.2 | 2.8 | 2.3 | 2.8 | 2.8 |
| Farm labor demands and supply | 3.1 | 2.0 | 1.3 | 1.3 | 2.2 | 2.2 |
| New ideas and trends in farm operation | 3.5 | 3.3 | 3.1 | 3.1 | 3.1 | 3.0 |
| Marketing trends of farm produce | 2.8 | 2.4 | 2.2 | 2.1 | 2.7 | 2.5 |
| Insurance programs for farmers | 1.5 | 1.3 | 1.1 | 1.1 | 1.6 | 1.6 |
| Farm legal instruments | 1.8 | 1.5 | 1.6 | 1.1 | 1.7 | 1.6 |
| Farm cropping programs | 2.5 | 2.5 | 2.3 | 2.0 | 2.3 | 2.3 |
| Soil nutrients and fertilizer application | 2.0 | 1.7 | 2.1 | 1.8 | 2.3 | 2.0 |
| Weed control and herbicide application | 2.3 | 2.0 | 2.1 | 2.0 | 2.3 | 2.0 |
| Insecticides and their application | 2.3 | 2.0 | 2.2 | 2.0 | 2.4 | 2.0 |

[a]4--very much competency needed, 3--much competency needed, 2--some competency needed, 1--little competency needed, 0--no competency needed.

[b]4--possess very much competency, 3--possess much competency, 2--possess some competency, 1--posses little competency, 0--possess no competency.

Table 1 continued.

| Competencies | Mean scores | | | | | |
|---|---|---|---|---|---|---|
| | Managers | | Product Education and Dealer Development | | Sales | |
| | N | P | N | P | N | P |
| Understanding of: | N=14 | | N=8 | | N=67 | |
| Crop storage practices | 2.5 | 2.3 | 2.1 | 2.0 | 2.6 | 2.4 |
| Artificial drying of crops | 2.6 | 2.1 | 2.6 | 2.0 | 2.7 | 2.5 |
| Soil tillage methods -- soil compaction | 2.5 | 2.2 | 2.5 | 2.6 | 2.8 | 2.5 |
| Use and storage of water | 1.7 | 1.7 | 1.8 | 1.3 | 1.9 | 1.8 |
| Soil temperature and effect on plant growth | 1.4 | 1.2 | 1.5 | 1.3 | 1.7 | 1.6 |
| Germination of farm crop seeds | 1.5 | 1.3 | 1.7 | 1.5 | 1.6 | 1.5 |
| Seed selection | 1.4 | 1.3 | 1.3 | 1.3 | 1.5 | 1.5 |
| Livestock selection | 1.4 | 1.5 | 1.6 | 1.2 | 1.5 | 1.6 |
| Machine capabilities | 3.5 | 3.4 | 3.1 | 3.0 | 3.3 | 3.2 |
| Feedlot automation and farmstead planning | 2.3 | 2.2 | 1.5 | 1.0 | 2.3 | 2.0 |
| Irrigation systems | 1.3 | 1.5 | .8 | .8 | 1.5 | 1.4 |
| Farm machinery hydraulic systems | 2.4 | 2.4 | 2.2 | 2.1 | 2.8 | 2.6 |
| Ignition and injection systems of farm tractors | 1.6 | 1.7 | 1.8 | 1.8 | 2.3 | 2.1 |
| Power transmission and gear train systems in tractors | 1.8 | 1.8 | 2.2 | 2.1 | 2.5 | 2.2 |
| Soil conservation measures and needs | 2.4 | 2.0 | 2.3 | 1.8 | 2.3 | 2.2 |
| Livestock programs | 2.5 | 2.3 | 1.8 | 1.5 | 2.3 | 2.2 |

