A COMPARISON OF PERSONNEL INFORMATION STORAGE AND RETRIEVAL SYSTEMS FOR THE PLACEMENT SERVICES OF SELECTED UNIVERSITIES

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ABSTRACT

A COMPARISON OF PERSONNEL INFORMATION STORAGE AND RETRIEVAL SYSTEMS FOR THE PLACEMENT SERVICES OF SELECTED UNIVERSITIES

By

Leo Patrick Scheetz

Purpose of the Study

The broad purpose of this study was to develop a recommended model personnel information storage and retrieval system for placement offices. In analyzing personnel data systems in placement offices, four specific purposes were examined. The examined purposes were to:

1. Study the present personnel information storage and retrieval systems used in selected major universities.
2. Compare the data processing model information storage and retrieval system developed and implemented at Michigan State with systems in operation at other selected major universities.
3. Determine the advantages and disadvantages of the personnel information storage and retrieval system used at Michigan State University.
4. Recommend a model information storage and retrieval system that appeared to be worthwhile and desirable for major universities.

Methodology

Using lessons learned during the development and implementation of Michigan State's system, an instrument was designed by the investigator to meet the purposes of this study. The initial instrument was

then reviewed by a panel of placement services experts. A review of the responses received from the panel of experts resulted in a final instrument with fifty-seven items in two sections: (1) placement office operations and (2) assessment of current status and opinion.

The final instrument was administered by interview and questionnaire during a personal visit by the investigator to each of thirty-eight (38) placement offices in ten (10) selected midwestern universities. A random sample of employers was also surveyed on one section of the questionnaire for their opinions of items for inclusion in a fast personnel retrieval system for placement offices. Both abstract statistical and descriptive statistical analyses were used to examine the collected data.

Conclusions

The study of personnel information retrieval systems in the surveyed placement offices revealed that there was extreme variation in the numbers of graduating students and alumni candidates registered, percent of each placed, and percent of graduating students registered for placement by placement office and by surveyed university. Several materials in varying numbers were collected and distributed in credentials. Copying and mailing costs for credentials varied also. Eleven vacancy listing methods were used in varying amounts in the surveyed placement offices. Budgets for placement offices per placement office and per university varied greatly. Various fast personnel retrieval systems were used from simple credential or resumé filing and notebook systems to simple and complicated data processing candidate listing systems. The operational costs for fast retrieval systems in the surveyed placement offices varied per system, per placement office, per university, and per registrant.

The comparison of Michigan State's model system with the other surveyed retrieval systems revealed that Michigan State's system was one of the largest placement operations surveyed and the only centralized university placement office. Greater numbers of graduating students and alumni candidates were registered, a higher percent of candidates were placed, and a greater percent of graduating students were registered for placement than at most other surveyed placement offices. Fewer credential materials were collected, copied, and mailed than at most other placement offices. More vacancy listing methods were used at Michigan State than at other placement offices. The budget for placement at Michigan State was the largest of the surveyed placement offices and third from largest for total placement budgets at the surveyed universities. Michigan State's cost for placement was the least expensive per registrant of the surveyed placement offices. The cost for operating Michigan State's model personnel retrieval system was one of the most expensive systems for total cost and one of the least expensive systems for cost per registrant.

When determining the advantages and disadvantages of Michigan State's model system, it was found that Michigan State's system was quick to use and more manageable with large numbers of candidates. Immediate access was possible. The organization and procedures used with Michigan State's system like batch processing by computer, centralized data processing operations, and multi-purpose capabilities provided uncommon advantages. The expense of system development, limited personnel data available, and the frequency of printouts provided disadvantages for Michigan State's system.

The recommendation for a model information storage and retrieval system revealed that twenty-eight items were recommended for inclusion in the model system. The chosen items were: candidate's name, campus and

home addresses, campus and home telephone numbers, undergraduate and graduate majors and minors, undergraduate and graduate grade point averages, campus activities, professional recommendations, first, second, and third job preferences, present employer's name, present job title, years experience in present and previous jobs, first and second locational preferences, highest degree achieved, employment status, year born, race, date file activated, and certification.

In recommending a physical model personnel data retrieval system for placement offices, it was determined that a single operational system was not appropriate for all placement offices. Three types of personnel retrieval systems were recommended. The recommended model for a specific placement office was dependent upon the total number of candidates registered for placement each year. For placement offices with approximately 1,500 or less registrants, credential or resumé manual filing or notebook systems were recommended. For placement offices with approximately 1,500 to 3,000 registrants, semi-automated (keysort, cardex, and electrofile) systems were recommended. For placement offices with approximately 3,000 or more registrants, a data processing candidate system was recommended.

A COMPARISON OF PERSONNEL INFORMATION STORAGE AND RETRIEVAL SYSTEMS FOR THE PLACEMENT SERVICES OF SELECTED UNIVERSITIES

By

Leo Patrick Scheetz

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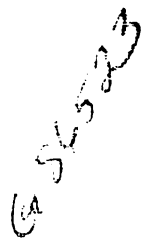

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

The challenge to improve our college graduate placement system in the fields of business, industry, government, and education has never been more pressing than in these times of technological explosion. Nor has success in our efforts been more vital than in the current era of limited employment for college graduates. Data processing operations offer hope for the improvement of our placement system.

Uses of data processing in placement systems are currently undergoing investigation, revision, and expansion in many major universities. More efficient methods are being developed, personnel selection criteria are being evaluated, and administrative technologies are being studied as they pertain to placement programs in the university.

The age of technology is forcing modifications in the university placement office. Archaic methods are being liquidated, and new, efficient processes are being born. Machines perform physical and routine clerical activities, and they assist in certain managerial and administrative functions. These changes necessarily affect all aspects of the placement system; change is inevitable.

The Problem

The placement office is ardently keeping pace with the changes affecting society in the employment process. Placement offices in today's automated

society are attempting immediately to identify candidates available for employment opportunities.

When employers contact placement offices, they expect qualified candidates to be referred to them immediately. They simultaneously expect their personnel needs to be filled efficiently and promptly. The delay of two or three weeks or even days for a reply is no longer acceptable. In fact, some employers expect placement offices to identify qualified candidates concurrently with their initial telephone contact. If placement offices are technologically capable of providing the necessary information, their candidates are considered and possibly hired for the available employment opportunity.

The problem of identifying candidates has been further complicated as the numbers of graduating students and alumni have increased. For instance, in 1940, 1,134 students[1] were granted Bachelors, Masters, and Doctoral Degrees from Michigan State University. Since that time, the number of graduates increased until 11,100 candidates[2] were granted degrees in 1971-72. The primary task of the placement office at Michigan State is to assist these students in obtaining career opportunities commensurate with their interests and academic preparation.

Similar increases were experienced for alumni seeking new employment opportunities. The Placement Bureau at Michigan State became operational in 1945, and at that time began to assist the few alumni who were seeking placement. Since then, the numbers of alumni have increased; 4,957

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[1]Registrar, Michigan State University, Annual Report: Degrees Conferred--1940 (East Lansing, Mich.: Michigan State University, 1940), p. 1.

[2] Registrar, Michigan State University, Annual Report: Degrees Conferred--1971-72 (East Lansing, Mich.: Michigan State University, 1972), p. 1.

alumni candidates[3] sought employment through the Placement Bureau in 1971-72.

When the numbers of graduating students and alumni were small, it was quite possible for placement personnel to know many of them personally and refer them to appropriate prospective employers who would hire them. Today, it is conceivable that a placement official would know very few of his candidates personally. Also, because of the size of some colleges and universities, it is very possible that faculty members would know few students individually.

The next problem in today's placement office is compiling the names of all the candidates available for employment opportunities. New graduating students and alumni are continually registering with the placement office to seek assistance, and registered candidates are constantly obtaining employment. The problem is to maintain a current awareness of those still seeking employment.

Once this problem is solved by automation or a manual identification system, additional personal and professional characteristics of each available candidate need to be immediately accessible. Prospective employers want this additional information to compare available candidates. They want the candidate's address and telephone number, employment preferences, sex, marital status, race, degrees attained, years of experience, employment experiences, and letters of reference. An efficient, effective placement office knows the names of all available candidates, and additional information on all candidates can be obtained as necessary.

An efficient placement system provides this service within financial (budgetary) constraints. Placement offices in many major universities

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[3]Placement Bureau, Michigan State University, Annual Report 1971-72 (East Lansing, Mich.: Michigan State University, 1972), p. 13.

have experienced limited budgets during the past several years. Nevertheless, placement offices are required to assist unemployed, underemployed, and potentially employable candidates. Placement offices must provide personal and professional information about available, qualified candidates, or their candidates will not be hired in this era of limited job vacancies.

Solutions to these problems might be answered by data processing technology. Should a model data processing information storage and retrieval system germinate and flourish in one major university, then inevitably it would be adapted and used in placement offices of other major universities.

Purpose

The purposes of this study were:

1) To study the present personnel information storage and retrieval systems used in selected major universities.

2) To compare the data processing model information storage and retrieval system developed and implemented at Michigan State University with systems in operation at other selected major universities.

3) To determine the advantages and disadvantages of the personnel information storage and retrieval system used at Michigan State University.

4) To recommend a model information storage and retrieval system that appears to be worthwhile and desirable for major universities.

Assumptions and Limitations

Assumptions

The following assumptions were made with regard to this study:

1. Placement offices in the selected universities remain a necessity.

2. Placement of college graduates and alumni is a function of the placement office.

3. The expressed opinions of those interviewed would be based on actual opinions and thereby a reasonably accurate portrayal would result.

Limitations

Readers should be aware of certain limitations of this study. These limitations included the following:

1. This study was limited to an examination of advantages and disadvantages of the model personnel information storage and retrieval system developed in the Placement Bureau at Michigan State University.

2. The bias of the participating personnel was a limitation, in that complete objectivity may have been lacking.

3. This study was limited to personnel information storage and retrieval systems found in selected universities.

4. The exploratory nature of the study represented a limitation as far as the specificity of the results was concerned.

Definition of Terms

Placement Office was the administrative entity that comprised the total placement service--personnel, facilities, and procedures.

Staff Members were the professional personnel in the placement offices who assisted persons seeking employment.

Credential was the file of materials collected on persons using the placement services--resumé forms, lists of courses, letters of recommendation, and student teaching reports.

Graduating Students were the Bachelors, Masters, or Doctoral Degree recipients who were graduating within one year and were seeking

placement through a placement service.

Alumni Candidates were the postgraduates of a university who were seeking employment through a placement service.

Candidate was the person seeking employment through a placement service. The term was used to include both alumni candidates and graduating students.

Data were the facts, concepts, or instructions presented in a formalized manner suitable for communication, interpretation, and processing by human or automatic means.

Information Retrieval was the methods and procedures for recovering specific information from stored data.

Information Storage was the device into which data were entered, held, and retrieved at a later time.

Data Processing was the execution of a systematic sequence of operations performed upon data.

Computer was a data processor that could solve problems by accepting data, performing described operations or computations on those data, and supplying the results of these operations.

Input was the device, process, or channel involved in the insertion of data into a data processor.

Output was the data that had been processed.

Printout was the data that had been processed and expressed as coded characters on hard copy.

Placed was the term used for candidates who had accepted full-time employment, entered graduate school, become homemakers, or entered military service.

Unemployed was the term used for candidates who had no full-time employment of any kind.

Methodology

Since it appeared that this study was a quantitative and qualitative description of personnel information storage and retrieval systems in placement offices, the normative survey method seemed most desirable.[4] Although this method encompassed a variety of techniques, the semistructured interview (leading question) and direct observation methods were employed in this study.

It was decided to limit the study to a random sample of selected large major universities. These universities were administratively comparable, were located in the same geographic region (the northcentral region of the United States), and granted Bachelors, Masters, and Doctoral Degrees.

A personal visit to the various selected colleges and universities was conducted in the spring of 1973. Letters were written to establish interview dates on each campus.

A tape recorder was used to record interviews and thereby expedite and not inhibit the interview process. The interview outline was prepared in two copies, one for the interviewer and one for the placement office staff member. Leading questions and specific factual data were requested in the interview.

Preview

This chapter served as an introduction to the study. Chapter II deals with a review of literature and historical development of the model personnel information storage and retrieval system. In Chapter III, the

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[4]C. V. Good, A. S. Barr, D. E. Scates, The Methodology of Educational Research (New York: Appleton-Century, 1941), p. 295.

descriptive methodology of the study is outlined. The results obtained from interviews with placement office personnel in the selected universities are presented in Chapter IV. Chapter V contains the summary, conclusions, and recommendations of the study.

CHAPTER II

REVIEW OF SELECTED LITERATURE

The review of the literature was primarily directed at the following areas:

1. Computers in personnel information systems
2. Alternative personnel information systems for placement
3. Michigan State's personnel information system for placement

Computers in Personnel Information Systems

Several business, industry, and government agencies have sought to utilize computers for maintenance of personnel information storage and retrieval systems. Initially, these computer systems were introduced for payroll, staff benefits, and statistical files. Eventually, operations in personnel areas were developed.

Applications in the personnel areas were slow to materialize. Although the personnel function was always dealing with changes in organization, manpower requirements, etc., personnel operating techniques were timeworn.[1] Traditional personnel operations were hard to change.

The initial step in establishing a personnel data system was planning a personnel information system feasibility and design study.

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[1]Richard T. Bueschel, "Changing Nature of Personnel," Personnel Journal, January, 1966, p. 20.

Mapp cited one of the problems that arose whenever a personnel information system was planned. It arose from the fact that personnel men were usually not skilled in the techniques of system design and analysis. Nor were the systems analysts familiar with personnel applications.[2]

When designing a personnel data processing system, certain objectives were sought. The system should (1) replace present clerical operations, (2) make possible a level of control and information retrieval and analysis that could not be achieved with conventional clerical methods, and (3) provide tangible and intangible dollar savings.[3] Justification for the system's success was dependent upon the designed system meeting these objectives.

Another primary purpose of the personnel data system was to serve management in a record-keeping capacity. According to Walker,[4] it was essentially an information system. Therefore, one gauge of its effectiveness was the completeness of data content and the way the data were used. He also cited modularity, internal efficiency, retrievability, benefits applicability, and readability as necessary features for operation of a successful personnel data system.

The dignity and stature of the personnel function were in jeopardy whenever it was unable to produce data promptly and accurately. Thus, as early as 1961, tabulating equipment was used to sort personnel data

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[2]George A. Mapp, "Planning a Personnel Information System Feasibility and Design Study," Personnel Journal, January, 1971, p. 28.

[3]William E. Berry, "What a Personnel EDP System Should Do," Personnel, January-February, 1969, p. 18.

[4]Alfred J. Walker, Jr., "Evaluating Existing Computerized Personnel Data Systems," Personnel Journal, September, 1970, p. 742.

when recorded on punched cards.[5] Invaluable monthly, quarterly, and annual reports were prepared accurately, quickly, and as desired. There was no excuse for failure to provide prompt and accurate personnel data to top management.

One of the earliest personnel information systems was a highly developed punched card technique used by the U. S. Navy Personnel Accounting Machine Installation. Source documents on all new personnel were processed daily by each district headquarters, and status reports and personnel files were updated daily. Various reports were submitted periodically to higher headquarters on call or as scheduled from this punched card system.[6]

The General Electric Engineering Personnel Register was another early computerized system, developed to enable General Electric to make full use of the education, training, and experience of its engineering and scientific personnel.[7] Employees were listed on the register, which contained descriptive and historical data as well as a list of experience areas. When a position became available in General Electric, a request was submitted to the register for a scan of available and qualified candidates. A similar register was developed by General Electric for its manufacturing, sales, and industrial relations personnel.

In 1963, United Air Lines used a computerized skills finder system to speed to supervisors and managers the names of all company employees who

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[5]John J. Sarcino, "Instant Personnel Data," Advanced Management, February, 1961, p. 20.

[6]Paul Duke, "Personnel Records: Along the Road to Automation," Personnel, May-June, 1959, p. 31.

[7]Ibid., p. 33.

were qualified for promotion.[8] Resumés were stored on the computer and retrieved upon request by managers who had job openings. The system was able to search the records of all employees interested in promotion in the 32,000-employee organization.

In 1963, the U. S. Air Force Logistics Command devised a system for identifying the best candidates for promotion.[9] Each employee's work history was coded for type of position and responsibility level. Various other data about the employees were also stored. Whenever a vacancy occurred, a Personnel Promotion Roster Request form was submitted to the computer for matching the qualifications of the present employees with the job requirements of the vacancy. The output list then was submitted to the appropriate headquarters.

Most personnel data processing systems, if they were effective, were tailor-made to the peculiar conditions, requirements, policies, and people of the organization using them. The salaried personnel data processing system at Ford Motor Company was such a centralized system. It contained a record for each of the 47,000 salaried employees in a single master file.[10] It was updated daily from information furnished by field locations of Ford Motor Company. Whitsell stated that a centralized system has three important advantages:

> (1) Speed in assembling data for management, (2) elimination of reports from field personnel activities, and (3) assurance that personnel data was uniform throughout the company with respect to definition, effective date, and interpretation.[11]

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[8]Charles M. Mason, "Computer Improves Promotion Opportunities," Industrial Relations News, XIII, 38 (September 21, 1963), 3.

[9]Charles Garlet, "How A Computer Can Do Your Personnel Selection," The Office, September, 1963, p. 109.

[10]Don M. Whitsell, "Some Principles of Efficient Personnel Data Processing," AMA Management Report #50, p. 49.

[11]Ibid., p. 50.

Whitsell also identified a few basic principles for an efficient personnel data processing system. Principles for the information-gathering category were:

> (1) Records containing related items of information should be integrated as fully as possible. (2) Procedures and forms should be as uniform as possible throughout all organizational components of the company. (3) Forms should be designed to reduce to a minimum the transcription of data. (4) Control over the input system should be in the hands of the system users.[12]

Principles of the information output category were:

> (1) The development of output programs should be under the control of the personnel analyst. (2) The output program should stress forward planning. (3) The personnel department must foresee management's need for personnel data and program for it in advance. (4) Reports should be programmed for maximum information content. (5) A record of machine hours or some other measure of the cost of a report should be maintained.[13]

Eventually, skills inventory systems became important in manpower management, especially in large corporations. The personnel skills inventory was similar to a parts inventory in a large production company. If someone questioned the parts manager about the number of machine parts on hand, he had an answer reasonably quickly. If someone approached a personnel manager and questioned him about the number of civil engineers employed with his company, he might need a week or more to get an answer.

Few companies had adequately compiled a skills inventory for their employees so that skills could be rapidly pinpointed.[14] Two vocabulary techniques were used in industry to collect work experience information from employees--Fixed Vocabulary and Free English. The Fixed Vocabulary,

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[12]Ibid.

[13]Ibid., p. 51-52.

[14]Ronald D. Olsen, "Skills Inventory--A Step Toward Better Manpower Management," Manage, March, 1963, p. 4.

with modifications, was the most widely employed. Among its users were IBM, Ford Motor Company, Xerox Corporation, and General Electric.

An efficiently operated skills inventory system could lead to significant improvement in the personnel activities of a company. Such a skills inventory system was developed by Honeywell[15] for engineering and research organizations, where high costs of recruiting and the shortage of skilled professionals made it essential to use the talent already available in the company. Their system offered greater growth to company employees and also attempted to reduce company turnover among the hard-to-find professionals. Information about the employee's background, education, previous job history, and skills was collected. Reports depicting individual skills and proficiencies were then prepared by the computer from the information on the questionnaires. New questionnaires were sent again annually to update employee files.

At IBM, the complexities inherent in the personnel activities led, in the late 1950's, to the development of a computer systems design specifically to assist in personnel work. Their system was a data base with complete and accurate information on each of the 150,000 employees at IBM locations within the United States. The initial step in the development of their system was the establishment of a uniform records system throughout the company with reliable updating methods.[16] From this system various personnel reports, including a skills inventory listing, were printed.

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[15]Richard T. Bueschel, "How EDP Is Improving the Personnel Function," Personnel, September-October, 1964, p. 59.

[16]Wesley R. Liebtag, "How an EDP Personnel Data System Works for Corporate Growth," Personnel, July-August, 1970, p. 15.

The Canadian government's data stream system was a national network on which information concerning the qualifications and career records of all Canadian Civil Servants was maintained.[17] When a vacancy arose, individuals who could be interested and potentially qualified were isolated immediately and informed of the vacancy so that they could apply if they wished.

The computerized Cornmarket Careers Register in the United Kingdom[18] was another attempt to use computer power to handle 20,000 job seekers a year. It matched the code number of a candidate and his qualifications, geographic location, age, and salary requirements with the specific requirements of a vacancy. Then a visual match of the candidate's application was necessary to assess whether the candidate was genuinely qualified for the position.