Table 2. Manager, product education and dealer development, and sales employee evaluations of degree nonagricultural competencies were needed and possessed

| Competencies | Mean scores | | | | | |
|---|---|---|---|---|---|---|
| | Managers | | Product Education and Dealer Development | | Sales | |
| | N[a] | P[b] | N | P | N | P |
| Ability to: | N=14 | | N=8 | | N=67 | |
| Think creatively | 3.5 | 3.3 | 3.6 | 3.3 | 3.4 | 3.0 |
| Find and use others' ideas and talent | 3.5 | 3.2 | 3.1 | 3.0 | 3.4 | 3.0 |
| Delegate authority | 3.7 | 3.5 | 3.1 | 2.8 | 3.0 | 2.8 |
| Recognize facts as opposed to opinion | 3.5 | 3.4 | 3.2 | 3.5 | 3.2 | 3.0 |
| Conduct all types of meetings | 3.3 | 3.2 | 3.5 | 3.1 | 3.2 | 3.0 |
| Communicate effectively | 3.4 | 3.4 | 3.2 | 3.2 | 3.4 | 3.2 |
| Interpret and analyze financial and operating statements | 3.5 | 3.3 | 3.2 | 3.0 | 3.3 | 3.0 |
| Prepare technical reports | 2.4 | 2.5 | 2.8 | 3.0 | 2.6 | 2.6 |
| Prepare weekly and annual time and expense reports | 3.1 | 3.2 | 2.8 | 3.3 | 3.3 | 3.2 |
| Perform detail work accurately | 3.2 | 3.1 | 3.1 | 3.0 | 3.4 | 3.2 |
| Write longhand legibly | 3.2 | 3.1 | 2.6 | 2.5 | 3.0 | 2.9 |
| Interpret verbal description into machine parts, numbers, bins | 2.5 | 2.5 | 2.3 | 2.7 | 3.2 | 3.1 |
| Figure invoices accurately | 2.9 | 3.0 | 2.2 | 2.6 | 3.2 | 3.2 |
| Plan work and travel efficiently | 3.5 | 3.7 | 3.6 | 3.2 | 3.6 | 3.3 |
| Follow instruction, policies, procedures accurately | 3.2 | 3.5 | 3.3 | 3.2 | 3.5 | 3.3 |
| Make decisions based on factual and objective reasoning | 3.6 | 3.7 | 3.5 | 3.0 | 3.5 | 3.3 |
| Accept responsibility | 3.8 | 4.0 | 3.7 | 3.2 | 3.6 | 3.6 |
| Understanding of: | | | | | | |
| Product application to the job | 3.0 | 3.1 | 3.1 | 3.2 | 3.4 | 3.3 |
| Buyer motivation | 3.0 | 3.1 | 3.1 | 3.0 | 3.3 | 3.1 |
| People in general -- applied psychology | 3.4 | 3.6 | 3.5 | 2.7 | 3.3 | 3.2 |

[a]4--very much competency needed, 3--much competency needed, 2--some competency needed, 1--little competency needed, 0--no competency needed.

[b]4--possess very much competency, 3--possess much competency, 2--possess some competency, 1--possess little competency, 0--possess no competency

Table 2 continued.

| | Mean scores | | | | | |
|---|---|---|---|---|---|---|
| | Managers | | Product Education and Dealer Development | | Sales | |
| | N | P | N | P | N | P |
| Understanding of: | N=14 | | N=8 | | N=67 | |
| Personal discipline -- initiative, desire, mental outlook | 3.5 | 3.6 | 3.5 | 3.0 | 3.5 | 3.3 |
| Company policies and profit margin | 3.4 | 3.6 | 3.5 | 3.2 | 3.4 | 3.4 |
| Inventory ratios | 3.0 | 3.0 | 3.1 | 3.1 | 3.1 | 3.0 |
| Retail financing and application | 3.1 | 3.0 | 3.2 | 2.8 | 3.4 | 3.2 |
| Area machine population and potential for sales | 3.2 | 3.0 | 3.3 | 2.7 | 3.1 | 2.9 |
| Retail farm machinery business | 3.5 | 3.5 | 3.6 | 3.0 | 3.4 | 3.4 |
| All phases of wholesale farm machinery business | 3.6 | 3.5 | 3.1 | 2.5 | 3.3 | 3.3 |
| General accounting procedures | 2.7 | 2.7 | 2.3 | 2.3 | 2.8 | 2.6 |
| State and federal laws relating to business | 2.9 | 2.7 | 2.7 | 2.1 | 2.6 | 2.3 |
| English grammar | 3.2 | 3.2 | 3.5 | 2.7 | 3.1 | 3.0 |
| Salesmanship | 3.7 | 3.5 | 3.8 | 2.8 | 3.6 | 3.3 |
| Business administration | 3.6 | 3.5 | 3.3 | 2.8 | 3.2 | 3.1 |
| Engineering -- basic principles | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 |
| Financing machine purchases | 3.2 | 3.2 | 3.1 | 2.7 | 3.3 | 3.1 |
| Manufacturers' service and maintenance requirements | 2.5 | 2.6 | 2.6 | 2.3 | 3.1 | 3.1 |
| Competition policies | 2.7 | 2.7 | 2.8 | 2.3 | 3.0 | 2.9 |
| General marketing conditions | 3.2 | 3.2 | 2.7 | 2.5 | 3.1 | 3.0 |

The degree agricultural competencies were needed by parts and service employees was indicated by a range of mean scores from 1.3 to 2.9 as shown in Table 3. The abilities to associate machine parts with machines, to conduct agricultural training sessions for others; and the understandings of farm machinery hydraulic systems, ignition and injection systems, power transmission and gear train systems in tractors had the highest mean scores. Mean scores for the degree of agricultural competency possessed ranged from 1.1 to 3.0.

The range of mean scores for nonagricultural competence needed by parts and service employees was from 1.8 to 3.3. Scores for this group are presented in Table 4. The abilities to interpret verbal descriptions into machine parts numbers, follow instructions, make decisions, and accept responsibility; and the understanding of product application to the job had the highest mean scores. There was a range in mean scores from 1.4 to 3.3 for nonagricultural competence possessed.

The degree agricultural competencies were needed by credit and collections employees had a range of mean scores from .5 to 3.8 as shown in Table 3. The understandings of agricultural economics, government farm programs, farmers credit sources, new ideas and trends in farm operation, and farm legal instruments had the highest mean scores. Mean scores for the degree of competency possessed ranged from .1 to 3.7.

Data in Table 4 reveal that the range of mean scores for nonagricultural competence needed by credit and collection employees was from 2.1 to 3.8. The abilities to perform detail work accurately, make decisions and accept responsibility and the understandings of retail financing and English grammar had the highest mean scores. Mean scores for nonagricultural competence possessed ranged from 1.5 to 3.8.

The degree agricultural competencies were needed by accounting and clerical employees ranged from .7 to 2.2 as shown in Table 3. The abilities to associate machine parts with machines; and the understandings of agricultural economics, seasonal livestock and crop prices, farmers credit sources, and new ideas and trends in farm operation had highest mean scores. Mean scores for the degree of agricultural competency possessed ranged from .9 to 2.5.

Mean scores ranged from 1.2 to 3.7 for nonagricultural competence needed by accounting and clerical employees. Scores for this group are presented in Table 4. The abilities to perform detail work accurately, follow instructions, and accept responsibility; and the understanding of company policy and profit margin had the highest mean scores. The range of mean scores for possessed nonagricultural competence was from 1.5 to 3.7.

The educational levels attained by the employees were as follows: 6 employees (4.2%) had less than 12 years of schooling, 73 (51.0%) were high school graduates, 29 employees (20.3%) had from one to three years of college and 35 (24.5%) had four or more years of college.

Of the employees, 108 (74.5%) had no vocational agriculture training, 28 (19.3%) had from one to three years, and seven employees (4.8%) had four years.

Of 145 employees, 57 (39.3%) had more than ten years of farm background; 42 (28.9%) had from one to ten years; and 44 (30.4%) had no farm background.