Also, a most sophisticated matching service was designed for the Employment Security Division of the New York State Government by the Auerbach Corporation.[19] This system was designed to speed notification of suitable vacancies to unemployed citizens, whether manual workers or executives. At the same time, it supplied employers with a printout of possible candidates for their jobs. The system was designed to answer three questions:

> (1) How do the candidate's qualifications and preferences compare with available jobs? (2) How can the candidate modify his preferences or restate his qualifications to enhance his opportunities for a suitable match with a vacancy? (3) What training should the candidate consider to improve his chances of additional and possibly better paying vacancies?[20]

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[17]Peter Brown, "The Computer and Personnel Management," Personnel Management, September, 1971, p. 26.

[18]Ibid.

[19]Ibid.

[20]Ibid.

A similar computer service to match jobs and job seekers underwent tests by the Wisconsin Department of Industry, Labor, and Human Relations in 1969. These tests, financed by the Bureau of Employment Security, U. S. Department of Labor, were the result of two years of planning and programming.[21] The Wisconsin State Employment Service hoped to install the system experimentally in Madison in 1969 and to extend it to Milwaukee in 1970. Using the Dictionary of Occupational Titles descriptions, information on the education, experience, knowledge, aptitude, interest, and personal characteristics was entered. Also, job openings were similarly described and entered. Then a computer match of applicants based on a set of selection factors such as salary, education, and locational preference would produce a selected listing of qualified applicants. A search of job openings based on an applicant's preferences would yield a selected listing of available job openings. The system design included current information for both applicants and job openings. It also included accommodations for statistical analysis of the job market--applicants and jobs.

A 1970 random sample survey of 375 major U. S. corporations found that use of computers was not as extensive in personnel as in most other functional areas of large U. S. corporation.[22] Not only did the current computer usage show the comparatively low status of personnel, but its status was unchanged for the future, too. Evidently, even personnel executives were convinced that the use of personnel-oriented computerized programs would increase only negligibly when cast into the perspective of

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[21] Jobs By Computer, Wisconsin State Employment Service, WSES 3154 Bulletin, January, 1969, p. 2.

[22] Steven J. Mayer, "EDP Personnel Systems: What Areas Are Being Automated?" Personnel, July-August, 1971, p. 29.

corporate growth. In personnel functional areas, collection and retrieval of applicant data on computers was implemented in only a minority of the surveyed firms at that time.

In a study by Cheek,[23] he traced the reasons for success and failure of personnel information systems in business. His analysis suggested that failure to gain the involvement and clear commitment of top management, to develop user acceptance, or to overcome employee resistance could doom the most carefully designed personnel computer system. But the most fundamental key to success was identification of a critical personnel problem and a more imaginative approach to its resolution.

As personnel departments throughout the country moved into the new scene of computerized personnel data systems, Bassett indicated that

> You'll never be able to take the human element out of the personnel job. You simply can't handle people mechanically and get away with it. However, overdependence on computers may indeed be poor public relations, but that does not mean that computerized personnel data systems should be shunned by the personnel manager.[24]

One area of the personnel job in which systems men commonly went astray was the matching of manpower and available jobs. The assumption was that a fully mechanized man-job matching system was both feasible and desirable. A hard look at the realities of the recruiting and placement processes suggested that a totally mechanized system was beyond the capacity of existing computers and computer softward.[25]

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[23]Logan M. Cheek, "Personnel Computer Systems," Business Horizons, August, 1971, p. 69.

[24]Glenn A. Bassett, "EDP Personnel Systems: Do's, Don'ts, and How-To's," Personnel, July-August, 1971, p. 20.

[25]Ibid., p. 22.

The National Association of Manufacturers attempted to find a way to harness the computer to the problem of matching people and jobs. The objective of their research was to determine whether and how jobs and job applicants could be matched at the semi- and low-skilled levels in both white- and blue-collar jobs. They wanted to ensure a higher degree of job satisfaction for successful applicants and simultaneously higher productivity and lower costs from turnover, rework, and recruiting for employers. Their principle was:

> In looking for work (as elsewhere throughout life), people seek those activities in which they feel they are most likely to be successful. Conversely, they avoid those activities in which they feel less likely to be successful.[26]

Therefore, occupationally well-adjusted people liked what they were doing, believed they were doing it well, were significantly more likely to do a better job for their employers, and would stay on their jobs longer than people who were occupationally maladjusted. They were grouped according to their orientation into one of three basic orientations common to all behavior: things, people, and ideas. Job profiles and job applicant profiles were then matched for most common fit (highest correlation) on these orientations.

Thus far, the computer had not made the contributions within the life sciences as it had in the physical sciences. Partly, this was a lack of quantitative sophistication in the life sciences. The perplexing problem was measurement when dealing with human variables.[27] A more serious problem, though, was the tendency of researchers in the life sciences merely

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[26]Samuel H. Cleff, and Robert M. Hecht, "Computer Job/Man Matching at Blue-Collar Levels," Personnel, January-February, 1971, p. 18.

[27]John R. Hinrichs, "Implications of the Computer for Personnel Research," Management of Personnel Quarterly, Winter, 1968, p. 6.

to analyze data and see what "popped out." A carefully designed study specifically to test a theory would be more productive.

Study design was certainly one of the problems of personnel research in organizations. The application of computers didn't do much to help the design of studies. The future of personnel research was in the quality of personnel research design and the thinking that went into research studies, rather than in the research techniques employed.[28]

Many employers learned from their personnel research that the cost accrued in obtaining suitable new employees was one of the most significant expenditures in business. To minimize this expense of the personnel function, it was necessary to determine the best source for obtaining particular types of personnel.[29] It was also necessary to determine which one of several recruiters or interviewers was doing the best job of obtaining the right people. Then, if not to reward them, it was a company objective to study their techniques, so that other interviewers could achieve similar results by adopting their particular methods.

Employers in business, industry, and government were using computers in many of their personnel activities. It therefore seemed sensible that placement offices could use similar operations to assist in their placement functions.

Alternative Personnel Information Systems for Placement

Knowing that employers in business, industry, and government were using computers in their personnel functions was too tempting for college officers. They, too, wanted similar systems for their placement offices.

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[28] Ibid., p. 8.

[29] Carlton W. Dukes, "Effective Measurement of a Professional Recruiting Effort--A Systems Approach." Personnel Journal, January, 1965, pp. 12-17.

They saw that by letting machines do the manual work, they could devote more time to meaningful career counseling and other creative activities. One hope for the future was the judicious use of the computer as an aid to the placment function. McCormick, in his case for the computer,[30] indicated that the placement office could be linked by teletypewriter with a computer to feed in all pertinent data about each available student. As employers registered for recruiting dates, information about employment opportunities could be fed into the computer. A match of the candidates and jobs would produce a list of the most nearly matched candidates, who would then be informed by computer-produced letter of their match with available jobs. After matched students and other interested students had interviewed with the employers, a computer evaluation of the recruitment success of the employers could be accomplished. This system would be more efficient, personal, and helpful to employers and applicants than would traditional methods.

Some placement personnel were not as optimistic. Catlin, for one, expressed some concern about utilization of computers in placement procedures. He complained that:

> (1) Computers could not be economical in small quantities. (2) Computers dehumanized the career planning activity. (3) Computers permitted little change in the candidate's career objectives during the senior year when a dream could just be solidifying into a reality. (4) Computerized matching of candidates with jobs would increase the premium on more attractive records at the expense of the less impressive ones.[31]

He expressed the beliefs of many who held anti-computer sentiments. Computers were condemned for their lack of human understanding and empathy.

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[30]John N. McCormick, "The Case for the Computer," Journal of College Placement, April-May, 1969, p. 44-50.

[31]Herbert P. Catlin, "The Case Against the Computer," Journal of College Placement, April-May, 1969, p. 46.

To probe whether data processing could assist in placement, the UCLA Student and Alumni Placement Center undertook a feasibility study in 1964.[32] In their study, only moderate success was achieved with (1) matching jobs and candidates, (2) processing information about on-campus recruitment, and (3) machine storage and retrieval of information descriptive of employing organizations and their typical personnel needs. The fourth phase of their project proved highly successful. In this phase, two projects were undertaken: (1) a follow-up study of recent graduates and (2) a thorough analysis of the characteristics of students registered with the UCLA Placement Center. Based upon their investigation, it was obvious that data processing could be of great assistance to placement offices, particularly those dealing with large student and employer populations. Their investigation also emphasized systems analysis. This systems analysis was a critical tool for the placement office to make a long-range commitment to data processing. The original study and heavy emphasis on advance planning made it possible for the UCLA Placement Center to design, and subsequently develop, several individual applications of data processing techniques. The UCLA Placement Center did determine that automation was not the solution to placement office problems, but it was a tool that could increase the effectiveness of professional staff members.

Although many placement officers believed that computers would reduce people to numbers, Menke and Mehle reported that their experiments with student placement[33] actually increased the personal aspects of their services

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[32]Joseph R. Scully, "UCLA EDP: A Placement Office Implements A Complete Computer System," Journal of College Placement, December, 1967-January, 1968, p. 62.

[33]Robert F. Menke, and Lawrence Yehle, "Personalization Through Computerization," Journal of College Placement, October, 1963, p. 42.

through the use of a computer. Student data and job description data were input through a file maintenance program onto a computer magnetic tape. Students were then matched with part-time positions received by the Arizona State University Placement Office. Student and employer notification letters were then printed for distribution. Although their system did cost more than similar manual operations, the placement function was accomplished more efficiently and effectively. Candidates in the system were selected on the basis of availability, class, college, major, sex, and marital status.

Indiana University's Matching System

In 1965, Indiana University's Bureau of Educational Placement developed a very sophisticated computer matching system for jobs and applicants.[34] Applicants and jobs were entered into the system; several characteristics about each were included. The characteristics on applicants included the applicant's number, name, geographical preference, sex, marital status, level of position desired, type of position desired, field, added responsibilities, degree achieved, date available, complexity of institution, experience (both administrative and teaching), birth date (month and year), minimum acceptable salary, and probable duration of employment. For jobs, the name of the institution, street address, and city and state were provided with information matching the applicant's record. Then jobs were matched to applicants, and applicants were informed by individual vacancy notices about available jobs.

The Indiana system was specifically designed for education placement. It was not adaptable to business, industry, or government placement.

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[34]William Voorhies, Interview (personal) on December 4, 1972.

Furthermore, the addresses and telephone numbers of the applicants were not available to employers through the system. Coding of information for both applicants and jobs was complicated. The system did require a match of each job with all applicants. The system operations were expensive, especially for computer run time and postage for mailing individual vacancy notices.

Iowa State University's System

During the 1964-65 school year, the teacher placement office at Iowa State University incorporated data processing into its office procedures.[35] Data processing was seen as a major solution to their problem of receiving and processing thousands of vacancy notices and hundreds of teacher candidates who registered for placement. Their system screened and identified all candidates fitting categories of geographic areas, size of community, and teaching fields. Vacancy letters were then computer printed, placed in window envelopes, and sent to the matched candidates informing them about the vacancy. Also, a master list of all vacancies classified by teaching fields was prepared. Their system was more efficient than their previous system, required less clerical time, decreased the work load of professional placement staff, permitted large increases in registrations and vacancy notices with minimum clerical staff adjustments, provided a continuous summary of teaching vacancies, provided multiple copies of information, and provided gross screening of candidates and positions.

Purdue University's Business Placement System

For graduating students seeking full-time employment in business, industry, and government, the Purdue University Business Placement office began the

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[35]H. E. Dilts, "EDP and Teacher Placement," Journal of Teacher Education, Summer, 1966, p. 151.

process in 1966 of developing and refining a computerized information system.[36] The purpose of the system was to provide more information about employment opportunities to students, to assist them in the employment process. During 1966 and 1967, in cooperation with the College of Engineering's computer science courses, the Purdue Placement Service Data System (PPSDS) was designed and programmed.

Throughout the development and implementation of this system, financing of the project was a problem. Finally, the College Placement Council offered its computer, programmers, computer operators, and finances to run the experimental project for one year, 1968. During that year, 1,421 students completed employment information request forms. Approximately 550 employers completed employer information forms. Only these 550 employers who were interviewing on the Purdue University campus were listed in the system. The employers listed 3,106 available jobs. As a result of submitting the student and employer information to the computer system, it was reported that over 40 percent of the students obtained somewhere between 6 and 50 matches per printout.

The student employment information request forms contained the student's name, academic discipline, degree level, interests, geographical region preferences, function preferences, and production and service preferences. The employer information forms requested the employer's name and address, degree preferences, specialization preferences, fields of interest, functions, primary product and/or services, and geographical regions. A match of the student and employer information provided the student with a printout of employers matching his preferences.

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[36]Richard A. Stewart, and Michael A. Donahue, "Purdue's Computer Project: How It Began & What It Means for Placement," Journal of College Placement, April-May, 1970, p. 44.

This system was developed mainly for technical placement (engineers, business graduates, and natural science graduates). Liberal arts graduates and students seeking nontraditional employment found few, if any, employment opportunities matching their preferences. This system was designed to match students against employers interviewing in the placement office. It did not match students against job vacancies received by the Business Placement Office. Neither did it provide employers with a list of candidates matching their employment opportunities.

GRAD II

Based upon the experiment of the College Placement Council with the Purdue University Business Placement Office, a nationwide technical graduate matching system was developed. This system was called UNDERGRAD, or generally GRAD II.[37] It was developed to match graduating students with employment opportunities available in various business, industry, and government organizations. This system was funded by fees paid from employer users. Resumés of graduating students were collected from various participating placement offices throughout the United States. Student resumé information was keypunched, input into the GRAD II programs, and stored for retrieval. Then prospective employment opportunities were matched against this file, and prospective employers were provided with information about candidates matching their employment openings.

The GRAD II system allowed little, if any, human interaction with the computer such as update capabilities. Certain perameters were input, and names of candidates who matched this input were printed and provided

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[37]Robert C. Bruce, "GRAD II System Capability," letter to placement directors throughout the United States, January 23, 1973, p. 2.

to the prospective employer. This system was capable of listing only business, industry, and government employers. It was not adaptable to listing employment opportunities in education.

Employment Systems, Inc.

During the early months of 1969, Employment Systems, Inc., of New York, conducted an extensive experiment in matching applicants and positions at Michigan State University.[38] With the assistance of the Placement Bureau staff at Michigan State, applicants and positions were filed and retrieved from a computer file. The following applicant information was input into the system: applicant's registration identification number, applicant's present zip code, industry code of preference, function code, present salary range, years of experience, highest education level attained, geographical preference, major skill area, and skill specialties in major skill area. Similar information was input for positions. That information included: position's registration identification number, zip code of job location, industry of employer, function desired, salary range required, experience required, education level required, major skill area required, and skill specialties in major skill area required.

Then through a "black box," candidates and positions could be searched to determine matches. The black box was a computer terminal connected by telephone cable to a computer in Detroit. The specifications of a position could be designated on the computer terminal, the black box. The telephone could then be dialed direct to Detroit, hooked to the computer automatically, and searched for applicants. The matching

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[38]Edward P. Dear, "Employment Systems, Inc.," letter to John D. Shingleton, Director of Placement, Michigan State University, January 18, 1969, p. 3.

applicants were then listed through audio response by their identification number. Through a cross-reference system in the Placement Bureau, a candidate's name, address, and telephone number could be found.

A similar procedure was followed to obtain position information. An applicant could search a position file to determine if any positions were available that matched his requirements. Positions were then output through audio response by a registration identification number. Again through the cross-reference system, the name, address, and telephone number of the prospective employer could be found.

Testing this system was only feasible because Employment Systems, Inc., allowed the Michigan State University Placement Bureau to utilize their system without cost. In fact, personnel were provided by ESI to input candidates into the applicant file.

In July, 1969, the test phase of the project was terminated. ESI then requested that the Michigan State University Placement Bureau pay for services rendered after that date. At that time, a review of the costs for the project revealed that a comprehensive project of this type would be approximately $12,000 to $13,000 per year. These costs were based upon only 750 applicants in the applicant file at once.[39]

The total budget for data processing operations in the Placement Bureau at Michigan State was $6,000 in 1968-69. Because of the limited budget, utilization of the ESI system was not possible. To complicate matters further, at that time approximately 8,000 graduating students and 5,000 to 6,000 alumni were using the placement services at Michigan State

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[39]Edward P. Dear, "Employment Systems Costs," letter to John D. Shingleton, Director of Placement, Michigan State University, July 8, 1969, p. 1.

each year. The costs for inputting and searching all these candidates would be significantly higher than their quoted cost estimates.

Some disadvantages were noted in utilizing the ESI system. For instance, applicants were identified by number from an audio output. Then a system operator was required to write down the numbers of the matches and use the cross-reference system to determine who these applicants really were. This process was inefficient and time-consuming.

ESI offered to resolve this problem by using a printout operation. However, even the printout operation would not identify the name, address, and telephone number of applicants. Also, the printout operation would require additional funding for the system. Because of costs and system inefficiencies, the search continued for an efficient data processing system for placement.

Placement Research

In 1970, many placement officers were reluctant to accept computer assisted pre-screening of applicants. But the placement offices at Michigan State, Rhode Island, Maryland, and Rutgers agreed to test a very sophisticated system developed by Placement Research.[40] One of the most attractive features of the experiment was its cost: the system was free to placement offices and students. The costs were borne by employers, who paid $75 per student hired through the system, predicated entirely on results.

Twenty separate variables were identified as critical to the machine matching process in this system, and were separated into student and employer descriptors. The student descriptors were: specific fields of

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[40]John D. Shingleton, "Campuses, Computers, Careers," Journal of College Placement, October-November, 1970, p. 38.

study, extracurricular participation, work experience, foreign language proficiencies, age, marital status, sex, citizenship, draft status and/or military service, date available for employment, and percentage of college tuition earned. The employer descriptors were: major job activity, type of working environment, general employment category, specific type of industry, geographic location of the job, size of the company, amount of travel, and company-sponsored formal training. After student and employer questionnaires were completed, a computer match was accomplished. Although specific results were not reported, the participating placement offices were "basically satisfied with the results."[41]

After taking steps to strengthen weaknesses that appeared in the system, preparations were made to use the system for 1970-71. Especially the free service to the college and students assisted the placement offices in their decision to test the system further.

For operating the system during 1969-70, student questionnaires were distributed to all business, industry, and government graduating students who would be interviewing in the participating placement offices. After student questionnaires were collected and keypunched, they were matched with available employment opportunities. Employers were then provided with a list of all students matching their requirements. Letters from employers could then be sent to students informing them about employment opportunities and interviewing dates on their campus.

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[41] Ibid., p. 49.

Students were also provided with a career directory, which listed employers who matched the students' employment preferences. The directories also indicated available employment opportunities and interviewing dates on campus for the respective employers.

One significant fault with the system was its concentration on matching graduating students and employers in the technical placement areas--engineering, natural sciences, and business. Few matches were found for liberal arts graduates. Neither did the system lend itself well to matching poorly defined career aspirations with poorly defined job opportunities.[42]

NEA SEARCH

Another computer assisted matching system vying for clients was NEA SEARCH, developed in 1967 by the National Education Association (NEA). NEA SEARCH encouraged teachers especially ethnic groups, who were interested in relocating, to register with the system. Of the total of 4,700 requests for teachers in 1969-70, 2,300 were for minority teacher personnel.[43]

The charge to teachers for using the service was from $10 for NEA members to $25 for nonmembers. Employers could request searches without charge. The system provided up to ten candidates, who were selected according to the requirements established by the searching school district.

The following information was collected on candidates: name; address; telephone number; year born; type of school district preferred;

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[42] Ibid.

[43] "NEA SEARCH Vacancy Listing Breaks Records," NEA Reporter, May 22, 1970, p. 11.

geographic preference; grade level preferred; subject/position preferred; subject/position experiences; educational level attained or expected by August, 1970; salary requested; certification held; special areas of experience; ethnic identification; and status of availability. Similar information was collected for vacancy information and requests for searches. For instance, the name, address, telephone number, and contact person for the school district were requested. All other information matched that requested from candidates. After this information was keypunched, matches were conducted two or three times each month.[44]

Because of limited use by teachers of the NEA SEARCH system, a concerted effort was made in 1970 to interest placement officers in using this system.[45] The system was advertised as a service designed to supplement placement operations, especially for those dealing with students wishing to teach out of state. The success of this campaign was not reported.

Other Systems

The University of Rhode Island Placement Office, in cooperation with DuPont, developed a similar automated matching system for graduating students.[46] The academic discipline, cumulative grade point average, and rate of progress through college for each graduating student were compared with minimum standards established by DuPont.

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[44]G. E. Arnstein, "SEARCH: The Computer in Personnel Services to Teachers," NEA Journal, February, 1967, p. 53.

[45]O. A. Payne, "NEA SEARCH," letter to John D. Shingleton, Director of Placement, Michigan State University, January 9, 1970, p. 1.

[46]Warren E. Kauffman, "The Computer in Senior Placement," Journal of College Placement, April-May, 1967, p. 42.

After three years of this operation, by chance only seniors who matched DuPont's criteria were finally hired.

At the University of Arkansas Placement Office, in the spring of 1967, the computer was used to inform students about employers interviewing on campus.[47] The computer was programmed to address and type a letter to each student with a major in the field that interested the employers interviewing on campus. The system basically improved communications with graduating students seeking employment.