Table 3. Parts and service, credit and collections, and accounting and clerical employee evaluations of degree agricultural competencies were needed and possessed

| Competencies | Mean scores: Parts and Service N[a] | Parts and Service P[b] | Credit and Collections N | Credit and Collections P | Accounting and Clerical N | Accounting and Clerical P |
|---|---|---|---|---|---|---|
| Ability to: | N=33 | | N=9 | | N=14 | |
| Estimate used machinery trade-in values | 1.8 | 1.9 | 2.7 | 2.7 | 1.4 | 1.7 |
| Adjust and repair major farm machines | 2.4 | 2.8 | 1.3 | .6 | 1.1 | 1.1 |
| Associate machine parts with machines | 2.9 | 3.0 | 1.3 | 1.1 | 2.0 | 2.0 |
| Locate machine failures -- trouble shooting | 2.4 | 2.7 | .7 | .1 | 1.0 | .9 |
| Conduct training sessions for others | 2.5 | 2.5 | 3.4 | 2.8 | 1.6 | 1.6 |
| Determine machinery replacement programs for farmers | 1.8 | 1.7 | 1.4 | 1.2 | 1.2 | 1.5 |
| Conduct farm demonstration of machines | 1.8 | 1.8 | 1.2 | .7 | 1.1 | 1.4 |
| Understanding of: | | | | | | |
| Agricultural economics and farm economy | 2.0 | 2.0 | 3.0 | 3.2 | 2.2 | 2.5 |
| Farm real estate values -- land appraisal | 1.4 | 1.2 | 2.0 | 1.8 | .8 | 1.2 |
| Seasonal livestock and crop prices | 2.0 | 1.9 | 2.7 | 2.7 | 1.8 | 2.2 |
| Farm production costs | 2.1 | 1.9 | 2.6 | 2.3 | 1.5 | 2.0 |
| Governmental farm programs | 1.7 | 1.6 | 3.1 | 2.5 | 1.7 | 2.1 |
| Farm taxation and agricultural land tax credit | 1.5 | 1.2 | 1.7 | 1.5 | 1.0 | 1.0 |
| Farmers' credit sources | 1.7 | 1.5 | 3.8 | 3.7 | 2.2 | 2.2 |
| Farm labor demands and supply | 1.4 | 1.5 | 1.6 | 1.4 | 1.4 | 1.8 |
| New ideas and trends in farm operation | 2.3 | 2.3 | 3.0 | 2.4 | 1.9 | 2.3 |
| Marketing trends of farm produce | 1.9 | 1.7 | 2.7 | 2.3 | 1.7 | 2.1 |
| Insurance programs for farmers | 1.4 | 1.1 | 1.5 | 1.7 | 1.0 | 1.1 |
| Farm legal instruments | 1.5 | 1.2 | 3.2 | 2.8 | 1.2 | 1.5 |
| Farm cropping programs | 1.6 | 1.5 | 2.0 | 1.4 | 1.1 | 1.6 |
| Soil conservation measures and needs | 1.8 | 1.7 | 1.4 | 1.5 | 1.0 | 1.7 |
| Livestock programs | 1.7 | 1.4 | 1.5 | 1.5 | 1.2 | 1.7 |

[a]4--very much competency needed, 3--much competency needed, 2--some competency needed, 1--little competency needed, 0--no competency needed.

[b]4--possess very much competency, 3--possess much competency, 2--possess some competency, 1--possess little competency, 0--possess no competency.

Table 3 continued.

| Competencies | Mean scores | | | | | |
|---|---|---|---|---|---|---|
| | Parts and Service | | Credit and Collections | | Accounting and Clerical | |
| | N | P | N | P | N | P |
| | N=33 | | N=9 | | N=14 | |
| Understanding of: | | | | | | |
| Soil nutrients and fertilizer application | 1.7 | 1.6 | .7 | .9 | 1.2 | 1.5 |
| Weed control and herbicide application | 1.8 | 1.6 | .6 | .7 | 1.0 | 1.2 |
| Insecticides and their application | 1.6 | 1.5 | .6 | .7 | 1.1 | 1.2 |
| Crop storage practices | 1.7 | 1.8 | 1.8 | 1.7 | 1.2 | 1.7 |
| Artificial drying of crops | 1.9 | 1.9 | 1.8 | 1.7 | 1.3 | 1.7 |
| Soil tillage methods -- soil compaction | 1.9 | 2.1 | 1.3 | 1.3 | 1.2 | 1.6 |
| Use and storage of water | 1.6 | 1.3 | .9 | 1.3 | 1.0 | 1.1 |
| Soil temperature and effect on plant growth | 1.3 | 1.2 | .5 | .5 | .9 | 1.2 |
| Germination of farm crop seeds | 1.3 | 1.4 | .6 | .7 | .8 | 1.2 |
| Seed selection | 1.5 | 1.6 | .5 | .6 | .8 | 1.1 |
| Livestock selection | 1.3 | 1.5 | .7 | .9 | .7 | 1.2 |
| Machine capabilities | 2.6 | 2.7 | 2.5 | 2.1 | 1.7 | 2.2 |
| Feedlot automation and farmstead planning | 1.6 | 1.5 | 1.3 | 1.2 | 1.3 | 1.5 |
| Irrigation systems | 1.4 | 1.2 | .9 | .6 | 1.0 | 1.0 |
| Ignition and injection systems of farm tractors | 2.5 | 2.8 | 1.4 | 1.2 | 1.7 | 1.6 |
| Power transmission and gear train systems in tractors | 2.5 | 2.7 | 1.3 | 1.0 | 1.7 | 1.5 |
| Farm machinery hydraulic systems | 2.6 | 2.6 | 1.5 | 1.3 | 1.6 | 1.8 |

Table 4. Parts and service, credit and collections, and accounting and clerical employee evaluations of degrees nonagricultural competencies were needed and possessed

| Competencies | Mean scores | | | | | |
|---|---|---|---|---|---|---|
| | Parts and Service | | Credit and Collections | | Accounting and Clerical | |
| | N[a] | P[b] | N | P | N | P |
| | N=33 | | N=9 | | N=14 | |
| Ability to: | | | | | | |
| Think creatively | 2.9 | 2.9 | 3.4 | 2.8 | 3.0 | 3.2 |
| Find and use others' ideas and talent | 2.6 | 2.6 | 3.2 | 2.7 | 2.7 | 2.7 |
| Delegate authority | 2.8 | 2.7 | 3.4 | 3.1 | 2.8 | 2.7 |
| Recognize facts as opposed to opinion | 2.5 | 2.5 | 3.4 | 3.4 | 3.1 | 3.2 |
| Conduct all types of meetings | 2.4 | 2.5 | 3.2 | 2.5 | 2.2 | 2.0 |
| Communicate effectively | 2.8 | 2.6 | 3.7 | 3.2 | 3.1 | 3.1 |
| Interpret and analyze financial and operating statements | 2.2 | 1.8 | 3.7 | 3.7 | 2.6 | 3.1 |
| Prepare technical reports | 2.3 | 2.1 | 2.7 | 2.4 | 2.7 | 3.0 |
| Prepare weekly and annual time and expense reports | 2.4 | 2.5 | 3.3 | 3.1 | 2.7 | 3.2 |
| Perform detail work accurately | 2.7 | 2.9 | 3.8 | 3.6 | 3.6 | 3.7 |
| Write longhand legibly | 2.9 | 2.6 | 3.6 | 2.8 | 3.2 | 3.3 |
| Interpret verbal description into machine parts, numbers, bins | 3.0 | 3.1 | 2.5 | 1.6 | 2.2 | 2.5 |
| Figure invoices accurately | 2.3 | 2.5 | 3.4 | 2.8 | 2.5 | 3.0 |
| Plan work and travel efficiently | 2.8 | 2.9 | 3.7 | 3.4 | 3.3 | 3.2 |
| Follow instruction, policies, procedures accurately | 3.2 | 3.2 | 3.7 | 3.6 | 3.7 | 3.5 |
| Make decisions based on factual and objective reasoning | 3.2 | 2.9 | 3.8 | 3.6 | 3.3 | 3.1 |
| Accept responsibility | 3.3 | 3.3 | 3.8 | 3.7 | 3.6 | 3.5 |
| Understanding of: | | | | | | |
| Product application to the job | 3.0 | 3.0 | 2.5 | 2.0 | 2.3 | 2.4 |
| Buyer motivation | 2.5 | 2.3 | 2.6 | 2.1 | | |
| People in general -- applied psychology | 2.9 | 2.6 | 3.4 | 3.1 | 2.7 | 2.7 |

[a]4--very much competency needed, 3--much competency needed, 2--some competency needed, 1--little competency needed, 0--no competency needed.