At the State University of New York at Binghamton, the Office of Appointments and Placement began efforts to make career literature more accessible to students.[48] Printed material from professional societies, government agencies, commercial publishers, industries, state education departments, foundations, civil service commissions, and major graduate and professional schools was coded by areas of opportunities and sorted by unit record equipment into interest areas.

Some placement offices had neither the volume of graduating students nor the budget to support a computer operation. Another system was investigated for them. The simple yet potentially effective manual retrieval device was the McBee Keysort. With it, institutions with modest funds could use less complex information retrieval techniques to aid in counseling and placement. The Duquesne University Placement Center was one such institution. In 1969, the personal and employment data of its job seekers were coded through an adaptation of

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[47]Neil F. Harmon, "Arkansas Uses Computer to Help with Apathy Towards Interviews," Journal of College Placement, February-March, 1967, p. 57.

[48]Aysel Searles, "A Computerized Career-Planning File Leads Students to Self-Help," Journal of College Placement, December-January, 1967-68, p. 39.

the McBee Keysort, a coded card system lending itself to a series of manually operated sorts.[49] The candidate cards were then sorted against employment opportunities received, and employers were informed about qualified candidates by telephone or letter.

A similar system was used in the public school system of LaDue, Missouri, for control of teacher recruitment. It was reported that their system was ideal for imposing order on paperwork and for automation of teacher recruitment records.[50] The system was simple, inexpensive, and successful in that school district with several hundred applications.

During the late 1960's, many other important changes and developments took place in the fields of computerized matching systems, directory services, and information retrieval systems for placement. To survey these developments, the Boards of the Eastern College Personnel Officers Association (ECPO) and the Middle Atlantic Placement Association (MAPA) established a joint committee.[51] Selected information was requested from all known computerized placement and directory services at that time. The services and their year of founding were: Career-Ways System, Inc. (1962), Compujob (1968), Computerized Student Search, Inc. (1969), Graduate Resumé Accumulation and Distribution - GRAD I (1966),

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[49]James R. Holcomb, "Keysort: Another Application in Campus Data Processing," Journal of College Placement, April-May, 1970, p. 55.

[50]James F. Heald, "How to Control Teacher Recruitment," School Management, June, 1964, p. 104.

[51]Eastern College Personnel Officers-Middle Atlantic Placement Association. Computerized Placement and Directory Services Report (White Plains, N.Y.: General Foods Corporation, 1970), p. 52.

GRAD II (1969), National Registry (1965), Placement Publications (1969), Re-Con Systems Corporation (1967), Careers In Business (1952), Careers in Technology (1952), College Placement Annual (1958), Guide to Educational Opportunities (1968), Equal Opportunity Publications (1970), Harbus New Publications (1965), Intercept (1969), Padric Publishing Company (1962), Placement Manuals (1967), Resource Publications, Inc. (1965), Sociocom (1970), Summitt Services Company (1968), and Wilwood Service Corporation (1969). The survey requested basic organizational information, objectives of their service, procedures on campus, approach to employers, financial arrangements, and opportunities offered. The oldest of these services were the Careers in Technology and Careers in Business directory services, established in 1952. The oldest computerized matching services were the National Manpower Register, founded in 1965, and the Graduate Resumé Accumulation and Distribution service - GRAD I, founded in 1965. The other computerized matching services were established after 1966.

At the same time, a survey of placement officers was conducted to determine the various information retrieval systems then in operation, to verify a suspected need for such systems, and to identify systems that would prove feasible in college placement operations.[52] From their survey, 185 questionnaires were returned. Of these, several reported use of computerized matching systems as follows: GRAD I - 70, GRAD II - 6, Compujob - 4, Re-Con - 4, NFA SEARCH - 3, and Placement Research - 2.

Several placement officers also used the computer facilities on their own campuses to provide: (1) career information lists, (2) departmental student lists, (3) employer mailing lists, (4) follow-up studies

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[52] Ibid., p. 56.

of alumni, (5) grade point and cumulative averages, (6) mailing lists and labels, (7) placement data analysis and summary, (8) recruitment calendar, and (9) scheduling on-campus interviews. The services were used most frequently to prepare mailing lists and labels and departmental student lists.[53]

The placement officers were also requested to identify the automated or manual system or procedure most often used for personnel matching for available jobs. Various systems were noted. They included: (1) electrofile system, (2) kardex visual file system, (3) Royal McBee Keysort Card System, (4) manual resumé system, (5) card index matching system, (6) color code identification system, and (7) cross index system.

A survey of employer members of MAPA was also conducted to determine the current and potential users of computerized matching systems.[54] The questionnaire was sent to 404 employer members. Of the 218 questionnaires returned, 55 were using computerized matching systems. The following services were being used, with the frequency indicated: GRAD I - 43, GRAD II - 9, Recon - 3, Purdue Experiment - 4, Internation A. E. C. - 2, Michigan State University system - 1, San Diego State University system - 1, Dart - 1, American Chemical Society - 1, and Placement Publications - 1.

Of the 163 employers who were not using computerized matching systems, 32 expected to use them in the foreseeable future. The services of their choice at that time were as follows: GRAD I - 8, GRAD II - 10, Placement Research - 1, and Undecided - 15.

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[53]Ibid., p. 54

[54]Ibid., p. 56.

Before 1965, placement officers had seriously considered the use of data processing in their placement offices and had in fact implemented some systems. According to a survey of 949 placement offices by the Southwest Placement Association in December, 1965, only 22 offices were doing significant work with data processing in the placement field.[55] The following placement offices reported they were doing some work at that time using data processing: California State Polytechnic University at Pomono, California State Polytechnic University at San Luis Obispo, University of California, University of Waterloo (Ontario), Yale University, University of Southern Florida, Florida State University, University of Illinois, Eastern Illinois University, Wheaton College, Iowa State University, Fort Hays Kansas State College, Massachusetts Institute of Technology, Southeast Missouri State College, Temple University, Villanova University, East Texas State University, North Texas State University, University of Houston, University of Texas, Arizona State University, and University of Pennsylvania.

Data processing was used in several placement activities at these colleges and universities. The activities and their frequency of use were: statistical analyses - 10, follow-up studies - 8, salary studies - 7, preparation of student lists - 4, preparation of employer lists - 5, placement of co-op students - 1, student screening for employers - 7, record keeping - 7, report preparation - 8, employer screening for students - 5, printing of student addresses - 4, and part-time employment - 4.[56]

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[55]Allan D. Richardson, Automation in the Placement Office, (Houston, Texas: University of Houston, 1967), p. 43.

[56]Ibid., p. 44.

During this review of literature, various personnel retrieval systems have been explained. These systems were attempts by placement offices to serve their needs. Some systems have flourished and others have failed. One principle cause for failure was financing for the system. Using the lessons learned from these earlier systems, a proposed model system was designed and implemented by the Placement Bureau at Michigan State University.

The Michigan State University Personnel Information System for Placement

During 1968 and 1969, the Michigan State University Placement Bureau entered the initial phases of developing its own model personnel information retrieval system. The initial attempt at this task was made in July, 1968. At that time, a system was proposed to assist in scheduling interviews in the Placement Bureau. Employers were coming to the Placement Bureau in ever-increasing numbers.[57] The largest task for the Placement Bureau at that time was scheduling 22,119 student interviews on 2,379 employer interview schedules.[58] A system was designed for accomplishing this task.

The Data Processing Center at Michigan State was requested to analyze the costs of the system. The monthly costs were estimated to be approximately $280 to operate the system and approximately $165 to keypunch input for the system.[59] A one-time programming charge of approximately $1,000

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[57]Placement Bureau, Michigan State University, Placement Bureau Annual Report 1967-68 (East Lansing, Mich.: Michigan State University, 1968), p. 1.

[58]Ibid., p. 2.

[59]Don A. Perrin, "A Data Processing System for Scheduling Employer Interviews" (Unpublished data processing proposal, Michigan State University, April 22, 1968), p. 2.

was necessary to make the system operational. Based on these costs and the Placement Bureau's data processing budget at that time, it was determined that the system could not replace present clerical personnel or provide tangible or intangible dollar savings.[60] These objectives had been established as necessary for a successful system.

However, this experience did accentuate one possible improvement for the placement system. A data processing system for producing locator file cards and credential file labels was designed and adopted.[61] This system searched the master student records in the Michigan State Master Student File and produced a computer label and card for each student with 120 or more credits or a student with a class standing of senior, Masters Degree, or Doctoral Degree level. These labels and locator cards were then used after placement registration to create credential files and locator cards for the manual credential filing system.

After being exposed to the capabilites of data processing, the Placement Bureau staff was dissatisfied with the existing manual system. They decided to seek some expert advice to assist them in a placement system design.

IBM Consultation

During April, 1969, the IBM district office in Lansing was approached by the Placement Bureau staff and was asked to assist in a feasibility and design study of a comprehensive automated data processing system for

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[60]Berry, "What a Personnel EDP System Should Do," p. 18.

[61]John D. Shingleton, "A Data Processing System for Producing Locator Cards and Credential File Labels" (unpublished data processing proposal, Michigan State University, April 24, 1969), p. 2.

placement services. This was the first step recommended by Mapp in the planning of a personnel information system.[62]

IBM acknowledged the Placement Bureau staff's request and agreed to provide technical assistance in the feasibility and design study. During April and May of 1969, IBM systems analysts and Placement Bureau staff members met several times to identify placement and data processing problems and to resolve technical conflicts.

Then in May, 1969, IBM informed the Placement Bureau staff that because of a monopoly suit pending in the U. S. Supreme Court against IBM, they could not further develop the placement services system. They suggested that the Data Processing Center at Michigan State be requested to submit cost estimates for the system.

Such a request was made, and the Data Processing Center submitted their cost estimates. For a comprehensive data processing system (including teleprocessing) for listing candidates, employment opportunities, and employer interviewing schedules, the costs would be $186,480 for operations and $17,500 for programming over a three-year period.[63] With a total Placement Bureau budget of $6,000 per year for all data processing expenses, this was obviously impossible.

Since the whole package was impossible, it was thought that portions of the system might be accomplished. Therefore, development of the personnel retrieval portion of the system was undertaken.

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[62]Mapp, "Planning a Personnel Information System Feasibility and Design Study," p. 28.

[63]Dave O'Neil, "A Comprehensive Data Processing System for the Placement Bureau" (unpublished data processing proposal, Michigan State University, October 30, 1969), p. 4.

Manual Credential Files

At that time, names of candidates seeking employment through the Placement Bureau at Michigan State were filed in manual credential files according to their employment preferences. For instance, the credential of a candidate seeking an elementary teaching position was filed under Elementary Education; the credential for an English Education graduating student or alumnus, under English Education; Electrical Engineer . . . under Engineering; a high school principal candidate . . . under Principal; etc. The system required that a locator card, a 3-1/4 inch by 7-3/8 inch card, be filed in alphabetical order by name for every candidate on file in the Placement Bureau. Then the credential of a candidate seeking a position in more than one employment area could be filed in each area. The locator card told the locations of all credential files.

But the filing of letters of recommendation in credentials was complicated and expensive to maintain. The credential clerk was required to find the credential files through the locator cards and file a copy of the letter of recommendation in each credential file.

Employers desiring names of candidates for employment opportunities were required to come to the Placement Bureau personally and search through the manual credential files by employment area to determine if candidates were available.

Sometimes credentials of candidates who found employment remained in these files, because too much time was involved in deactivating them. Employed candidates were then referred to prospective employers, even though they were no longer available.

With this system, active candidates were informed about employment opportunities through vacancy bulletins, but the address labels for mailing the bulletins were typed by clerks. This task was not too difficult when only one or two hundred candidates were receiving bulletins, but the bulletin mailing lists began to increase significantly as the economic slump of 1968 and 1969 descended upon the Placement Bureau.[64] To type the labels needed to mail 3,000 or more bulletins published every two weeks was almost impossible, and very expensive.

Unit Record Mailing Labels

The increase in mailing labels for bulletins forced the Placement Bureau staff into one of their first automated data processing ventures. The name, street address, city, and state of all alumni on each mailing list were keypunched onto computer cards for each mailing list. Then a unit record equipment tabulator was used to print the mailing labels for all alumni candidates receiving bulletins.

As alumni received jobs, their cards were pulled from the mailing list deck. If one's address changed, his card was theoretically pulled from the mailing list card deck and a new one keypunched and inserted in its place.

Initially, this deck was maintained by hand inserting and pulling cards placed in alphabetical order. But the lists began to grow so rapidly that unit record equipment sorters were called upon to sort the cards into alphabetical order by name. This simplified the task and freed Placement Bureau personnel to do other things.

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[64]Placement Bureau, Michigan State University, Placement Bureau Annual Report 1968-69, (East Lansing, Mich.: Michigan State University, 1969) p. 21.

Then the Placement Bureau staff hit upon another idea in October, 1968. After seeing an alphabetical listing of the bulletin mailing lists, it was decided to identify the cards of each candidate by employment preference, sort the cards by this coded preference, and list the cards (now in job preference order) by unit record equipment tabulator.

Employment Preference Listings

A four-column code was added to the end of the address line of each computer card to identify the candidate's job preference. Candidates on the bulletin mailing lists were then identified by the job preference printout, without proceeding to the alumni files. But the information provided on this list was not sufficient to identify qualified candidates for available employment opportunities. Only the name, address, and job preference of the candidate were listed. However, all information was listed on one 80-column computer card, and the listing and sorting systems were extremely simple.

Then in October, 1969, after consultation with Placement Bureau staff members and several prospective employers of Michgian State graduates, a more comprehensive system was developed. This listing included the candidate's name, address (street, city, state, and zip code), job preferences (2), locational preferences (2), highest degree held, total years of experience, sex and marital status, year born, home telephone number, and date on file. Employers were informed by telephone or letter about candidates seeking employment in their geographical region. Also, some of the candidate's personal characteristics were identified for the employer.

A separate deck of cards was required for each bulletin mailing list: (1) the Teacher Vacancy Bulletin, (2) Administrative Vacancy Bulletin, (3) Higher Education Vacancy Bulletin, and (4) Business, Industry, and Government Vacancy Bulletin. A candidate was input in each deck where vacancies might occur for his employment preferences. Also, two computer cards were required to store all this personal information. Control and sorting of these decks was a significant problem. When someone obtained employment, several clerks were informed to purge their decks. Sometimes candidates received bulletins and were informed about employment opportunities for months after they had informed the Placement Bureau to deactivate their files.

In October, 1970, columns were added to identify the mailing lists of candidates. If a candidate should receive one or more bulletins, this fact was identified with a punch in an appropriate column.

At the same time, a third job preference was added especially for teacher/coaches and teacher/administrators. These candidates were identified with their major teaching area, minor teaching area, and coaching or administration area. Also, a candidate's employment status (employed, unemployed, or seeking a new position), identification number, teacher certification status, and Placement Bureau rating (staff members evaluation) were coded.

Hence more information was known about candidates, and control of mailing lists was less difficult. But a candidate was only listed under his first job preference. Finding a candidate for a combination teaching position (English/French/Spanish) required that Placement Bureau staff members search under all choices to determine if a candidate possessed the necessary qualifications. At the same time, sorts of these two

cards for each candidate became clumsy, unmanageable, and expensive. Approximately 6,000 cards were sorted each time mailing list labels or listings were needed for the alumni.[65]

During this time when alumni job preference listings were used, listings of students by their academic curriculum and major were produced directly from the data processing Master Student File. Student names, home addresses, campus addresses, year born, class, sex and marital status, and level (for identifying teacher education candidates) were listed. Names of all students with 110 or more credits or a class standing of senior or above were printed by the Data Processing Center. The figure of 110 credits was used for cutoff, because a junior with 110 credits or more generally graduated within the next 12 months. These lists were printed only once each year. In 1970-71, almost 20,000 students were printed on these lists, but only approximately 8,500 students registered with the Placement Bureau at fall term registration.[66] Therefore, many students were not available for or interested in employment, but their names were printed on these lists.

Employers were provided with these lists and informed that these graduating students were available for employment. These employers were being wrongly informed, and students were bothered by employers unnecessarily. Therefore, when the candidate employment preference listing for alumni was developed sufficiently in October, 1970, several lists of students in high-demand employment categories were converted to the unit record listing system. However, the costs for keypunching cards for

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[65]Placement Bureau, Michigan State University, Placement Bureau Annual Report 1970-71, (East Lansing, Mich.: Michigan State University, 1971), p. 21.

[66]Ibid., p. 5.

these candidates were significant, and the costs of sorting for mailing list labels and job preference listings were already unbearable.

The Model System

An alternative to the unit record system became necessary, especially from a financial standpoint. Therefore, the Placement Bureau staff turned to the computer to assist with their problem.

The cost of programming for a comprehensive candidate listing system was estimated at $3,500.[67] The Placement Bureau supplies and services budget for data processing of $6,000 was not sufficient to bear this charge and to do other data processing operations, too. Help in financing this project was needed. In December, 1970, and January, 1971, the Placement Bureau staff approached the Detroit Edison Company[68] and the U. S. Department of Labor[69] to request funding for this project. Neither was willing to support it.

Then in April, 1971, the Placement Bureau staff approached the director of the Data Processing Center at Michigan State and requested his financial support for development of this project.[70] He agreed to

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[67]Paul L. Klaver, "Programming Costs for Candidate Lists and Bulletin Mailing Labels" (unpublished data processing proposal, Michigan State University, August 21, 1970), p. 2.

[68]John D. Shingleton, and L. Patrick Scheetz, "Computerized Pre-Screening Placement Program" (unpublished data processing proposal to Detroit Edison Company, Michigan State University, January 29, 1971), p. 1.

[69]John D. Shingleton, "Computerized System for Placement Offices" (unpublished data processing proposal to U. S. Department of Labor, Michigan State University, December 17, 1970), p. 1.

[70]John D. Shingleton, "A Data Processing System for the Placement Bureau" (unpublished data processing proposal, Michigan State University, April 13, 1971), p. 1.

support the developmental costs if the Placement Bureau would support the operational costs.

Throughout the summer of 1971, a programmer from the Data Processing Center and the Placement Bureau staff began development of the Computerized Personnel Information Storage and Retrieval System for the Placement Bureau. Much of the development was based upon the past experience of the Placement Bureau staff, the Data Processing Center staff, and employers using the Placement Bureau.

The next important problem in development of the system was identification of the data elements for the personnel information system. Before the information could be stored and retrieved, the information for use in the system was determined by the Placement Bureau staff (users), as both Schruben[71] and Dukes[72] suggested. They indicated that personal data, education background, work experience, and employment preference characteristics should be researched to determine which were important enough to store and retrieve in the system.

After deliberation, analysis, and consensus by the Placement Bureau staff, the following characteristics were chosen as the most important for input: candidate's identification number (used as computer record number), name, home street address, city, state, zip code, bulletin codes, race, locational preferences (2), job preferences (3), highest degree held, total years of experience (or level and term of graduation for graduating students), sex and marital status, year born, home telephone

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[71]Lee Schruben, "The Information System Model," Datamation, July, 1969, p. 93.

[72]Carlton W. Dukes, "A Computer-Oriented Personnel Information System," Computer Technology-Applications for Management (Greenwich, Conn.: Industrial Relations Counselors, Inc., 1965), p. 65.

number, date on file, present job title (or cumulative grade point average for graduating students), employment status, teacher certification held, Placement Bureau staff rating, and present employer (or campus telephone number if graduating students). Prior experience with the unit record equipment system helped determine which of these characteristics were important.

The next problem in establishing the personnel information system was its cost. Regardless of data processing equipment availability, according to Warren of the Port of New York Authority, the costs for establishing and maintaining a personnel system must be justified by increased benefits which are translated into operational savings. He said that an institution "should not use an elephant gun to kill a fly just to show that you have the equipment."[73]

Klaver, in his analysis of the Placement Bureau candidate lists and bulletin mailing labels system, determined that a complete cycle of candidate lists and bulletin labels for 10,000 candidates would cost $98.[74] Using the unit record equipment listing and labels system, the cost for 3,000 candidates was approximately $200 per cycle. Also, an intangible value was received from the model system when candidates were listed by each of their employment preferences (up to three). Also, all candidates, alumni and graduating students, were listed on one system.

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[73]William B. Warren, "Some Personnel Data Processing Applications In a Small Organization," AMA Management Report #50, p. 58.

[74]Klaver, "Programming Costs for Candidate Lists and Bulletin Mailing Labels," p. 5.

During the fall of 1971, the system was operated on a Dial 250 program (temporary program) until the proper programs were written to make the system fully operational. In February, 1973, the system became operational.

After experience with the unit record equipment listings and labels, only limited additional information was added for the computer listings. For instance, the candidate's present job title and present employer were added. This new system had the capability to list a candidate under each of his employment preferences (up to three), list graduating students and alumni on one system, automatically update candidate information, and delete candidate information from the system. Card input was used, but candidate information was stored on magnetic computer tape. After almost four years of development, the model system became a reality.

Computer File Maintenance

The primary purpose of the model system was to list candidates by their employment preferences so their names could easily be retrieved. To input candidate information into the Candidate Master File, two cards were keypunched from abstracts prepared by the Placement Bureau staff and contained the candidate's characteristic personal and professional information. The abstract form called the Candidate Additions List form was used to record the candidate's information from credential forms completed by the candidate for the Placement Bureau. The Candidate Listing Handbook included instructions to Placement Bureau staff members for completing this form.[75] As soon as this form was keypunched onto two cards,

[75]Placement Bureau, Michigan State University, Candidate Listing System Handbook (East Lansing, Mich.: Michigan State University, February, 1972), pp. 2-3.

the maintenance cards were input into the Candidate Master File through a maintenance program. This program prepared a new master if one was not already prepared, or it updated an old master with the information contained on the maintenance cards.

Also, a maintenance listing was produced from this program. It identified only problems which existed in the maintenance cards being entered onto the Candidate Master File. This important edit routine, reporting by exception,[76] alleviated reports which were expensive to prepare and handle. In this report, only errors were identified; thus, much expensive reading was eliminated. Identified errors were then corrected.

To correct errors or partially update a candidate's record, a special form called the Candidate Update List form was used. Instructions for using this form were also included in the Candidate Listing System Handbook.[77] Selected characteristics were updated with this form. The selected characteristics included: name, bulletin codes, race, locational preferences (2), job preferences (3), total years of experience (or level and term of graduation for graduating students), sex and marital status, home telephone number, employment status, teacher certification held, and Placement Bureau staff rating. When completing the Candidate Update List form, the candidate's identification number (computer record identification number) was required. Then only the one or more sections of the form needing correction were completed on the form. All other sections of the candidate's record in

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[76]Joseph L. Kish, "Don't Bury'em to Their Ears in Superfluous Paperwork," Computers & Data Processing, August, 1964, p. 16.

[77]Placement Bureau, Candidate Listing System Handbook, pp. 4-6.

the Candidate Master File remained unchanged, unless changes were made on the Candidate Update List form.

Once the Candidate Update List forms were keypunched, they also were input into the Candidate Master File through the maintenance program. If errors were made on the updating form, they were corrected by submitting another updating form. All corrections were shown on the maintenance listing with the old and new information.

The Candidate Master File was also updated with batches of information received from other sources at the University. For instance, the Registrar's Office at Michigan State provided the Placement Bureau with a computer card deck containing the identification numbers (student numbers) and names of candidates who would graduate. This was provided during the candidate's term of graduation. Update cards were then created automatically by unit record equipment and used to update the Candidate Master File with information about each graduating student's term of graduation.

Information on the race of graduating students was updated in a similar manner. The Office of Institutional Research at Michigan State was required to collect information on the race of each student at Michigan State. From their files, an updated maintenance card was prepared automatically with the graduating student's identification number (student number) and a race code. This information was then processed through the system maintenance program to update records of graduating students contained in the Candidate Master File.

If information other than that included on the Candidate Update List form needed updating, this was accomplished by deleting and adding a new record. This was especially necessary for changes of address.

Candidate records were deleted from the Candidate Master File by listing the candidate's identification number on a Candidate Deletions List form. Instructions for completing this form were also included in the Candidate Listing System Handbook.[78] By keypunching the identification number into a delete card and inputting the delete card through the maintenance program, all information stored on that candidate was erased from the Candidate Master File. Also, all deletions were listed on the maintenance listing.

This system made it possible for candidate information to be input, updated, and deleted from the Candidate Master File. Once the Candidate Master File was created and updated sufficiently, other operations were possible.

Creation of Yearly Candidate Master File

During each fall term student registration at Michigan State, all students who would graduate with a Bachelors, Masters, or Doctoral Degree during the next 12 months were requested to complete at registration a credential form for the Placement Bureau. After this registration, it was helpful to have a listing of all candidates who registered with the Placement Bureau.

To obtain this listing, a compilation of student numbers of all students who registered with the Placement Bureau was made. Each of these student numbers was then keypunched into a finder card. By using these finder cards, the Master Student File maintained by the Data Processing Center, and the system maintenance programs, a new Candidate Master File was created. This new Candidate Master File contained

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[78]Placement Bureau, Candidate Listing System Handbook, p. 7.

selected candidate records from the old Candidate Master File and records for all candidates added through the new registration. By using appropriate control cards in the maintenance programs, only selected alumni candidates were permitted to remain in the newly created Candidate Master File.

This system required no keypunching of personal and professional information for graduating students listed with the Placement Bureau. The Registrar at Michigan State had already keypunched the student data. The Placement Bureau system only copied it through a very inexpensive maintenance program.

This technique of utilizing information already collected by other departments of an institution was called an "integrated data system."[79] The concept was first coined by the American Management Association and United States Steel in 1954.[80] This concept united data accumulation in the Data Processing Center with data utilization in the Placement Bureau. It meant much financial and operational savings, especially for the Placement Bureau staff.

Candidate Alphabetical Listing

Once the Candidate Master File was created, it was essential to know the names of candidates who were entered into the file. By using a listing program, an alphabetical list of candidates was obtained.

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[79]C. Orville Elliott, and Robert S. Wasley, Business Information Processing Systems (Homewood, Ill.: Richard D. Irwin, Inc., 1968), pp. 303-307.

[80]Alan O. Mann, "A Publically Regulated System of Management Control Services," Management Control Systems, edited by Donald G. Malcolm and Alan J. Rowe, (New York: John Wiley & Sons, Inc., 1960), p. 246.

When counseling students and alumni, this listing allowed placement office staff members to determine if the candidates were accurately and actively on the listing. Also, their personal and professional information was verified and/or updated.

Candidate Job Preference Listing

Once the candidate information was input and stored, it was also retrieved in an appropriate order for employers to review it. By using another listing program, it was possible to list candidates in order of their employment preferences. From this listing, employers or even Placement Bureau staff members identified candidates qualified for available employment opportunities. The names and pertinent personal information of candidates were given to prospective employers by telephone or by copying the appropriate pages and sending them to the prospective employer.

Address Labels

A designed by-product of this system was the capability of producing three-line address labels for all or selected candidates from the Candidate Master File. At the Placement Bureau, it was determined that one of the most expeditious and efficient methods of informing candidates about employment opportunities was the periodical mailing of vacancy bulletins. These vacancy bulletins contained information about all employment opportunities received by the Placement Bureau for an area of employment preferences (i.e. elementary and secondary education, higher education, etc.). This system was preferred over the vacancy notice system mainly because of system costs.

In this system, if candidate information was properly coded when input, it was possible through listing programs to print one-inch Avery address labels for all candidates seeking employment in a certain employment area (i.e. all elementary and secondary education graduating students and alumni). As used at the Placement Bureau, bulletins were prepared for elementary and secondary education, higher education, business, industry, and government, and employers (all types) visiting campus to interview candidates. Every week for some bulletins and every other week for others, sets of labels were prepared to send the bulletins to appropriate candidates.

Through use of the candidate alphabetical listing and the maintenance program listing, it was possible to determine if candidates were properly coded to receive appropriate bulletins. Candidates received as many different bulletins as necessary to provide them with employment information about all their employment preferences.

Follow-Up Report

To account for success of the data processing personnel information system for placement and the education offered at Michigan State, a Follow-Up Report of graduated students was developed. This report identified the careers chosen by graduated students immediately following graduation. The first report printed by computer at Michigan State was in 1967-68.[81] Because this report relied upon the respondents to fill out the survey instrument completely and accurately, the report had several

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[81]Placement Bureau, Michigan State University, Placement Bureau Follow-Up Report 1967-68 (East Lansing, Mich.: Michigan State University, 1968), p. 1.

inadequacies. However, a system was designed and developed in 1970 which utilized the data base already established at Michigan State.[82]

Continuing to use integrated data system concepts, it was recognized that significant information was already accumulated on graduating students. The Michigan State data base, the Master Student File, provided the candidate's name, home address (street address, city, state, and zip code), sex, marital status, academic major, college, level (for teacher certification purposes), degree received, date graduated, and race. From the data base, this information was automatically punched onto computer cards. Then a copy of this punched card with questions on it (the survey instrument) was sent to the candidate with a letter and a self-addressed, postage paid, business reply envelope requesting the following information: name of organization (employer, graduate school, or homemaker), location (city and state), job title, and salary, if appropriate. If a candidate was unemployed, then unemployed and the location (city and state) were indicated on the survey instrument.

The first mailing of Follow-Up Report survey instrument cards was sent to each graduated student approximately three months after graduation. If an answer was not received from the first mailing within three months, another copy of the punched card was then mailed with a letter similar to the first. Approximately a 70 percent response was received from the survey in 1971-72.[83]

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[82]Placement Bureau, Michigan State University, Placement Bureau Follow-Up Report 1970-71 (East Lansing, Mich.: Michigan State University, 1971), p. 1.

[83]Placement Bureau, Michigan State University, Placement Bureau Follow-Up Report 1971-72 (East Lansing, Mich.: Michigan State University, 1972), p. ii.

The collected information was coded, keypunched, and recorded on computer magnetic tape. From this computer tape, several reports were printed. The main reports were printed in alphabetical name order within degree, within major, within college. Average salaries by degree were summarized at the end of each academic major, summarized by college, and summarized for each total report. All graduated students for one academic year (i.e. 11,100 students in 1971-72) were printed on one report,[84] all female graduated students for the same year on another,[85] all Black graduated students on another,[86] all Spanish-American graduated students on another,[87] and all Honors College graduated students on another.[88] Also, a report compiled alphabetically by student name order within degree, within organization, and alphabetically by organization name order was printed.[89] From these various listings, the successes of the Placement Bureau services and Michigan State's education programs were partially judged.

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[84] Ibid.

[85] Placement Bureau, Michigan State University, Placement Bureau Follow-Up Report 1971-72: Female Students (East Lansing, Mich.: Michigan State University, 1972).

[86] Placement Bureau, Michigan State University, Placement Bureau Follow-Up Report 1971-72: Black Students (East Lansing, Mich.: Michigan State University, 1972).

[87] Placement Bureau, Michigan State University, Placement Bureau Follow-Up Report 1971-72: Spanish-American Students (East Lansing, Mich.: Michigan State University, 1972).

[88] Placement Bureau, Michigan State University, Placement Bureau Follow-Up Report 1971-72: Honors College Students (East Lansing, Mich.: Michigan State University, 1972).

[89] Placement Bureau, Michigan State University, Placement Bureau Follow-Up Report 1971-72: Alphabetical Listing of Organizations of Michigan State University Graduates (East Lansing, Mich.: Michigan State University, 1972).

Alumni Follow-Up Report

If the Follow-Up Report for students immediately after graduation did not provide sufficient information for a complete analysis of Michigan State's successes, an analysis of graduates five and ten years after graduation was possible. This report might provide more appropriate information. The Follow-Up Report portion of the placement services personnel information system was capable of printing this information for analysis if it was collected. Until and during the 1972-73 school year, the administration at Michigan State had not seen sufficient tangible and intangible benefits to request this survey and analysis. Neither was sufficient funding provided to support this project. Nevertheless, if that report is ever needed, the model system is capable of handling it.

Summary

The review of literature revealed the scope and extent of personnel information systems throughout worlds of business, industry, government, and education organizations. Especially the review of personnel information systems in placement was revealing. Somewhere in the United States, a data processing system has been used to assist in solving many of the problems facing placement offices.

Computers have long been used in the business operations of industrial, governmental, and educational organizations. However, their use in personnel operations has only recently appeared. Their future in personnel functions is perhaps limited, as documentation has indicated.

Specifically, use of computers in placement office operations was varied and piecemeal. There was evidence to indicate that some direction

was needed in the development of a personnel information data system for placement offices. Even placement offices large enough to support data processing operations financially were utilizing them only slightly.

A review of successful and unsuccessful data processing systems in placement offices told little about the potentiality of personnel information systems in placement. Each system had its strengths and weaknesses. Development of a data processing personnel information system utilizing the strengths and overcoming the weaknesses of many of these systems was sorely needed.

The review of literature further confirmed the need for development of a model personnel information storage and retrieval system for placement offices. This study has attempted to develop such a model system.

CHAPTER III

METHODS AND PROCEDURES

The research methods and procedures used in this study to investigate personnel data retrieval systems in placement offices are described in this chapter. A first step in this part of the study was to develop a series of questions for identifying and measuring personnel data retrieval systems.

Description of the Questionnaire

The investigator developed the questionnaire for the study to explore personnel information storage and retrieval systems used in placement offices of selected midwestern universities. The questionnaire was developed for administration simultaneously with a structured interview.

The questionnaire was structured to explore: (1) present personnel information storage and retrieval systems in the selected placement offices, (2) to compare these systems with Michigan State's personnel data retrieval system, (3) to determine the advantages and disadvantages of Michigan State's system, and (4) to identify items for inclusion in a recommended model. The questions were designed to probe the organization, content, quality, and quantity of operations in each placement office. The placement directors were asked to answer the questions within the context of their current credential

and fast personnel data retrieval system and their judgment for future personnel data retrieval system development. The questionnaire was developed to provide a means for evaluating present systems and judgments of placement staff members.

Survey of Panel of Experts

After the investigator initially designed the instrument, it was reviewed by a panel of placement experts. Nineteen recognized authorities on placement services in the United States were identified and were asked to respond to a questionnaire. This panel of experts included placement directors who had responsibilities similar to those in the population that would finally be interviewed and surveyed. The respondents were requested to react to the items in the instrument for evaluating present and proposed personnel information storage and retrieval systems in placement offices. Similar to a procedure utilized by Hickey,[1] the respondents were requested to rate the relevance of each item for inclusion in the final instrument according to the following scale:

1. I feel the item is necessary.
2. I feel the item is desirable but not necessary.
3. I feel the item is undesirable but acceptable.
4. I feel the item is not acceptable.

The respondents were further requested to add items to each section which they felt should be included and to rewrite any item which they

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[1]Howard W. Hickey, "Development of Criteria for Evaluating Alternative Patterns to Reduce School Segregation in the Inner City" (unpublished Ph.D. dissertation, Michigan State University, 1968), pp. 81-82.

rated undesirable or not acceptable if the wording of the item made it not acceptable.

The analysis of responses by the experts was not meant to be a statistical analysis of significance. The responses of the panel were used to ensure that the items were representative of the dimensions of the evaluation. There was no attempt to establish the statistical significance, validity, or even reliability of the items. The size of the sample was obviously too small to perform such operations.

At the outset of the study, it was recognized that appealing to experts in the field had advantages and disadvantages. As a primary disadvantage, many experts in the placement field would likely not take the time to respond to the questionnaire. It was also expected that the opinions of the respondents would be varied and even divergent.

On the basis of the responses and suggestions received from the panel of experts, revisions were made in the questionnaire contents. Some items were altered or deleted, and others remained unchanged.

Analysis of Responses

The method for analysis of the responses was developed as proposed by Hickey.[2] As in Hickey's study, the responses were assigned the following directional weightings:

+3 Necessary

+1 Desirable but not necessary

0 No response

-1 Undesirable but acceptable

-3 Not acceptable

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[2]Ibid., p. 83.

The three-point weighting was utilized because it gave greater weighting to those responses which indicated a greater degree of confidence by the respondent in his answer. Where a respondent did not respond to a specific criterion, a score of zero was assigned.

The sum of scores was tabulated for each item and divided by the total number of respondents to the questionnaire (8). The resulting mean was the statistic s, which indicated the panel's composite weighting of the item for its relevance for inclusion in the final instrument.

Areas for acceptance and rejection of items were established for the mean of the response s as follows:

$s \geq +2.50$ Necessary (N)

$+2.49 \geq s \geq +0.50$ Desirable (D)

$+0.49 \geq s \geq -0.49$ Indeterminate (I)

$-0.50 \geq s \geq -2.49$ Undesirable (U)

$s \leq -2.50$ Not Acceptable (NA)

According to these areas of acceptance and rejection, whenever the statistic s was greater than or equal to +0.50, the item was accepted for inclusion in the final instrument (D). The rank N merely indicated a much stronger response by the respondents. Whenever the statistic s was less than or equal to -0.50, the item was rejected (U). The rank NA represented a much stronger rejection of the criterion for inclusion in the final instrument.

The rank I indicated that consensus was not reached by the panel for inclusion of the item in the final instrument. For this rank, s was greater than or equal to -0.49 but less than or equal to +0.49. This tended to occur where there was great divergence of opinion among

the panel of experts. In these instances, the investigator took the option to include or not include the item in the final instrument.

After the last item in each section of the questionnaire, the respondents were permitted to enter additional items for inclusion and evaluation. These responses were analyzed at the end of the analysis of response for each section in this chapter.

Each item in each section of the questionnaire was analyzed for inclusion in the final instrument. In the first section of the questionnaire, Section A, Placement Office Operations, the panel of experts responded to the questions shown in Appendix B.

Appendix J indicates the frequency of response by the panel of experts to Section A: Part 1, Credential Filing System; Part 2, Fast Retrieval System; and Part 3, Budget. The experts were in agreement that each item was at least desirable (D) and sometimes necessary (N) for inclusion in the final instrument. One expert suggested that two additional categories be included in the question of Part 3 about placement supplies and services budgets for 1972-73. Therefore, "printing" and "office supplies" categories were added to this question in the final instrument.

In the second section of the questionnaire, Section B, Assessment of Current Status and Opinion, the panel of experts responded to items for assessing current and future items for inclusion in fast retrieval systems for graduating students and alumni candidates. The surveyed items are shown in Appendix B.

Appendix J indicates the frequency of response by the panel of experts to each item in Section B. The experts agreed that most items were desirable for inclusion in the final instrument.

Items 2, 3, 6, 9, 22, 29, 38, and 41 were rated by the experts as necessary; items 1, 4, 5, 7, 8, 10 to 15, 17, 18, 21, 23, 24, 28, 30 to 36, 39, 40, and 44 to 46 were rated as desirable. Items 26, 27, and 42 were rated as undesirable.

All items which were judged by the experts to be necessary and desirable remained in the final instrument. None of those items judged to be undesirable was included in the final instrument.

Some items were judged indeterminate (I). Those included items 16, 19, 20, 25, 37, and 43. Items 16 (personal recommendations), 25 (fourth job preference), 37 (third locational preference), and 43 (Placement Office rating in words) were not included in the final instrument. The dissatisfaction of the experts with these items seemed to stem from the lack of relevance for evaluating a personnel data retrieval system.

Items 19 (marital status) and 20 (year born) remained in the final instrument. Some employers tend to specify age or marital status in their selection criteria.

Table 1 indicates the sum of responses to each section and each part of the two sections. The sum of responses for the total questionnaire was also calculated and is indicated on Table 1.

The highest rating was given to the scales of Part 2, Fast Retrieval System. This would seem to indicate that the panel of experts was most agreeable with the items of Part 2. Also, these items were possibly least controversial.

All parts of Section A and the sum of responses for Sections A and B received high ratings. The experts were in agreement that the overall instrument and each part and section thereof were desirable (D) for inclusion in the final instrument.

TABLE 1

EVALUATION OF PARTS AND SECTIONS

Item Number	Response Frequency and Weighting					Response Means	Rank
	1 (+3)	2 (+1)	None (0)	3 (-1)	4 (-3)		
Total Part 1	75	67	7	11	0	1.76	D
Total Part 2	16	6	2	0	0	2.25	D
Total Part 3	26	12	2	5	3	1.58	D
Total Section A	117	85	11	16	3	1.77	D
Total Section B	171	133	4	30	30	1.43	D
Grand Total	288	218	15	46	33	1.56	D

Definition of Population

The population for this study was composed of ten selected midwestern universities. There were three important considerations in the selection of the population for this study. First, a population was desired that was administratively comparable, but varied in size, to maximize the usefulness of the study to various sized major universities. Second, a population was desired that was small enough in size and geographical proximity to permit the investigator to conduct a personal interview with the director(s) of placement at each university. Third, a population was desired that granted Bachelors, Masters, and Doctoral Degrees in several academic areas to permit the investigator to maximize the utility

of the study to various academic areas. The director of placement was selected for the interview and questionnaire administration because of his responsibility for the total placement program and its future developments in personnel information storage and retrieval systems. The director of placement was permitted to consult with and seek assistance from his staff in this study.

The ten midwestern universities were selected because they contained several types of placement office organizations. Some placement organizations were centralized, and others were decentralized. Some served only business, engineering, or education graduates, and others served graduates from all academic areas. These universities ranged in size from 15,006 students to 51,247 students in 1971-72.[3] The general operating budgets of these universities in 1971-72 ranged from less than $53 million total to over $201 million total. One was a privately controlled university, and the others were publicly controlled.

Correspondence

A letter was sent to each selected university placement director to request his cooperation and to suggest a date and time for a personal interview. At the conclusion of the study, a summary of the findings was sent to each participating placement director who requested one.

Interviews

The placement directors of the selected universities were interviewed in their respective placement offices. Each interview and questionnaire

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[3]Jerry I. Reitman, and Jon S. Greene, eds., Yearbook of Higher Education - 1972 (Orange, N.J.: Academic Media, 1972).

administration lasted approximately one-half hour, and was conducted on a weekday between May 17, 1973, and June 5, 1973. The interviews followed the questionnaire format and were tape recorded for later analysis. The placement directors were advised that the interview and questionnaire would be kept confidential and that reporting would be abstract statistical and descriptive data. They were also informed that the tape recordings would be erased and the questionnaires destroyed upon completion of the study.