[b]4--possess very much competency, 3--possess much competency, 2--possess some competency, 1--possess little competency, 0--possess no competency.

Table 4 continued.

| Competencies | Mean scores | | | | | |
|---|---|---|---|---|---|---|
| | Parts and Service | | Credit and Collections | | Accounting and Clerical | |
| | N | P | N | P | N | P |
| | N=33 | | N=9 | | N=14 | |
| Understanding of: | | | | | | |
| Personal discipline -- initiative, desire, mental outlook | 2.9 | 2.9 | 3.7 | 3.4 | 3.3 | 3.3 |
| Company policies and profit margin | 2.9 | 2.8 | 3.6 | 3.3 | 3.5 | 3.6 |
| Inventory ratios | 2.7 | 2.5 | 3.7 | 3.1 | 2.9 | 3.0 |
| Retail financing and application | 2.2 | 1.6 | 3.8 | 2.8 | 2.9 | 3.0 |
| Area machine population and potential for sales | 2.3 | 2.1 | 3.0 | 2.2 | 2.2 | 2.5 |
| Retail farm machinery business | 2.3 | 2.4 | 3.3 | 3.0 | 2.3 | 2.8 |
| All phases of wholesale farm machinery business | 2.7 | 2.4 | 3.6 | 3.2 | 3.0 | 3.3 |
| General accounting procedures | 2.1 | 1.5 | 3.7 | 3.4 | 3.2 | 3.2 |
| State and federal laws relating to business | 2.3 | 1.6 | 3.2 | 2.8 | 2.7 | 2.6 |
| English grammar | 2.8 | 2.6 | 3.8 | 3.2 | 3.1 | 3.1 |
| Salesmanship | 2.9 | 2.5 | 3.7 | 3.0 | 2.5 | 2.7 |
| Business administration | 2.5 | 2.2 | 3.4 | 3.4 | 3.0 | 3.1 |
| Engineering -- basic principles | 2.1 | 1.9 | 2.1 | 1.5 | 1.2 | 1.5 |
| Financing machine purchases | 1.8 | 1.4 | 3.7 | 3.7 | 2.9 | 2.9 |
| Manufacturers' service and maintenance requirements | 2.7 | 2.7 | 2.6 | 2.2 | 2.5 | 2.7 |
| Competition policies | 2.3 | 2.0 | 3.3 | 3.1 | 2.0 | 2.2 |
| General marketing conditions | 2.3 | 2.1 | 3.2 | 2.8 | 2.2 | 2.7 |

Managers in the Iowa area indicated that in 1958 there were 693 persons employed in their businesses as shown in Table 5. By 1963 employment had increased by approximately 5 percent to 726 persons. Managers anticipated that employment would total 717 persons by 1968, a decrease of 1.2 percent. The annual replacement need for employees in wholesale farm machinery distribution in the Iowa area was estimated to be 7 persons.

## Implications

The findings of this study indicate that neither farm background, years of vocational agriculture nor age had a strong influence on employment as a manager in wholesale farm equipment distribution. It would seem that experience in other areas of management might be more important to managers than increased knowledge in the agricultural field. With increased diversification taking place among many of the leading farm equipment companies, this management experience in other types of wholesale business within the parent company may be obtained by many managers.

Conversations with various managers suggested they felt that upgrading of nonagricultural competencies of present managerial and product education and dealer development employees was a matter of concern for the parent company as opposed to a public educational institution program. Most of our schools are not equipped at the present time to handle these types of programs. On the other hand, as shown by needed scores, these employees must have a limited amount of agricultural abilities and understandings. These could very well be included in a vocational offering at the secondary level for prospective entrants into this occupation. During the college and specialized training periods for these prospective employees they could, by personal initiative, continue to upgrade these agricultural competencies.

More than one-half of the salesmen in this study were high school graduates. Assuming that their ratings of needed competence are valid, the present vocational programs at the secondary level could be broadened to include much of the competency training they indicated was needed. It would seem that these agricultural competencies could logically be taught in a related occupations course at the secondary level and emphasized in the work phase of such a program by the local cooperating business.

Sales employees indicated that they needed much competence in all but four areas of the listed nonagricultural activities. Present employees could upgrade these abilities and understandings by participation in adult evening schools if superior teachers were made available for such programs. Specialized programs for this type of instruction at the twelfth grade and post-high school level would not be economically feasible when employment opportunities in wholesale farm equipment distribution are so limited. The total employment picture for sales persons suggests there may be a need for a specialized sales personnel program in area vocational schools. Wholesale farm equipment sales employees in this study have given a specific indication of needs if such a program becomes practical.

Personal correspondence included with returned questionnaires indicated that selling is a vocation which is rewarding in terms of salary, satisfaction and enjoyment. Some sales employees felt the occupation is looked down upon by teachers and professors. There was an (informal) expressed need to apply

Table 5. Present and future manpower needs in wholesale farm machinery distribution in the Iowa area

| Occupational area | Employment | | | | | |
|---|---|---|---|---|---|---|
| | Employed in 1958[a] | Employed in 1963[a] | Anticipated employment in 1968[a] | Employee increase 58-63 | Employee increase 63-68 | Estimated annual need of employees[b] |
| General managers | 15 | 16 | 14 | 1 | -2 | .16 |
| Department managers | 62 | 67 | 55 | 5 | -12 | .67 |
| Sales | 209 | 217 | 211 | 8 | -6 | 2.17 |
| Advertising | 22 | 16 | 17 | -6 | 1 | .16 |
| Service | 47 | 51 | 54 | 4 | 3 | .51 |
| Parts | 69 | 73 | 78 | 4 | 5 | .73 |
| Credit and collections | 46 | 54 | 57 | 8 | 3 | .54 |
| Accounting and clerical | 132 | 127 | 125 | -5 | -2 | 1.27 |
| Product education and dealer development | 21 | 28 | 34 | 7 | 6 | .28 |
| Others | 70 | 77 | 72 | 7 | -5 | .77 |
| Total | 693 | 726 | 717 | 33 | -9 | 7.26 |

[a]Tabulated from responses of 16 branch managers.
[b]Based on the percentage of employees found to be over 60 years of age.

the nonagricultural abilities and understandings directly in a specialized wholesale farm equipment sales training program. It would seem that this would fit best into a one or two-year college level program. Taking into consideration the increasingly technical nature of agriculture and the fact that nearly one-fourth of the sales employees in this study were college graduates, this program could be a combination of technical agriculture and specialized sales training, and offered as a degree program if the overall need justified a special college or university curricula.

Parts and service employees indicated a need for agricultural competencies, but not to the degree needed for sales employees. Two-thirds of these employees had had from one to four years of vocational agriculture training, and 29 employees (88%) had had 12 years of education or less. Twenty-eight employees (85%) had had a farm background. A combination of vocational agriculture training and farm background possessed by parts and service employees may have influenced them to rate the agricultural competencies lower because of their familiarity with these abilities and understandings.

Parts and service employees felt little need to upgrade their agricultural and nonagricultural abilities and understandings. The agricultural training of prospective entrants into parts and service occupations could well be included in area vocational school programs. More than 80 percent of the parts and service employees had had no more than 12 years of education, and college training was not essential for employment in these occupations.

A vocational agriculture program in related occupations could provide the necessary training for initial employment in parts and service occupations at the wholesale level. The number of employment opportunities should be carefully explored before such a program is initiated.

Employees in credit and collections indicated they needed some agricultural competency. Their ratings on 28 of the 39 agricultural competencies (70%) indicated that they needed little to some competence and felt little need to upgrade their agricultural abilities and understandings.

This study indicates little need for upgrading the agricultural competence of credit and collections employees. There is a need to improve nonagricultural competence especially in the management and financing phases of the industry. Since individual companies have their own credit policies and financing plans, it would seem that training for prospective entrants in these specific competencies would best be provided by the parent company.

The accounting and clerical employees are in the enviable position of possessing more agricultural and nonagricultural competence than is needed in their work. Considering average age, years of farm background and vocational training of these employees, the investigator questioned the validity of the degree competency possessed scores of both agricultural and nonagricultural abilities and understandings.

Vocational programs in commercial and business education could help prepare prospective employees for the accounting and clerical occupations at the secondary and post-high school levels.