Survey of Employers

A list of employers in business, industry, government, and education was established and a questionnaire devised to solicit their help in determining the appropriateness of the placement directors' answers. A random sample of these employers was selected to receive one section of the developed questionnaire. They were requested to identify which items were important for inclusion in a fast personnel data retrieval system for placement offices. A cover letter, the employer questionnaire, and a self-addressed, stamped envelope were sent to each selected employer. Each employer was requested to complete the questionnaire and return it as soon as possible.

Summary

The literature was void of criteria for measuring personnel data retrieval systems in placement offices. Even the review of operational personnel and placement office systems was only enlightening and not informative on the topic.

With this background, the study was undertaken to develop a questionnaire for analyzing personnel data retrieval systems in placement offices.

After the questionnaire was designed by the investigator, it was reviewed by a panel of experts. Results from this review assisted in the development of the final instrument containing two sections: (A) Placement Office Operations, with three parts and 20 items total; and (B) Assessment of Current Status and Opinion, with one part and 37 items total. Therefore, a total of 57 items was included in the final instrument.

The next step in validating the instrument was field testing. Data received from field tests with the final instrument are reported in Chapter IV.

CHAPTER IV

ANALYSIS OF THE DATA

Introduction

Data were received from 38 placement offices in 10 selected midwestern universities. The investigator personally visited each placement office included in the survey. Data were collected by simultaneously administering an interview and questionnaire during the visit.

Two types of analyses were used to examine the data reported in this chapter. Both abstract statistical and descriptive statistical analyses were used.

Placement Clientele

Before determining the types of placement services provided by each placement office, it was necessary to identify their clientele (placement service users). Table 2 indicates that all 38 surveyed placement offices provided placement services to graduating students. However, three placement offices provided placement services only to graduating students; they did not provide such services to alumni candidates. Michigan State University's model system provided placement services to both graduating students and alumni candidates.

TABLE 2

CLIENTELE SERVED BY PLACEMENT OFFICES

Clientele	Number of Placement Offices Providing Service	
	Yes	No
Graduating Students	38	0
Alumni Candidates	35	3

Registrants

One indication of the quantity of placement services was the number of graduating students and alumni candidates registered with each placement office. In the 38 surveyed placement offices, the number of registered graduating students varied from a high of 8,700 registered at Michigan State to a low of 94 registered in another of the surveyed offices. Table 3 indicates the number of graduating students, alumni candidates, and total candidates registered with each placement office.

The number of registered alumni candidates also varied from 3,500 registered with the model system to 25 registered at another placement office. Three placement offices did not provide alumni placement services.

Averages of 1,112 graduating students registered, 667 alumni candidates registered, and 1,727 total candidates registered were calculated. Of the 38 placement offices in the survey, 11 were above the average for graduating students registered, 9 for alumni candidates registered, and 12 for total registrants. The model system was above the average in each category. The 8,700 graduating students and 3,500 alumni candidates registered with the Placement Services at the model system were the highest number of candidates registered (total and in both categories) in any of the placement offices surveyed.

TABLE 3

CANDIDATES REGISTERED

University and Placement Office	Graduating Students	Alumni Candidates	Total Registered
A1	1100	250	1350
A2	518	45	563
A3	1339	243	1582
A4	180	211	391
A5	1577	2320	3897
B1	350	150	500
B2	200	-0-	200
B3	245	120	365
B4	546	541	1087
C1	1400	350	1750
C2	389	-0-	389
C3	2821	1863	4684
D1	785	42	827
D2	155	47	202
D3	1267	1453	2720
F1	3742	2926	6668
F2	804	336	1140
F3	510	250	760
G1	1079	1694	2773
G2	240	80	320
G3	612	100	712
G4	110	50	160
G5	600	1000	1600
G6	400	50	450
H1	558	296	854
H2	250	100	350
H3	2303	150	2453
H4	1930	606	2536
H5	480	100	580
H6	200	25	225
I1	680	505	1185
I2	94	40	134
I3	466	209	675
I4	559	70	629
I5	1466	2136	3602
J1	2500	-0-	2500
J2	1100	1500	2600
Michigan State	8700	3500	12,200

Placements and Possible Registrants

Another measurement of the effectiveness and quality of the placement offices was the rate of placements. Table 4 indicates the percentage of graduating students placed in each placement office surveyed. The rates of placement in the surveyed placement offices ranged from a high of 100.0 percent to a low of 45.0 percent placements. The placement rates corresponded demonstrably with the academic preparation of the graduating students being placed. Liberal arts (arts and letters, communication arts, and social sciences) and education majors were in high supply and low demand, according to comments from the surveyed placement officers. On the other hand, business, engineering, and natural science majors were in demand. Placements for the latter types of graduates were easier to accomplish, according to placement officers. The model system's overall placement rate was 90.0 percent with graduating students from all the types listed above.

Another indicator of the success of each placement office was the percentage of graduating students registering for placement. Table 4 also indicates this percentage for each surveyed placement office. These percentages ranged from a low of 15.6 percent registered to a high of 100.0 percent registered. Quite possibly, the placement offices with the quality services were the ones with the highest percentages of candidates registered. It seemed that word about placement success caused graduating students to seek the source.

The model system's percentage of graduating students registered was 78.4 percent. Notice was taken of the fact that the model system's percentage registered was computed on the basis of total number of graduates from the university.

TABLE 4

PLACEMENT OF GRADUATING STUDENTS

University and Placement Office	Number of Registrants	Number Placed	Percent Placed	Number of Possible Registrants	Percent Registered
A1	1100	1067	97.0	3300	33.3
A2	518	304	58.7	518	100.0
A3	1339	1284	95.9	1481	86.7
A4	180	196	108.9	198	90.9
A5	1577	1455	92.3	2100	75.1
B1	350	315	90.9	700	50.0
B2	200	170	85.0	1200	16.7
B3	245	239	97.5	300	81.7
B4	546	301	55.1	700	78.0
C1	1400	1330	95.0	1400	100.0
C2	389	175	45.0	2500	15.6
C3	2821	2116	75.0	3500	80.6
D1	785	565	72.0	3500	22.4
D2	155	155	100.0	183	84.7
D3	1267	1013	80.0	1267	100.0
F1	3742	3500	93.5	4500	83.2
F2	804	782	97.3	1253	64.2
F3	510	500	98.0	510	100.0
G1	1079	838	77.7	1095	98.5
G2	240	223	92.9	265	90.6
G3	612	570	93.1	632	96.8
G4	110	100	90.9	115	95.7
G5	600	510	85.0	1800	33.3
G6	400	315	78.8	691	57.9
H1	558	393	70.4	925	60.3
H2	250	220	88.0	661	37.8
H3	2303	1954	84.8	3365	68.4
H4	1930	1869	96.8	2400	80.4
H5	480	470	97.9	560	85.7
H6	200	198	99.0	317	63.1
I1	680	544	80.0	3000	22.7
I2	94	94	100.0	231	40.7
I3	466	414	88.8	699	66.7
I4	559	487	87.1	634	88.2
I5	1466	1393	95.0	1700	86.2
J1	2500	2250	90.0	6000	41.7
J2	1100	825	75.0	1500	73.3
Michigan State	8700	7830	90.0	11,100	78.4

In any one university, one placement office might be more successful than another, just because of the clientele served. Therefore, a comparison was made among the overall placement services of the surveyed universities. The indicator was the percentage of graduating students registered for placement services. Table 5 indicates that the highest overall percentage of graduating students registered for placement was 78.4 percent, and the lowest was 31.0 percent. The average was 49.6 percent.

TABLE 5

PERCENT AND NUMBER OF TOTAL GRADUATES REGISTERED FOR PLACEMENT

University	Graduating Students Registered	Total Graduating Students	Percent Registered
A	4714	9,320	50.6
B	1341	4,126	32.5
C	4610	8,085	57.0
D	2207	4,984	44.3
F	5056	9,557	52.9
G	3041	9,821	31.0
H	5721	10,504	54.5
I	3265	8,222	39.7
J	3600	6,485	55.5
Michigan State	8700	11,100	78.4

Alumni Placement

Of the surveyed placement offices, 35 provided a service to alumni candidates. This service was another indicator of the type of placement services offered.

With the exception of the three placement offices which did not provide placement services for alumni candidates, the number of alumni candidates registered for placement ranged from a low of 25 in one office to a high of 3,500 at the model system. Table 6 summarizes the placement of alumni candidates.

The average number of alumni candidates registered was 667. Nine placement offices were above the average in number of alumni candidates registered.

The percentage of candidates placed ranged from a low of 37.1 percent to a high of 100.0 percent in eight of the surveyed placement offices. Again, according to the placement directors being surveyed, placements were related to the academic areas of preparation of the candidates being placed.

Four placement offices had high placement percentages, with very high numbers of alumni candidates registered: the model system placed 95.0 percent of 3,500 alumni candidates registered, placement office F1 placed 99.1 percent of 2,926 registered, placement office I5 placed 95.0 percent of 2,136 registered, and placement office A5 placed 90.5 percent of 2,320 registered.

The analysis of alumni placement was not complete until a summary was calculated for each university alumni placement total. Table 7 indicates that only one university had more alumni candidates registered than did the model system, and that the same university was the only one to have a higher percentage of its alumni candidates placed. No other university surpassed the model system candidates registered and/or placed or percentage placed.

TABLE 6

PLACEMENT OF ALUMNI CANDIDATES

University and Placement Office	Number Registered	Number Placed	Percent Placed
A1	250	245	98.8
A2	45	45	100.0
A3	243	203	83.5
A4	211	177	83.9
A5	2320	2100	90.5
B1	150	135	90.0
B2	No Alumni Service Provided		
B3	120	120	100.0
B4	541	459	84.8
C1	350	343	98.0
C2	No Alumni Service Provided		
C3	1863	1677	90.0
D1	42	42	100.0
D2	47	47	100.0
D3	1453	1162	80.0
F1	2926	2900	99.1
F2	336	300	89.3
F3	250	240	96.0
G1	1694	1440	85.0
G2	80	78	97.5
G3	100	100	100.0
G4	50	50	100.0
G5	1000	800	80.0
G6	50	30	60.0
H1	296	255	86.1
H2	100	50	50.0
H3	150	100	66.7
H4	606	586	96.7
H5	100	100	100.0
H6	25	23	92.0
I1	505	429	85.0
I2	40	40	100.0
I3	209	209	100.0
I4	70	26	37.1
I5	2136	2029	95.0
J1	No Alumni Service Provided		
J2	1500	1350	90.0
Michigan State	3500	3325	95.0

TABLE 7

ALUMNI CANDIDATES REGISTERED BY UNIVERSITY

University	Alumni Candidates Registered	Alumni Candidates Placed	Percent Placed
A	3069	2770	90.2
B	811	714	88.0
C	2213	2020	91.3
D	1542	1251	81.1
F	3512	3440	97.9
G	2974	2498	84.0
H	1277	1114	87.2
I	2960	2733	92.3
J	1500	1350	90.0
Michigan State	3500	3325	95.0

Credentials

Credentials as credential forms or resumes were generally used in placement offices to store information about graduating students and alumni candidates registered with the office. The contents of credentials varied from a low of one page to a high of 16 pages. Several placement offices filed an average of 10, 11, 12, 13, and 14 pages of graduating student and alumni candidate credentials.

Appendix K indicates the items included in credentials of graduating students and alumni candidates in each surveyed placement office. Table 8 indicates the total number of placement offices using each item included in credentials of graduating students and alumni candidates.

All placement offices used credential forms or resume forms to collect information about available candidates. Only 11 used credential

covers for decorative or informative purposes. Seven (six with alumni services) used separate candidate pages. Several placement officers mentioned that a separate candidate page was not used, but accommodations were made on their credential forms for the candidate to say whatever he desired. Only 12 placement offices (32 percent) considered lists of courses or unofficial transcripts to be important enough to include in credentials.

TABLE 8

SUMMARY OF ITEMS USED IN PLACEMENT OFFICE CREDENTIALS

Items	Number of Placement Offices Using Each Item	
	Graduating Student Credentials	Alumni Candidate Credentials
Credential Cover	11	11
Credential Forms	32	28
Resumé Forms	6	7
Candidate Page	7	6
List of Courses	7	8
Unofficial Transcript	5	4
Personal Recommendations	5	6
Academic Recommendations	16	11
Professional Recommendations	7	12
Student Teaching Reports	10	6

Five credential filing systems for graduating students and six for alumni candidates included personal recommendations. Academic recommendations were included in the credentials in 16 graduating student and 11 alumni candidate credential filing systems. Professional recommendations were included in seven graduating student and 12 alumni candidate credential filing systems. Student teaching reports were included in ten graduating student credential filing systems and remained in only six alumni

candidate credential filing systems. All ten surveyed education placement offices included student teaching reports in credentials of graduating teacher education candidates.

The model placement office used a one-page credential form for all graduating students and an additional one-page student teaching report for teacher education graduates. Two pages of credential forms were used for all alumni candidates. Alumni candidates in education had an average of four additional pages including the student teaching report, or a total average of six pages was included in alumni candidate credentials in education.

Most surveyed placement offices used only credential or resumé forms in the placement of their graduating students and alumni candidates. If placement offices efficiently placed graduating students and alumni candidates without additional materials, significant costs would be saved.

Credential-Related Costs

Another indicator of the type of placement services provided by the surveyed placement offices was their credential transmittal service provided to prospective employers of graduating students and alumni candidates. Table 9 displays the average copying and mailing costs for the surveyed placement offices to provide credentials or resumés to prospective employers.

In fact, several placement offices did not provide this service at all. Six placement offices neither copied nor mailed credentials or resumés to prospective employers. Five placement offices only mailed credentials or resumés provided by the candidates using their service.

TABLE 9

QUANTITY AND COSTS OF CREDENTIAL TRANSMITTAL SERVICES

University and Placement Office	Graduating Students		Alumni Candidates		Total Credentials Provided
	Copying Costs Per Credential	Mailing Costs per Credential	Copying Costs Per Credential	Mailing Costs Per Credential	
A1	$ .12	$ .08	$ .06	$ .08	3500
A2	Candidate provides and mails credential to employers.				
A3	.03	.08	.03	.08	8599
A4	Candidate provides	.08	Candidate provides	.08	-0-
A5	.09	.16	.12	.16	29,850
B1	.04	.08	.04	.08	2500
B2	.04	.08	.04	.08	1400
B3	Candidate provides	.08	Candidate provides	.08	8000
B4	.28	.16	.56	.32	6409
C1	Candidate provides	.08	Candidate provides	.08	13,400
C2	.04	.08	.04	.08	2000
C3	.275	.24	.40	.32	25,047
D1	.27	.16	.30	.16	1380
D2	.04	.08	.04	.08	736
D3	.25	.16	.35	.32	25,200
F1	.11	.16	.15	.24	38,830
F2	.04	.08	.04	.08	5000
F3	.03	.08	.03	.08	52,000
G1	.36	.16	.52	.24	29,136
G2	.04	.08	.04	.08	850
G3	.06	.08	.06	.08	3900
G4	Candidate provides and mails credential to employers.				
G5	.04	.08	.04	.08	2390
G6	Candidate provides and mails credential to employers.				
H1	Candidate provides	.08	Candidate provides	.08	5861
H2	.03	.08	.03	.08	825
H3	.15	.08	.15	.08	3875
H4	.12	.16	.23	.24	34,023
H5	Candidate provides	.08	Candidate provides	.08	-0-
H6	.90*	.08	.90[a]	.08	500
I1	Candidate provides and mails credential to employers.				
I2	.15	.20	.18	.20	318
I3	.01	.08	.01	.08	7000
I4	Candidate provides and mails credential to employers.				
I5	.32	.24	.60	.24	44,850
J1	Candidate provides and mails credential to employers.				
J2	.24	.16	.33	.24	14,000
Michigan State	.021	.08	.06[b]	.16	45,000

[a]Whenever a copy of a letter or form was requested, five copies were typed. The extra copies were used for future requests.

[b]Approximately 20 percent of all credentials, those in higher education and education administration, were copied for 12¢ each.

The other placement offices made their own copies of credentials or resumés at a cost of three or four cents per page. Only two placement offices copied at less than this price: at rates of two cents and 2.1 cents per page. One placement office still had not found copying machines to be advantageous, and retyped all materials sent from their office.

The volume of materials included in credentials and resumés was the significant determinant for the cost of copying credentials or resumés. For those placement offices using copying machines for reproducing graduating student credentials, a high cost of 36 cents per credential was found in one placement office. The low costs were two cents in one office and 2.1 cents in another.

For copying alumni candidate credentials, high costs of 60 cents, 56 cents, and 52 cents each were found. The low costs were three cents and four cents. In fact, copying alumni candidate credentials in business, industry, and government placement at the model office cost only 2.1 cents for two pages. The process at the model office provided the capability of copying two pages on one page (35 percent reduction capability) for an average cost per copy of 2.1 cents.

The cost of mailing credentials and resumés was essentially the same per page in all the surveyed placement offices. The significant difference was the number of pages distributed by each office. For graduating students, the mailing costs for those placement offices which mailed credentials or resumés varied from a high of 24 cents each in two placement offices to a low of 8 cents each in 20 placement offices. For alumni candidates, the mailing costs ranged from an average high of 32 cents in 3 offices and 24 cents in 5 placement offices to an average low of 8 cents in 20 placement offices.

Vacancy Listing Systems

Indicative of the placement services' quality were the vacancy listing systems for informing candidates about employment opportunities. Table 10 lists several possible methods and their levels of use by the surveyed placement offices.

TABLE 10

SYSTEMS FOR NOTIFYING CANDIDATES ABOUT EMPLOYMENT OPPORTUNITIES

Systems	Placement Offices Using System	Total Placement Offices
Employers Interviewing Bulletin	All surveyed placement offices	38
Bulletin Board Notices	All surveyed placement offices	38
Vacancy Bulletins		
To Alumni Candidates	A1, A3, A4, A5, B4, C1, D3, F1, F2, F3, G1, G2, G3, G5, H2, H3, H4, I2, I4, and Michigan State	20
To Graduating Students	A5 and G1	2
To Academic Departments	A1, A3, A4, A5, C1, C2, D3, F1, F2, F3, G1, G2, G3, G5, H2, H3, H4, I2, I3, I4, J1, J2, and Michigan State	23
Vacancy Notices to Individuals	A1, A5, B1, B2, B4, C1, C2, C3, D1, D2, D3, F1, F2, F3, G1, G3, G4, G5, H1, H2, H4, I5, J2, and Michigan State	24
Credential or Resumé Referrals	A5, B3, F1, F3, G1, H1, H2, H4, I5, J2, and Michigan State	11
Candidate Notices to Employers	C1, D1, F3, G2, and Michigan State	5
Telephone Calls to Candidates	All surveyed placement offices	38
Personal Interviews with Candidates	All surveyed placement offices	38
Local News Media	All surveyed placement offices	38

The employers interviewing bulletin, bulletin board notices, telephone calls to candidates, personal interviews with candidates, and local news media were used by all the surveyed placement offices. Vacancy notices to individuals were used in 24 placement offices, and vacancy bulletins to academic departments were the next most frequently used in 23 placement offices. Following closely were vacancy bulletins to alumni candidates in 20 placement offices. Used less seldom were credential or resumé referrals in 11, candidate notices to employers in 5, and vacancy bulletins to graduating students in 2 placement offices.

The model placement service used all the identified methods except the vacancy bulletins to graduating students. Assuming that placement services were measured partially by the vacancy listing methods utilized, the model system ranked extremely high in quality on this measure, since 10 of the 11 identified methods were used by the model placement office.

Fast Retrieval Systems

Fast retrieval systems in the surveyed placement offices were another item in the comparison of placement office systems. Fast retrieval systems ranged from simple credential or resumé notebook systems to simple and complicated data processing candidate listing systems. Table 11 summarizes the fast retrieval systems used in the surveyed placement offices.

Seven types of fast retrieval systems were identified in the surveyed placement offices. Ten placement offices used credential or resumé notebook systems. In these systems, resumés or credentials of candidates were placed in notebooks in alphabetical name order, academic major order, or job preference order. Then placement office staff members or prospective employers reviewed the available candidates in the credential or resumé notebooks.

TABLE 11

PLACEMENT OFFICE FAST RETRIEVAL SYSTEMS

Systems	Number of Users	Average Total Registrants	Average Yearly Operational Costs	Average Cost Per Candidate
Credential or Resumé Notebook Systems	10	1200	$ 14	$ .012
Printed Resumé Books	2	513	300	.585
Keysort Systems	2	1495	350	.234
Cardex Systems	12	1694	598	.353
Electrofile	1	760	600	.789
Credential or Resumé Filing Systems	7	1172	1025	.875
Data Processing Candidate Listing Systems	3	5949	3347	.563
No System	1			
TOTAL	38			

A second identified system was the printed resumé books used in two placement offices. The resumés of available graduating students and alumni candidates were printed and bound into a book for distribution to prospective employers.

Keysort systems were the third identified system used in two placement offices. In these systems, candidate characteristics were identified by punching holes from the edges of the keysort cards. A long needle, similar to a knitting needle, was then pushed through the deck of keysort cards and raised. Candidates with the required characteristic would drop from the deck because the edges of their cards were punched in the appropriate location on the card.

Cardex systems were used in 12 placement offices. Cardex systems included summaries of each candidate's personal and professional information on five inch by eight inch or similar size cards. The cardex cards were then arranged in visual card filing cabinets or card drawers in alphabetical name order, academic major order, or job preference order. In some systems, one card was used for each of the candidate's one or more job preferences.

Another identified fast retrieval system was the electrofile, used in only one of the surveyed placement offices. The electrofile was similar to the keysort system except the candidate's characteristics were identified by removing a specific metal tab from the bottom edge of a folder containing a copy of the candidate's resumé or credential. Metal tabs were arranged along the complete bottom edge of the folder. The presence or absence of a metal tab identified the candidate's characteristics when sorting the candidate folders on the electrofile machine.

Credential or resumé filing systems were used in seven of the surveyed placement offices. In credential or resumé filing systems, credentials or resumés were arranged in filing drawers in alphabetical name order, academic major order, or job preference order. Placement office staff members and prospective employers reviewed the credentials or resumés in the files.

The seventh type of fast retrieval system was the data processing candidate listing system. This system was used in three surveyed placement offices. For this system, candidate personal and professional information was abstracted from credential or resumé forms, keypunched onto computer cards, and sorted by computer for listings of candidates in alphabetical name order, academic major order, and job preference order.

Placement office staff members and prospective employers reviewed the listings to identify qualified candidates for available employment opportunities.

One of the surveyed placement offices did not have a system for retrieving data on candidates seeking employment through their office.

The fast retrieval systems varied significantly in their operational costs. The systems, in order of their total average yearly operational costs from the most expensive to least expensive, were: the data processing candidate listing system - $3,347, credential or resumé filing system - $1,025, electrofile - $600, cardex system - $598, keysort systems - $350, printed resumé books - $300, and credential or resumé notebook systems - $14.

The number of registrants somewhat dictated the retrieval systems used by the surveyed placement offices. Offices with few registrants normally used variations of resumé or credential notebook filing systems. As the number of registrants increased to about 1,500 registrants, the placement offices turned to semi-automated systems like the cardex and keysort systems. As the number of registrants increased to 3,000 or above, the placement offices turned to data processing to assist them in their fast personnel information retrieval processing.

The costs per registrant in the manual and semi-automated systems began to increase significantly as the number of registrants increased. Somewhere at about the 3,000 registrant level and above, the placement offices turned to data processing for answers to their fast retrieval problems. Several of the surveyed placement directors, in their comments about their present fast retrieval systems, cited data processing as a possible solution for processing large numbers of registrants.

The cost for operating a candidate listing system in the model office was significantly below the average cost for data processing systems. The model's average yearly cost per registrant was $ .287. This cost was below the averages of all but two of the systems used by the surveyed placement offices. However, the credential or resumé notebook systems and the keysort systems were not operationally feasible with the model's numbers of registrants.

Compulsory Registration

One of the reasons for the model's low operating costs for the data processing fast retrieval system was the practice of compulsory registration for Bachelors and Masters Degree candidates. From this compulsory registration, approximately 8,000 credentials were collected in three days each year. Since these registrants were students and the Registrar's Office at Michigan State had already collected significant necessary information from the placement registrants, the Registrar's Master Student File of information was used initially to constitute the data processing record for listing these candidates for placement. Therefore, it was not necessary to prepare a completely new record.

To keypunch a new data processing record for each graduating student registered with the model system would cost about ten cents. For 8,000 registered graduating students, this cost would have been $800 just to prepare the records before any listings were made.

The model system copied the Registrar's record of 8,000 registrants for approximately $50 total cost. This meant that data processing records were prepared for $ .006 each. For the model, this system was relatively inexpensive.

To determine the feasibility of this system at the surveyed placement offices, an inquiry was made into the number of placement offices that had compulsory registration. Table 12 indicates the response received from the surveyed placement offices. Five placement offices had compulsory registration for Bachelors Degree graduating students, four for Masters, and three for Doctorates.

TABLE 12

COMPULSORY REGISTRATION FOR PLACEMENT

Degree Levels	Number of Placement Offices	
	Yes	No
Bachelors	5	33
Masters	4	34
Doctorates	3	35

Therefore, this facet of the model system's cost reducing scheme was possible in only five placement offices serving Bachelors Degree graduating students and four serving Masters Degree graduating students with the present operating procedures used in the surveyed placement offices.

Advantages and Disadvantages of Fast Retrieval Systems

The surveyed placement officers were requested to state the advantages and disadvantages of their present fast retrieval systems. Several advantages and disadvantages were reported for each surveyed fast retrieval system.

For the credential or resumé notebook systems, the following advantages were reported: inexpensive, improvement over nothing, more and

better information available, fast system for few candidates, small enough system to find anyone listed, employer gets complete information to select on whole man, prescreening is possible, convenient and easy to operate, works for business graduates, easy to keep up to date, and easy to retrieve information.

The cited disadvantages of credential or resumé notebook systems were: coding is inefficient and ineffective, more specific job preference categories are needed, resumés are in alphabetical order and not in job preference order, not available to employers off-campus, longer processing required, bulky to handle, hard to use, hard to provide list of names and addresses of graduates, and difficult to operate if not kept up to date.

The advantages of the data processing systems were: quick and more manageable with many candidates, more convenient, quick notification of candidates about jobs, includes inventory of all available candidates, multi-purpose in operation (follow-up reports, salary reports, address labels, vacancy notices, and candidate listings), quick and easy to use, capable of various sorts, saves time and money for large volume of registrants, and immediate access to available registrants is possible.

The cited disadvantages of data processing systems were: expensive to operate, delay in receiving listings (every two weeks), must have handy computer or one with high priority for placement routines, programs must be written and debugged for easy operation, lacks personal touch if not compensated by staff, and initial costs are high.

For credential or resumé filing systems, the advantages were: inexpensive to operate, not many candidates per category, student commitment to job preference was more flexible, and all information is available.

The disadvantages of the credential or resumé filing systems were: hard to use, expensive for duplicating credentials, inflexible in job preferences, possible to know certain candidates better and choose accordingly, and takes time for employers to review resumés or credentials.

The cardex systems had advantages as follows: small enough to find anyone; inexpensive; capable of more personal attention to candidates; possible to know candidates; more personalized; simple, easy and fast to operate and use; instant retrieval; familiar with cards and therefore familiar with candidates; sufficient information is on cards; and seems to work quite well when handling small numbers of candidates.

The disadvantages of the cardex systems were: not convenient for large numbers of candidates, limited numbers of job preferences available (only three), inefficient if more graduates were using the system, longer processing required, time consuming to use, risk of missing candidates, limited information available, repetitive, easier way is needed, difficult to keep file up to date, and cumbersome to operate.

The electrofile had one advantage: the complete resumé was available to review. Two disadvantages of the electrofile were cited. They were: limited in capacity and time consuming to operate.

The advantages of the keysort systems were: information about candidates is immediately available, easy to use, and cheap to operate for a few graduates. The disadvantages were: lacks frequency of updating, difficult to identify all candidates available for each position, and time consuming to operate.

The advantage of the printed book of resumés was: contains all available candidates. The disadvantages were: out of date just when printed, a better system is needed, and expensive to print book.

In summary, placement officers with small numbers of registrants were relatively satisfied with a system of credential or resumé retrieval (notebooks, files, or printed books). As the numbers of registrants increased to approximately 1,500, the placement officers began to use the keysort, cardex, and electrofile systems. As the numbers of registrants rose much above 1,500, comments began to appear about the inconvenience of these systems with large numbers of registrants. These systems were also cited as time consuming, inefficient, cumbersome, difficult to update, and difficult to identify all qualified candidates.

As the number of registrants neared or exceeded 3,000, the placement officers turned to data processing. Data processing systems were depicted as expensive to implement and operate and impossible to operate if placement did not have a high priority for operations. On the other hand, data processing systems were more convenient, quicker and easier to use, saved money and time with large volumes of registrants, and were multi-purpose in operation.

Based upon the comments received from the respondents, manual systems were best for small numbers of registrants, semi-automated systems were a must for moderate numbers of registrants, and data processing systems were best for large volumes of registrants. With the model's large volume of registrants, a data processing system was the best system.

TABLE 13

PLACEMENT OFFICE BUDGETS IN 1972-73

University and Placement Office	Salaries	Equipment	Supplies & Services	Income Received	Total Budget
A1	$36,850	As needed	$ 5,750	-0-	$ 42,600
A2	25,000	As needed	5,000	-0-[a]	30,000
A3	40,000	As needed	20,000	-0-[a]	60,000
A4	26,500	As needed	4,550	-0-[a]	31,050
A5	90,000	As needed	30,150	$ 200[b]	100,150
B1	Included in costs for operating placement office B4				
B2					
B3	26,000	As needed	7,840	-0-[a]	33,840
B4	90,000	As needed	15,000	-0-	105,000
C1	90,000	As needed	18,000	-0-[a]	108,000
C2	10,000	As needed	1,000	-0-	11,000
C3	132,570	As needed	37,900	300[c]	170,470
D1	47,000	As needed	5,800	6,750[d]	52,800
D2	5,000	As needed	500	-0-	5,500
D3	105,500	As needed	25,000	18,750[d]	130,500
F1	225,370	As needed	50,800	15,000[e]	276,170
F2	45,000	As needed	5,000	-0-	50,000
F3	32,000	As needed	5,220	-0-	37,220
G1	137,730	As needed	52,600	61,590[f]	190,330
G2	15,500	As needed	1,160	-0-	16,660
G3	19,000	As needed	1,860	-0-	20,860
G4	10,000	As needed	500	-0-[a]	10,500
G5	29,000	As needed	3,000	-0-	32,000
G6	19,000	As needed	2,500	-0-	21,500
H1	39,000	As needed	1,750	-0-[a]	40,750
H2	9,600	As needed	1,600	-0-	11,200
H3	25,000	As needed	1,750	-0-	26,750
H4	110,000	$ 2,000	20,000	-0-	132,000
H5	25,000	As needed	1,060	-0-[a]	26,060
H6	5,000	As needed	800	-0-	5,800
I1	51,000	As needed	3,000	-0-[a]	54,000
I2	6,000	As needed	300	-0-	6,300
I3	50,000	As needed	5,000	-0-	55,000
I4	28,000	As needed	1,500	-0-	29,500
I5	134,880	As needed	50,810	40,000[a]	185,690
J1	112,000	1,850	10,000	-0-[a]	123,850
J2	45,000	As needed	9,500	-0-	54,500
Michigan State	266,665	4,100	42,000	-0-	312,765

[a]Candidates pay for the cost of preparing credentials or resumes used in the placement office.
[b]Candidates pay $2.50 for each set of credentials over 12 sets sent each year.
[c]Candidates pay $1.00 for each set of credentials over 10 sets sent each year.
[d]A fee of $7.50 is collected from each registered candidate.
[e]A fee of $1.00 is charged for each credential sent from the placement office.
[f]A fee of $15.00 is required for credential file activation and $5.00 for each credential request.

Placement Budgets

Further insight was reflected on the surveyed placement services by their budgets. The budgets of the surveyed placement offices ranged from low total yearly budgets of $5,500, $5,800, and $6,300 to highs of $276,170 and $312,765. Table 13 indicates the salaries, equipment, supplies and services, income received, and total budgets of the surveyed placement offices.

The model's budget was the largest budget for any single placement office; it surpassed the next largest budget by $36,595.

Because the model's placement operations were centralized in one office, comparison of individual budgets held by each placement office was unfair to the model. Therefore, a summary of the total budgets for all placement offices at each university was calculated and listed in Table 14.

TABLE 14

SUMMARY OF COST FOR PLACEMENT SERVICES

University	Total University Placement Budget	Total Registrants	Cost Per Registrant	Cost Per Graduating Student
A	$263,800	7,783	$33.89	$28.30
B	138,840	2,152	64.52	33.65
C	289,470	6,823	42.42	35.80
D	188,800	3,749	50.36	37.88
F	363,390	8,568	42.41	38.02
G	291,850	6,015	48.52	29.71
H	242,560	6,998	34.66	23.09
I	330,470	6,225	53.09	40.19
J	178,350	5,100	34.97	27.50
Michigan State	312,765	12,200	25.64	28.18

When compared to the total budgets for all placement offices at the other surveyed universities, the model's total budget was more comparable.

In fact, the total budgets for placement offices at two other universities exceeded the model's total budget. The average total budget for placement offices at the ten surveyed universities was $260,030. This compared reasonably to the model's total placement budget of $312,765.

The most favorable quality of the model's budget was the dollars spent per registrant. Displayed on Table 14 also is the amount spent per registrant at each surveyed university. The model's cost was lowest of all surveyed universities, $25.64 per registrant.

When representing the total university placement budgets as a cost per graduating student, only two other universities spent less than Michigan State. The average cost per graduating student was $32.13.

Assessment of Current Status and Opinion

To recommend a model personnel information storage and retrieval system for placement offices, it was necessary first to determine the present status of retrieval system data elements. Therefore, an assessment of the opinions of the surveyed placement officers about future data elements was necessary.

An instrument was designed to assist in assessing current and future items for inclusion in a fast personnel information retrieval system for graduating students and alumni candidates. When referring graduating students and alumni (experienced) candidates from present or future fast retrieval systems in their placement offices, the respondents to this questionnaire were requested to determine the importance of each item.

Thirty-six university responses were received from this survey. One placement office at one of the universities did not have a system for identifying candidates for prospective employment opportunities. Therefore,

only the "should be" section of the questionnaire was completed by that placement officer.

The respondents were requested to determine the level of importance for each item as follows:

First, how important is the item at your placement office at the present time with your present fast retrieval system?

Second, in your judgment, how important should the item be at your placement office with a future fast retrieval system?

Using the method for analysis of responses developed by Hickey,[1] the responses were assigned the following directional weightings:

+3 Extremely High Importance

+1 High Importance

0 Medium Importance

-1 Low Importance

-3 No Importance

The three-point weighting was used because it gave greater weighting to those responses that indicated a greater degree of confidence by the respondent in his answer. Where the respondent assessed a medium importance to an item, a score of 0 was assigned.

The sum of scores was tabulated for each item and divided by the total number of responses for that item in the questionnaire. The resulting mean was the statistic s that indicated the respondents' composite weighting of the item for its relevance for inclusion in present and future fast retrieval systems.

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[1]Howard W. Hickey, "Development of Criteria for Evaluating Alternative Patterns to Reduce School Segregation in the Inner City" pp.81-82.

Areas for acceptance and rejection of items were established for the mean of the responses s as follows:

$s \geq +1.75$ Necessary (N)

$+1.74 \geq s \geq +0.50$ Desirable (D)

$+0.49 \geq s \geq -0.49$ Indeterminate (I)

$-0.50 \geq s \geq -1.74$ Undesirable (U)

$s \leq -1.75$ Not Acceptable (NA)

According to these areas of acceptance and rejection, whenever the statistic s was greater than or equal to +0.50, the item was accepted for inclusion in a present or future fast retrieval system (D). The rank N merely indicated a much stronger response by the respondents. Whenever the statistic s was less than or equal to -0.50, the item was rejected (U). The rank NA represented a much stronger rejection of the item for inclusion in a fast retrieval system.

A summary and analysis of responses received from the surveyed placement officers about their assessment of the current status and opinion on personnel retrieval systems is displayed in Appendix L. At the end of this section of the questionnaire, the respondents were permitted to enter additional items for inclusion and evaluation. An analysis of these responses is shown at the end of Appendix L.

The respondents experienced a difficult time answering this section of the questionnaire. Their difficulty arose from distinguishing between what was really important and what was available for use, what was legally right and what was really used, what was morally right and what was really used, and what was ethically proper and what existed. Much divergence of opinion arose from this dilemma.

The respondents were requested to determine the level of importance for each item in their present fast retrieval system. For the established levels of acceptance and rejection, the following items were judged to be necessary (N) in present fast retrieval systems: candidate's name, campus address, home address, undergraduate major, and graduate major. The following items were judged as desirable (D): campus telephone number, home telephone number, undergraduate grade point average, graduate grade point average, first job preference, present employer's name, present job title, years experience in present job, years experience in previous jobs, first locational preference, highest degree achieved, employment status, and date available for employment. The following items received a response of indeterminate (I): graduate minors, campus activities, publications, faculty recommendations, professional recommendations, sex, marital status, year born, second job titles, second locational preference, date file activated most recently, certification held, list of courses, candidate's page, present salary, and placement evaluation. The following items were analyzed as undesirable (U): undergraduate minors, hobbies and interests, race, student teaching reports, unofficial transcript, and candidate's picture. No items were rated as not acceptable (NA) in present retrieval systems.

Even though student teaching reports were judged to be indeterminate in this section, student teaching reports were the most important item and received a necessary (N) level of acceptance from education placement offices surveyed. The items of sex and race were indeterminate, probably because of their legal and controversial status in placement offices.

The answers in this section provided information about present fast retrieval systems. Assuming that present systems did not have all items that placement officers wanted in a fast retrieval system, the respondents were requested to determine the level of importance for each item in a future fast personnel retrieval system. For the established levels of acceptance and rejection, the following items were judged to be necessary (N) in future fast retrieval systems: candidate's name, campus address, campus telephone number, home address, undergraduate major, and graduate major. The following items were judged as desirable (D): home telephone number, undergraduate grade point average, graduate grade point average, campus activities, professional recommendations, race, first job preference, second job preference, present employer's name, present job title, years experience in present job, years experience in previous jobs, first locational preference, highest degree achieved, employment status, and date available for employment. The following items received a response of indeterminate (I): undergraduate minors, graduate minors, hobbies and interests, publications, faculty recommendations, sex, marital status, year born, third job preference, previous employers, previous job titles, second locational preference, date file activated most recently, certification held, list of courses, candidate's page, present salary, candidate's picture, and placement evaluation. Two items, student teaching reports and unofficial transcripts, were analyzed as undesirable (U).

When comparing what is with what should be, only the level of importance for race changed significantly from undesirable (U) in the is system to desirable (D) in the should be system. In the opinion of the respondents, availability of race identification was desirable for future systems, but

race identification was legally or operationally undesirable in present systems. Table 15 contains a summary of the responses for the is and should be systems.

TABLE 15

SUMMARY OF ASSESSMENT OF CURRENT STATUS AND OPINION

Items	LEVELS OF IMPORTANCE					Number of Respondents	Response Means	Rank
	Response Frequency and Weightings							
	(+3)	(+1)	(0)	(-1)	(-3)			
Total Is Items 1 to 39	313	413	295	145	199	1365	.45	I
Total Should Be Items 1 to 39	338	442	308	145	171	1404	.57	D

Overall, the respondents rated the items for inclusion in a present system as indeterminate. For a future system, an overall rating of desirable was received. Overall, the respondents expected more from a future system than was received from the present system.

For this section of the questionnaire, the respondents were determining the importance of each item in present and future fast personnal retrieval systems when referring candidates to prospective employers. Some assurance was needed that the placement officers' answers were an accurate indication of employer requirements from placement personnel retrieval systems. Therefore, a survey of employers was needed to compare employers' answers with the answers of the placement officers.

Assessment of Employer Opinions

This section of the study was provided to determine the importance of each item for inclusion in a fast personnel retrieval system for placement

offices as determined by employers who used placement offices. A random sample of 40 employers in business, industry, government, and education was chosen. From a letter and questionnaire sent to the sample of employers with a self-addressed and stamped envelope, 30 responses were received.

The respondents were requested to judge only one level of importance for each item. The items, levels of importance, method of analysis, and areas for acceptance and rejection were the same as those used earlier in this chapter with the placement officers. A summary of the responses received is shown in Appendix M.

Based upon the opinions of the respondents, the following items were judged as necessary (N): undergraduate major and graduate major. Other items were judged as desirable (D). They were: candidate's name, campus address, campus telephone number, home address, home telephone number, undergraduate grade point average, campus activities, faculty recommendations, professional recommendations, first job preference, present employer's name, years experience in present job, previous employers, years experience in previous jobs, first locational preference, highest degree achieved, employment status, list of courses, and unofficial transcript. The items rated as indeterminate were: undergraduate minors, graduate minors, hobbies and interests, publications, year born, second job preference, present job title, previous job titles, second locational preference, date file activated most recently, and candidate's page. Other items received undesirable (U) ratings: sex, marital status, race, third job preference, student teaching reports, and certification held. No items received a rating of not acceptable (NA).

TABLE 16

AN OVERALL ASSESSMENT OF PLACEMENT OFFICER AND EMPLOYER OPINIONS

Items	Placement Officer Opinion On Is	Placement Officer Opinion on Should Be	Employer Opinion	Average of Response Means	Rank
1. Candidate's Name	2.60	2.36	1.53	2.16	N
2. Campus Address	1.83	2.03	.87	1.58	D
3. Campus Telephone Number	1.71	1.75	.87	1.44	D
4. Home Address	1.86	1.92	.73	1.50	D
5. Home Telephone Number	1.40	1.50	.53	1.14	D
6. Undergraduate Major	2.34	2.33	2.10	2.27	N
7. Undergraduate Minor(s)	- .51	- .42	.23	- .23	I
8. Undergraduate Grade Point Average	.71	.81	1.33	.95	D
9. Graduate Major	1.89	2.25	2.10	2.08	N
10. Graduate Minor(s)	- .34	- .19	.27	- .09	I
11. Graduate Grade Point Average	.60	.58	1.27	.82	D
12. Campus Activities	.34	.58	.77	.56	D
13. Hobbies & Interests	- .51	- .36	.07	- .27	I
14. Publications	- .11	- .03	.07	- .02	I
15. Faculty Recommendations	.00	- .03	.53	.17	I
16. Professional Recommendations	.34	.61	.76	.57	D
17. Sex	.23	- .08	-1.67	- .51	U
18. Marital Status	- .31	- .42	- .83	- .52	U
19. Year Born	.14	.14	- .13	.05	I
20. Race	- .94	.69	-1.23	- .49	I
21. First Job Preference	.86	1.11	1.06	1.01	D
22. Second Job Preference	.49	.75	- .07	.39	I
23. Third Job Preference	- .46	- .27	- .60	- .44	I
24. Student Teaching Report	- .94	- .83	-1.57	-1.11	U
25. Present Employer's Name	.60	.69	.80	.70	D
26. Present Job Title	.68	.86	.47	.67	D
27. Years Experience in Present Job	1.23	1.33	.70	1.09	D
28. Previous Employer's Name	.17	.31	.67	.38	I
29. Previous Job Titles	.31	.42	.30	.34	I
30. Years Experience in Previous Jobs	.74	.89	.93	.85	D
31. First Locational Preference	.91	.72	1.00	.88	D
32. Second Locational Preference	- .31	- .19	- .13	- .21	I
33. Highest Degree Achieved	1.69	1.58	1.00	1.42	D
34. Date File Activated	- .09	.14	.23	.09	I
35. Employment Status	.66	.92	.93	.84	D
36. Certification Held	- .37	- .08	- .50	- .32	I
37. List of Courses	- .49	- .17	.80	.05	I
38. Unofficial Transcript	-1.49	-1.19	1.07	- .54	U
39. Candidate's Page	- .46	- .17	- .03	- .22	I

When comparing the employers' opinions with the opinions of the placement officers on an *is* or *should be* system, some distinct differences were noted. Table 16 is a summary of the response means received by each item. Giving each mean an equal weighting, an average of response means was calculated. The areas for acceptance and rejection of each item were the same as the areas used with the placement officers' and employers' opinions mentioned earlier in this chapter. Only items 1 through 39 were included in the analysis, since only these items were judged on all three ratings.

When comparing the three opinion ratings, four items received ratings with significant differences (a response mean difference greater than 1.00): sex, race, list of courses, and unofficial transcript. The employers rated sex as undesirable, compared to the placement officers' indeterminate rating of sex on both *is* and *should be* systems. Compared to the employers' rating of undesirable for race, the placement officers rated race as undesirable on *is* systems and desirable on *should be* systems. On the items of list of courses and unofficial transcripts, placement officer ratings were indeterminate and undesirable, respectively, on both *is* and *should be* systems, and employers rated both items as desirable.

In choosing items for inclusion in a model fast retrieval system, any items judged on the average to be necessary or desirable were accepted. The following items received an overall rating of necessary or desirable: candidate's name, campus address, campus telephone number, home address, home telephone number, undergraduate major, undergraduate grade point average, graduate major, graduate grade point average, campus activities, professional recommendations, first job preference, present

employer's name, present job title, years experience in present job, years experience in previous jobs, first locational preference, highest degree achieved, and employment status.

Items receiving an average rating of undesirable were rejected. No items received a rating of not acceptable. The items with a rating of undesirable were: sex, marital status, student teaching reports, and unofficial transcripts.

The remaining items received an average rating of indeterminate. With justification, some of the indeterminate items were included in the model system and some items were rejected.

Undergraduate and graduate minors were included in the model system, since this information was sometimes indicative of the employment capabilities of available candidates. For instance, the respondents mentioned in their comments that graduating teacher education candidates were sometimes properly qualified only if they possessed the right major and minor for the available employment opportunity.

Hobbies and interests, publications, and faculty recommendations were rejected from the model. The respondents maintained that these items were sometimes helpful in selecting candidates for available jobs, but these items were generally not necessary in the selection process.

Year born was included in the model system. The respondents stressed the discriminatory aspects of this item, but it was used in estimating maturity, possible experience, and proper fit for the available opportunity.

Race was also an item included in the model system. Affirmative action programs undertaken by employers required that the race of available candidates, especially minority candidates, be determined, so that minority candidates specifically could be sought for available jobs.

The second and third job preferences were included in the system. The respondents explained that the second or third job preference of the candidate sometimes provided information necessary for placement of especially hard to place graduating students and alumni candidates.

The previous employers and the previous job titles of the candidate were rejected from the model. This information was helpful in referring candidates, but it was not necessary as a job specification.

The second locational preference of the candidate was included in the model system. If the first job preference was not possible because of employment conditions, the second locational preference sometimes indicated the candidate's mobility.

Date file activated was included in the model. The respondents listed this item as an indicator of the candidate's availability for employment. If availability for employment had been included as an item, the respondents might have rated the item, date file activated, lower in importance.

Certification held was included in the model. Especially for teacher education graduating students and alumni candidates, the respondents viewed certification as necessary. The certification held by the candidate determined his qualifications for the available job.

The items, list of courses and candidate's page, were rejected from the model. The respondents indicated that sometimes these items were helpful for determining or suggesting the candidate's qualifications for an available job, but technical difficulties in providing the items in a concise manner on one page or less required that they be rejected from the model system.

Table 17 displays a summary of the overall ratings for both the placement officers' is and should be systems with the employers' estimates of a desired system. This summary indicated that employers agreed overall with placement officers about the items for inclusion in a fast personnal data retrieval system for placement offices. The overall rating from employers was almost exactly the rating given by the placement officers on is systems. The employers' overall rating varied slightly, but not significantly, from the placement officers' rating on should be systems.

TABLE 17

SUMMARY OF PLACEMENT OFFICER AND EMPLOYER OVERALL OPINIONS

Items	Response Frequency and Weightings					Number of Respondents	Response Means	Rank
	(+3)	(+1)	(0)	(-1)	(-3)			
Total Items 1 to 39 Placement Officer Opinions on Is	313	413	295	145	199	1365	.45	I
Total Items 1 to 39 Placement Officer Opinions on Should Be	338	442	308	145	171	1404	.57	D
Total Items 1 to 39 Employer Opinions	234	324	350	134	128	1170	.43	I

Summary

The data were collected during a personal visit by the investigator to each surveyed placement office. The data were analyzed using abstract statistical and descriptive statistical methods.

The analysis showed that the 38 surveyed placement offices provided placement services to an average of 667 alumni candidates and 1,112 graduating students. Of the surveyed placement offices, 35 provided alumni candidate placement services, and 38 provided graduating student placement services.

Credential forms were the most used item for collecting information about candidates available for employment. Credentials varied from a total of 1 page in each to 16 pages per credential.

Costs for copying credentials varied from a high of 60 cents each to a low of 2 cents each. Mailing of credentials costs varied from a high of 32 cents each to a low of 8 cents each. Twenty placement offices were sending credentials for eight cents each.

Several vacancy listing systems, including employers interviewing bulletin, bulletin board notices, telephone calls to candidates, personal interviews with candidates, and local news media, were used to inform qualified candidates about available employment opportunities. Other systems were used less frequently.

The most frequently used fast personnel information retrieval systems were the cardex, credential or resumé notebook, and credential or resumé filing systems. Data processing, keysort, and printed resumé books were used less often. System costs and system capabilities were the primary determining factors when choosing a fast retrieval system.

Budgets for the surveyed placement offices varied from $5,500 to $312,765. The average budget was $260,030. The cost per registrant varied from $25.64 to $64.52.

Items for inclusion in a fast retrieval system were chosen with assistance from the surveyed placement officers and a sample of prospective employers. The 28 items chosen for inclusion in a model personnel retrieval system for placement offices were: candidate's name, campus address, campus telephone number, home address, home telephone number, undergraduate major, undergraduate grade point average, graduate major, graduate grade point average, campus activities, professional recommendations, first job preference, present employer's name, present job title, years experience in present job, years experience in previous jobs, first locational preference, highest degree achieved, employment status, undergraduate minors, graduate minors, year born, race, second job preference, third job preference, second locational preference, date file activated, and certification.

CHAPTER V

SUMMARY AND CONCLUSIONS

Introduction

This concluding chapter has four sections: (1) a summary of the development and validation of the complete study, (2) the major conclusions of the study, (3) some implications derived from the study, and (4) some recommendations for further research. This study was an attempt to prepare a model personnel data system for placement offices.

Summary

The broad purpose of this study was to develop a recommended model personnel information storage and retrieval system for placement offices. In analyzing personnel data systems in placement offices, four specific purposes were examined. They were:

1. To study the present personnel information storage and retrieval systems used in selected major universities.
2. To compare the data processing model information storage and retrieval system developed and implemented at Michigan State with systems in operation at other selected major universities.
3. To determine the advantages and disadvantages of the personnel information storage and retrieval system used at Michigan State University.

4. To recommend a model information storage and retrieval system that appears to be worthwhile and desirable for major universities.

The review of literature revealed no studies directly related to the development of a personnel information storage and retrieval system for placement offices. Limited research and development had been done by individual placement offices to fulfill their specific needs.

The review of literature did reveal that several business, industry, and government agencies sought to utilize computers for maintenance of personnel information storage and retrieval systems. Initially, these computer systems were introduced for payroll, staff benefits, and statistical files. Eventually, operations in personnel areas were developed.

The review revealed that use of computers in placement office operations was varied and piecemeal. Some evidence indicated that direction was needed in the development of a personnel information data system for placement offices. Even placement offices large enough to support data processing systems financially were utilizing them only slightly.

A review of successful and unsuccessful data processing systems in placement offices told little about the potential of personnel information systems. Each reviewed system had its strengths and weaknesses. Development of a data processing personnel information storage and retrieval system utilizing the strengths and overcoming the weaknesses of these systems was sorely needed.

Finally, development and implementation of the personnel information storage and retrieval system for placement at Michigan State University was reviewed. The historical development was traced from Michigan State's initial computer card sorting system through the testing of alternative systems to the computer programmed candidate listing system finally operated at Michigan State.

Normative research methods were used in this study to investigate personnel data retrieval systems in placement offices. A questionnaire was developed by the investigator for administration simultaneously with a structured interview and personal visit to each surveyed placement office.

After the questionnaire was initially designed by the investigator, it was reviewed by a panel of placement experts. Nineteen recognized authorities on placement services in the United States were identified and requested to respond to the questionnaire. From the responses received from the panel of experts, a final questionnaire was developed that contained two sections and 57 items.

The final instrument was administered in the spring of 1973 in 38 placement offices in 10 selected large major midwestern universities. To help determine the appropriateness of the placement officers' answers, one section of the final instrument was administered to a random sample of employers in business, industry, government, and education.

Conclusions

Several conclusions were reached from the data collected and surveys conducted to accomplish the purposes of this study. The major conclusions for each purpose are reported in this section.

The first purpose was to study the present personnel information storage and retrieval system used in selected major universities. Based on the data collected from the surveyed placement offices to meet this purpose, the following conclusions were reached:

1. The surveyed placement offices varied significantly in the number and type of clientele served. Of the 38 surveyed placement offices, all 38 provided placement services to graduating students and only 35 provided placement services to alumni candidates. On the average, 1,112 graduating students, 667 alumni candidates, and 1,727 total candidates were registered with the surveyed placement offices. The number of graduating students registered in the placement offices varied from a high of 8,700 to a low of 94. The number of alumni candidates registered in the placement offices providing alumni candidate placement services varied from a high of 3,500 to a low of 25.

2. The placement percentages for alumni candidates and graduating students varied significantly. The percentage of graduating students placed varied from a high of 108.9 percent to a low of 45.0 percent. The percentage of alumni candidates placed varied from a low of 37.1 percent of 70 registrants placed to a high of 100.0 percent of 209 registrants placed.

3. The percentage of graduating students registered for placement in each placement office and at each university varied significantly. The percentage registered for placement in each placement office varied from a low of 15.6 percent to a high of 123.1 percent. For each university, the percentage registered for placement varied from a high of 78.4

percent to a low of 31.0 percent. An average of 49.6 percent per university was registered for placement.

4. The numbers of pages and types of materials in credentials varied significantly. The collected materials in credentials included credential covers, credential forms, resumé forms, candidate pages, lists of courses, unofficial transcripts, personal recommendations, academic recommendations, professional recommendations, and student teaching reports. The total pages included in graduating student and alumni candidate credentials varied from a low of one page in graduating student credentials in 19 placement offices and one page in alumni candidate credentials in 17 placement offices to highs of 11 pages in graduating student credentials in one placement office and 16 pages in alumni candidate credentials in one placement office. An average of 3.6 pages were collected in credentials for graduating students registered and 5.0 pages in credentials for alumni registered.

5. The collection and dissemination of credential materials was costly and varied. Six placement offices neither copied nor mailed credentials or resumés to prospective employers. Five other placement offices only mailed credentials or resumés provided to the placement office by the graduating students and alumni candidates. The cost for copying each page in the credentials of registrants varied from a low of two cents in one placement office to a high of four cents in another. The cost for copying each graduating student credential varied from a high of 36 cents in one placement office to a low of 2 cents in one and 2.1 cents in another placement office. For copying alumni candidate credentials, the cost varied from highs of 60 cents, 56 cents, and 52 cents for copying each credential in three placement offices to lows of

2 cents, 2.1 cents, 3 cents, and 4 cents for copying each credential in several other placement offices. The cheapest system was copying two pages onto one page (35 percent reduction) for 2.1 cents for each credential copied. The cost for mailing credentials was essentially the same in all surveyed placement offices. However, the volume of credential materials mailed from each placement office varied, thus causing the credential mailing costs to vary substantially. For graduating student credentials, the mailing cost varied from a high of 24 cents in one placement office to a low of 8 cents in 20 placement offices. For alumni candidate credentials, the cost varied from a high of 32 cents in 3 to a low of 8 cents each in 20 placement offices.

6. Several methods were utilized for distributing employment opportunity information to qualified and interested graduating student and alumni candidates. The most frequently used methods were employer interviewing bulletins, bulletin board notices, telephone calls to candidates, personal interviews with candidates, and local news media. These methods were used by all the surveyed placement offices. Vacancy notices to individuals were used in 24 placement offices, vacancy bulletins to academic departments in 23, and vacancy bulletins to alumni candidates in 20. Less seldomly used were credential or resumé referrals in 11, candidate notices to employers in 5, and vacancy bulletins to graduating students in 2 placement offices.

7. The budgets for placement offices varied significantly for each office, for each university, for each registrant, and for each graduating student. The individual placement office budgets varied from highs of $312,765 and $276,170 to lows of $5,500, $5,800, and $6,300. The average budget for each placement office was $68,429. The university

budget for all placement offices per university varied from a high of $363,390 to a low of $138,840. The average total budget for placement offices per university was $260,030. The average cost per registrant per university varied from a high of $64.52 per registrant to a low of $25.64 per registrant. The average cost per registrant in each university was $43.05. When representing the total university placement budget as a cost per graduating student, the cost varied from a high of $40.19 to a low of $23.09. The average cost per graduating student was $32.13.

8. Compulsory registration was seldom used. Compulsory registration was used in only five placement offices serving Bachelors Degree candidates, four serving Masters, and three serving Doctoral Degree candidates.

9. The types of fast personnel information retrieval systems used, the cost for operating each system, and the number of registrants per system varied significantly. The fast personnel retrieval systems ranged from simple credential or resumé notebook systems to simple and complicated data processing candidate listing systems. The most frequently used system was the cardex system used in 12 placement offices. The other fast retrieval systems and their frequency of use were: credential or resumé notebook system in ten placement offices, credential or resumé filing systems in four, data processing candidate listing systems in three, keysort systems in two, printed resumé books in two, and the electrofile system in one placement office. One placement office did not have a system for retrieving data on candidates seeking employment through that office.

The average total yearly operational costs for the fast retrieval system varied from $3,347 for the data processing candidate listing systems and $1,025 for credential or resumé filing systems to $600 for electrofile systems, $598 for cardex systems, $350 for keysort systems, $300 for printed resumé books, and $14 for credential or resumé notebook systems.

The average number of total registrants per system varied from 513 in printed resumé books to 4,949 in data processing candidate listing systems. An average of 1,707 total registrants per system was listed with the surveyed fast retrieval systems.

The average cost per candidate registered was most enlightening. The cost per candidate registered varied from a low of $ .012 per candidate to a high of $ .875 per candidate. The fast retrieval systems with the highest average yearly operational costs were not necessarily the ones with the highest average cost per candidate registered. For instance, the average yearly operational cost for the data processing candidate listing systems was the highest of all systems, but the average cost per candidate for data processing candidate listing systems was fourth from the lowest for all systems.

The second purpose of the study was to compare the data processing model information storage and retrieval system developed and implemented at Michigan State with systems in operation at other selected major universities. As a note of interest, Michigan State's placement office was the only centralized placement office of the surveyed placement offices. Since Michigan State's placement service was centralized, several comparisons were made among individual placement offices and among university placement services. In these instances, Michigan State's

placement office was both an individual placement office and a total university placement office.

From the review of data for fulfilling the second purpose of this study, the following conclusions were reached:

1. The placement office at Michigan State provided both graduating student and alumni candidate placement services like most of the other surveyed placement offices.

2. The numbers of graduating students, alumni candidates, and total candidates registered with the placement office at Michigan State were the highest of any of the surveyed placement offices. Michigan State had 8,700 graduating students registered in comparison to an average of 1,112 graduating students registered in all the surveyed placement offices. The total of 3,500 alumni candidates registered at Michigan State was considerably greater than the average of 667 alumni candidates registered with all the surveyed placement offices providing alumni candidate placement services. The 12,200 candidates registered at Michigan State exceeded the average total of 1,727 candidates registered in the surveyed placement offices. Michigan State had almost twice as many total registrants as the next largest of the surveyed placement offices. Also, Michigan State's numbers of graduating students registered and total registrants were highest of all surveyed universities. Only one university had more alumni candidates registered for placement than Michigan State, and that university insignificantly surpassed Michigan State's total alumni candidates registered by 12 registrants.

3. Michigan State's percentage of graduating students placed and registered for placement and percentage of alumni candidates placed

compared favorably with the other surveyed placement offices and universities. The 90.0 percent of graduating students placed at Michigan State was slightly above the average of 86.8 percent for all surveyed placement offices. The 78.4 percent of graduating students registered for placement at Michigan State was the highest of all surveyed universities. The averages were 49.6 percent registered for placement per university and 68.4 percent registered for placement per placement office. Michigan State's 95.0 percent of alumni candidates placed compared with the averages of 88.6 percent placed per placement office and 89.7 percent placed per university. Only 15 of the surveyed placement offices had placement percentages for alumni candidates greater than Michigan State's, and only one of those had more than 2,000 alumni registrants. When comparing figures by university, only one university had more alumni candidates registered and a higher percentage of alumni candidates placed.

4. The numbers of pages and types of materials collected in credentials at Michigan State were generally fewer than in credentials at the other surveyed placement offices. In graduating student credentials, Michigan State collected only one page for business, industry, and government candidates and two pages for education candidates. The average for the surveyed placement offices was 3.6 pages. In alumni candidate credentials, Michigan State collected two pages from business, industry, and government candidates and an average of six pages from education candidates. The average in the surveyed placement offices was five pages.

5. The collection and dissemination of credential materials at Michigan State was one of the least expensive systems. The copying cost

at Michigan State for copying two pages of credential materials onto one page was 2.1 cents per copy. The lowest copy cost in the surveyed placement offices was two cents per copy in one other placement office. Because Michigan State's system copied two pages onto one page, its system was the least expensive system. For copying graduating student credentials, Michigan State's system was one of the lowest cost systems. For copying alumni candidate credentials, Michigan State's copy cost was twelfth from lowest. The cost for mailing credentials from Michigan State was one of the lowest possible, at eight cents each. Nineteen other placement offices sent credentials for the same price.

6. The vacancy listing system at Michigan State was one of the best of the surveyed placement offices. Two placement offices provided vacancy bulletins to graduating students, which Michigan State did not. However, Michigan State sent candidate notices to employers, and the two above mentioned placement offices did not. Therefore, Michigan State's system at least provided a comparable service. Michigan State used 10 of the 11 identified methods for informing candidates about available employment opportunities.

7. Michigan State's placement budget was the largest for individual placement offices and third from largest for university placement budgets. The average total budget for the surveyed placement offices was $68,429 compared to Michigan State's total budget of $312,765. When comparing Michigan State's placement budget with all placement budgets for each of the surveyed universities, Michigan State's budget was exceeded by two other university placement budgets. Michigan State's total placement budget only slightly exceeded the average total placement budget per surveyed university of $260,030.

8. Michigan State's placement budget was least expensive per registrant by university and third from least expensive per graduating student by university. Michigan State spent $25.64 per registrant, compared to an average per university of $43.05. Two other universities spent less per graduating student than Michigan State's $28.18. The average cost per graduating student for the surveyed universities was $32.13.

9. Michigan State operated one of the cheapest fast retrieval systems of those surveyed. Only two other placement offices used data processing candidate listing systems similar to Michigan State's system. The other 35 placement offices either used other systems or no system at all. The yearly operational cost for Michigan State's system was $3,000 compared to the average yearly operational cost for all systems of $714. Although this yearly cost was much higher than the average cost for other systems, the average cost per candidate registered brought the facts into better perspective. Michigan State's average cost per registrant of $ .287 was lower than the cost per registrant for all systems except credential or resumé notebook systems, keysort systems, and cardex systems. The volume of candidates registered with Michigan State did not permit the use of the less expensive systems because of the physical limitations of such systems. For the number of candidates registered at Michigan State, the system used was the most economical of those surveyed.

The third purpose of the study was to determine the advantages and disadvantages of the personnel information storage and retrieval system used at Michigan State University. From the review of data collected for this purpose, the following conclusions were reached:

1. Michigan State's system was one of the quickest and most manageable to use when processing many candidates. Filing and pulling credentials or resumé files from notebooks or filing systems with 3,000 or more candidates was just too time consuming and expensive for Michigan State, although Michigan State did have a credential filing system before implementing their present fast retrieval system. Even making cardex or keysort cards for 3,000 or more candidates was unmanageable.

2. Michigan State's system listed candidates under as many as three job preferences. When submitting the personal information of a candidate into Michigan State's system, the information was retrieved under as many as three job preferences. All personal information for the candidate was listed under each of the candidate's job preferences. This capacity was unique for the surveyed fast personnel retrieval systems.

3. Compulsory Registration for placement at Michigan State was very rare in the surveyed placement offices. Only four other placement offices for Bachelors Degree candidates and three others for Masters Degree candidates achieved this procedure. Of the surveyed systems, only Michigan State's system took advantage of the compulsory registration procedure, which permitted Michigan State's placement office to register approximately 8,000 graduating students in three days at fall term registration. After registration, all registered candidates were referred to prospective employers. All other surveyed placement offices waited for the candidates to register so employers could be informed about the candidates' availability.

4. Michigan State's procedure of batch processing graduating students into the fast retrieval system after fall term registration was unique. From the Master Student Records maintained by the Registrar's Office on all students enrolled at Michigan State, a record for the placement office's fast personnel retrieval system was written for all graduating students registered for placement. This system capability saved much time and money. No other surveyed system accomplished this task as cheaply or as efficiently. All other systems required a manual update of individual candidate information.

5. Michigan State's centralized fast personnel data retrieval system was the only centralized placement system of the surveyed placement offices. The consolidation of financial and personnel resources permitted the development of a comprehensive fast personnel data retrieval system that was relatively inexpensive for Michigan State, but the development of a similar system at any other surveyed placement office would have been expensive to accomplish.

6. The cost of operating Michigan State's system was relatively low. Only the credential or resumé notebook systems and keysort systems were less expensive per candidate registered than Michigan State's system. However, the clerical costs for operating any other surveyed fast retrieval system at Michigan State were prohibitive. Organizing and filing as many as three credential files for each candidate registered at Michigan State would cost several hundred dollars. Even after the system was operational, some of the other advantages of Michigan State's fast personnel retrieval system would not accrue.

7. Michigan State's system had multi-purpose capabilities that were not achieved by other surveyed systems. From Michigan State's

system, address labels and candidate listings were provided. These by-products offered possibilities that were not attained by the other surveyed systems.

8. Prescreening of candidates at the employers' locations was a unique possibility with Michigan State's system. Although prescreening was possible with other surveyed systems, it was not possible for other systems to provide this service at the employers' locations.

9. The update capability of Michigan State's system was less time consuming and more efficient to operate than the other surveyed systems. By submitting abstracts for new candidates entering the system and update abstracts for changed personal information on candidates already in the system, candidate information was submitted or changed. Deletion of candidates was accomplished by submitting the candidate's identification number on a delete sheet. The other surveyed systems required that new candidates be entered onto the system by filing the candidate's personal information in a physical location. For changing a candidate's personal information, the personal information was changed in each physical location. For deletion of candidates from the other systems, physical removal of the candidate's personal information from the physical location was required.

10. Review of many candidates on one page was easy with Michigan State's system. As many as 20 candidates were listed on one page. The other surveyed systems had one or more pages or cards per candidate.

11. Michigan State's system had a more accurate and instant retrieval capability. This capability was shared with other surveyed

systems, since several were capable of instant retrieval. However, coupled with the other advantages of Michigan State's system like easy updating and deletions, Michigan State's instant retrieval was more accurate.

12. Michigan State's capability of including a complete inventory of all available candidates in one book was another advantage. One book, including two inches of 8 1/2 inch by 11 inch pages, was large enough to store the personal information of all available candidates. No other surveyed system had this capability.

13. Michigan State's system included a large number of the items recommended for a model personnel information retrieval system. Of the 28 items chosen for the model system, Michigan State's system included 23. The items included in both systems were: candidate's name, campus telephone number, home address, home telephone number, undergraduate major, undergraduate grade point average, graduate major, first job preference, present employer's name, present job title, years experience in present job, years experience in previous jobs, first locational preference, highest degree achieved, employment status, undergraduate minors, year born, race, second job preference, third job preference, second locational preference, date file activated, and certification.

14. Michigan State's system did not include five items that were included in the recommended model system. The items excluded from Michigan State's system were: campus address, graduate grade point average, campus activities, professional recommendations, and graduate minors.

15. Michigan State's system included items that were not included in the recommended model system. The items excluded from the recommended model were: date available for employment, sex, marital status, placement office rating, and vacancy bulletin designations. These items provided additional capabilities that were not possible in the recommended model.

16. Michigan State's system was expensive to develop, and total operational costs were high compared to other surveyed systems. Some approaches like credential or resumé notebook systems for small numbers of registrants were very inexpensive compared to Michigan State's system.

17. Michigan State's system was impersonal if not supported by clerical and professional staff members. Staff members in the placement office were necessary to make the impersonal numbers and letters of the system mean something to prospective employers.

18. All personal information was not immediately available to prospective employers with Michigan State's system. Limited data were printed on each available candidate, and additional information was only available on request from credential files.

19. The personal information in Michigan State's system was invalid and incorrect if not kept up to date. The success and efficiency of Michigan State's system was dependent upon the updating of personal information by the placement office staff. If candidates who had taken jobs were on the system, prospective employers were incorrectly informed about candidates available for employment. If the candidate's personal information or preferences were not updated, candidates were not referred properly or were referred with improper or inaccurate information.

20. The frequency of printouts (once monthly) created a disadvantage for Michigan State's system. During each month, several candidates were employed and several other new candidates were added to the system. Between printouts, candidates were referred improperly or not referred at all. The costs for providing printouts more frequently were too much to justify additional printouts. The future planned conversion of Michigan State's system to teleprocessing would eliminate this disadvantage.

21. Too many candidates were listed in Michigan State's system in certain job preferences to allow proper review of all candidates available for each employment opportunity. Only a greater refinement of the job preference codes could eliminate this disadvantage.

The fourth purpose of the study was to recommend a model information storage and retrieval system that appeared to be worthwhile and desirable for major universities. A survey was conducted for current and future items included in fast retrieval systems in the surveyed placement offices and the levels of importance of each item. The results of this survey indicated that several items were included in fast retrieval systems that were not very important to prospective employers or placement office staff members. Other items were not presently important, but the items were cited for greater importance in future fast retrieval systems. The opinions of prospective employers shed even more light on the specific items for inclusion in a model fast retrieval system for placement offices. The following conclusions were reached from the data collected for the fourth purpose:

1. Twenty-eight items were chosen for inclusion in a model retrieval system. They were: candidate's name; campus and home addresses;

campus and home telephone numbers; undergraduate and graduate majors and minors; undergraduate and graduate grade point averages; campus activities; professional recommendations; first, second, and third job preferences; present employer's name; present job title; years experience in present and previous jobs; first and second locational preferences; highest degree achieved; employment status; year born; race; date file activated; and certification.

2. Three types of personnel information retrieval systems were recommended for placement offices, depending on the total number of registrants on file in the placement office. When undertaking this investigation, the researcher intended to recommend one model physical system for personnel retrieval in placement offices. A review of the systems used in the surveyed placement offices suggested that a single operational system was not appropriate for all placement offices. In fact, three types of personnel retrieval systems were recommended: (1) credential or resumé systems, (2) semi-automated systems (keysort, cardex, and the electrofile), and (3) data processing candidate listing systems. The model recommended for a specific placement office was dependent on the total number of registrants on file in that placement office. If the number of registrants was approximately 1,500 or less, the credential or resumé systems were recommended. If the number of registrants was 1,500 to 3,000, the semi-automated systems were recommended. If the number of registrants was over 3,000, the recommended system was a data processing candidate listing system. Therefore, one specific system was not cited as the ultimate system for placement offices. The recommended system was dependent on the total number of registrants on file in the specific placement office.

Implications

As a result of the data revealed in this study and the systems reported in the review of literature, the investigator drew some implications for improvement and development of placement offices in major colleges and universities. The following implications were derived:

1. The number of pages and types of materials in credentials and resumés may have little effect on the percentage of graduating students and alumni candidates placed by a placement office, if at least the recommended personnel information items are included. The study indicated that varying numbers of pages and types of materials were included in credentials of the surveyed placement offices. The results of this study clearly implied that only certain items were necessary in fast retrieval systems. If all other items were irrelevant in the employment process for graduating students and alumni candidates, a maximum of one or two pages would be needed in credentials. All other pages and materials now in the credentials at the surveyed placement offices could be discarded, and significant cost savings would result.

2. Other placement offices and universities should seriously consider some of the procedures, systems, and organization used at Michigan State University. As an example, compulsory registration was not utilized at any other surveyed placement office. If the complete inventory of graduating students were known at the beginning of a school year, it might be possible to accomplish more fully the objectives of the placement office programs. The consolidation of financial and personnel resources at universities offered other

advantages. For one, a better placement program might result from the exchange of ideas among personnel and the pooling of financial resources. One small step in a large placement office might be compared to one giant step in a small placement office. The size of a placement office might hide the magnitude of a placement office development. Therefore, combining placement resources at a university might produce greater achievement.

3. The exchange of information about fast personnel retrieval systems and other placement office procedures might assist in making all placement offices more efficient. Each placement office could learn something from every other placement office. For instance, much valuable information was gained from this study. The dissemination of this information to other placement offices might assist them in solutions to their problems. This study implies that certain items are necessary in fast personnel retrieval system and that certain procedures and retrieval systems might be more beneficial to placement offices. A greater exchange of ideas and less protectiveness among placement officers might provide greater development in all placement offices.

4. Placement office budgets and university total budgets for placement may have little effect on placement results. The findings of this study clearly implied that the dollars spent per registrant did not guarantee a high placement percentage. Using innovative ideas and common sense, placement officers might achieve greater success. Quite possibly, placement officers were worrying too much about placement budgets and not enough about outdated placement procedures and new developments in other placement offices.

5. The operation of Michigan State's data processing candidate listing system at other placement offices and universities might be easily accomplished. The expensive developmental costs for a data processing system have already been spent. The system is already operational at Michigan State. Operation of the system at other placement offices and universities should easily be accomplished.

6. Development and operation of similar fast personnel information retrieval systems at several placement offices and universities should permit connection of these systems in future consolidated fast personnel retrieval systems. A search for qualified candidates through connected retrieval systems would save significant time and money for prospective employers. If several personnel retrieval systems were similar in design and job preference coding, a prospective employer could quickly determine which college or university to contact for qualified candidates.

7. Extension of the developed model personnel information system into staff personnel records applications should be relatively easy to accomplish. When considering possible candidates for available employment opportunities within an organization, it generally desires to first consider possible applicants within the organization before publicizing the vacancy. With an inventory of employee skills, this can be accomplished.

Recommendations

The limitations of this study were many. It was not intended to be a statistical study in which tests of statistical significance were inferred. The size of the panel of experts was obviously too small to suggest that the developed criteria represented more than the opinions

of a few individuals. The selection of major universities from one geographical location for study did not allow generalization to any population greater than the major universities from that one geographical region.

This study did investigate a significant problem in placement offices - the development of a personnel data retrieval system. However, this investigation and its conclusions did indicate several inadequacies in the operations of major university placement offices. Answers for these inadequacies pointed to needed research in these areas:

1. Development of a model follow-up report for new college graduates to account for the successes and failures of university educational programs.
2. Development of a model follow-up report for alumni candidates to trace the career development for college graduates of each academic area.
3. Development of a model vacancy listing system for placement offices to list job vacancies received from prospective employers.
4. Comparison of computer efficiency with manual labor efficiency in placement office operations to better predict the specific tasks best handled by each method.
5. Testing the items developed in this study over a wider population, which would result in both revision of and addition to the developed models.
6. Refinement and expansion of the instrument for development of data elements for inclusion in other placement office data system models.

7. Investigation of items included in placement credentials to determine if candidates would be hired if only the items recommended by this study for a model personnel retrieval system were included in credentials.

In the final analysis, the accomplishments of this study did provide some insight into the operations of personnel information storage and retrieval systems in placement offices. However, additional research into other aspects of placement office procedures and operations is needed to help placement offices operate effectively.

APPENDICES

APPENDIX A

A LETTER OF TRANSMITTAL FOR THE PANEL OF EXPERTS QUESTIONNAIRE

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48823

PLACEMENT BUREAU • OFFICE OF THE DIRECTOR • STUDENT SERVICES BUILDING

April 18, 1973

X
X
X
X

Dear :

For a placement systems study at Michigan State University, we are attempting to devise an instrument for evaluating personnel data systems for placement offices. Because of your recognized expertise in the field of placement, you were chosen on a panel of selected experts from throughout the United States to evaluate the enclosed instrument. Your response will remain confidential and will help us to select the items which will be most meaningful in the final instrument.

Your rask as an expert is to rate each item for its relevance for inclusion in the final instrument. Please circle the number that best describes your feeling about the inclusion of each item according to the following scale:

1. I feel this item is absolutely necessary.
2. I feel this item is desirable but not necessary.
3. I feel this item is undesirable but acceptable.
4. I feel this item is absolutely not acceptable.

If you rate an item as undesirable or not acceptable and you can reword it so it is acceptable, will you do so on the back of the page and then rate it according to the same scale. Please add any items which you feel should be included at the end of each category of questions, and then rate them.

Please return the completed questionnaire at your earliest convenience in the enclosed self-addressed and stamped envelope. IN ORDER FOR THIS STUDY TO BE COMPLETED ON TIME, YOUR QUESTIONNAIRE MUST BE RETURNED BY MAY 15, 1973. It should take approximately thirty minutes of your time to complete your evaluation. If you wish to receive a copy of the final instrument, please inform me when returning the questionnaire.

Your cooperation in this matter will be greatly appreciated.

Sincerely,

L. Patrick Scheetz
Assistant Director of Placement

LPS:da
Enclosure

APPENDIX B

A QUESTIONNAIRE TO ASSIST IN THE DEVELOPMENT OF AN INSTRUMENT FOR EVALUATING AND PROPOSING A MODEL PERSONNEL DATA SYSTEM FOR PLACEMENT OFFICES

Q U E S T I O N N A I R E

A FEASIBILITY STUDY FOR EVALUATING AND PROPOSING A MODEL PERSONNEL DATA SYSTEM FOR PLACEMENT OFFICES

By

L. Patrick Scheetz
Assistant Director of Placement
Michigan State University
East Lansing, Michigan 48823
Telephone: 517-355-9541

April 2, 1973

Instructions

The final instrument will be designed to evaluate personnel data systems for placement offices. The categories for answers available to placement directors on the final instrument are shown as they would appear.

Your task as an expert is to rate each item for its relevance for inclusion in the final instrument. Please circle the number that best describes your feeling about the inclusion of each item according to the following scale.

1. I feel this item is absolutely necessary.

2. I feel this item is desirable but not necessary.

3. I feel this item is undesirable but acceptable.

4. I feel this item is absolutely not acceptable.

If you rate an item as undesirable or not acceptable and you can reword it so it is acceptable, will you do so on the back of the page and then rate it according to the same scale.

Please add any items which you feel should be included at the end of each category of questions, and then rate them.

Section A

Placement Office Operations

This part of the final instrument will be designed to assess the current status of the placement office for:

1. Credential filing system
2. Fast retrieval system
3. Budget

Your task as an expert is to rate each item as to its relevance for inclusion in the final instrument. Please circle the number that best describes your feeling about the inclusion of each item in the final instrument.

Necessary
Desirable
Undesirable
Not Acceptable

1. Credential filing system

a. Do you provide a placement service for: 1 2 3 4

	Yes	No
Graduating students .	___	___
Alumni candidates . .	___	___

b. How many candidates (new registrants) were registered with your placement service (completed credential forms) in 1971-72? 1 2 3 4

Graduating students _____
Alumni candidates _____

c. How many credentials of candidates were provided (mailed, hand-carried, or given) to prospective employers from your office in 1971-72? 1 2 3 4

Graduating students _____
Alumni candidates _____

d. How many candidates from your areas of responsibility were placed (full-time employment, homemaker, armed services, graduate school, or remained in same position) in 1971-72? 1 2 3 4

Graduating students _____
Alumni candidates _____

e. How many students graduated in 1971-73 from the academic departments in your areas of placement responsibility? 1 2 3 4

_____

f. How many 8 1/2 inch by 11 inch pages were contained in an average candidate credential in 1972-73? 1 2 3 4

Graduating students _____
Alumni candidates _____

g. What was the average cost for copying a candidate credential in your placement office in 1972-73? 1 2 3 4

Graduating students _____
Alumni candidates _____

h. What was the average cost for mailing candidate credentials from your placement office in 1972-73? 1 2 3 4

Graduating students _____
Alumni candidates _____

i. Do you have compulsory registration for: 1 2 3 4

	Yes	No
Graduating seniors	___	___
Masters candidates	___	___
Doctoral candidates	___	___

Necessary
Desirable
Undesirable
Not Acceptable

j. Which of the following items are normally contained in credentials of graduating students and alumni on file in your office? (Please provide a representative sample of a graduating student and alumni candidate credential.) 1 2 3 4

	Graduating Student		Alumni Candidate		
	Yes	No	Yes	No	
Credential cover	___	___	___	___	1 2 3 4
Credential forms	___	___	___	___	1 2 3 4
Candidate's page	___	___	___	___	1 2 3 4
List of courses	___	___	___	___	1 2 3 4
Unofficial transcript	___	___	___	___	1 2 3 4
Personal recommendations . . .	___	___	___	___	1 2 3 4
Academic recommendations . . .	___	___	___	___	1 2 3 4
Professional recommendations .	___	___	___	___	1 2 3 4
Student teaching report(s) . .	___	___	___	___	1 2 3 4
_____	___	___	___	___	1 2 3 4
_____	___	___	___	___	1 2 3 4

k. Please briefly explain how your credential filing system operates. Include information about active credentials, referrals, bulletins, vacancy notices, and credential sending. 1 2 3 4

l. _____

_____ 1 2 3 4

m. _____

_____ 1 2 3 4

Necessary
Desirable
Undesirable
Not Acceptable

2. Fast Retrieval System

a. What system do you use for quickly identifying graduating students and alumni candidates to prospective employers? Is your system a locator card system, manual filing system, cardex system, findex system, rolidex system, data processing system, or other? Please briefly describe the operation of your system: 1 2 3 4

c. What are the advantages and disadvantages of your fast retrieval system?

1 2 3 4

Advantages:

Disadvantages:

d. What were the total costs for operating your fast retrieval system in 1972-73 (estimated to the nearest ten dollars)? Include labor, equipment, and materials in your estimate.

_____ 1 2 3 4

e. _____

_____ 1 2 3 4

f. _____

_____ 1 2 3 4

Necessary 1 Desirable 2 Undesirable 3 Not Acceptable 4

3. **Budget**

a. **What was your total placement budget in 1972-73?** _____ 1 2 3 4

b. **What was your placement budget for salaries in 1972-73?**

Administrative: _____ 1 2 3 4

Clerical staff: _____ 1 2 3 4

c. **What was your equipment budget in 1972-73?** _____ 1 2 3 4

d. **What was your placement supplies and services budget in 1972-73?**

Communications: _____ 1 2 3 4

Postage: _____ 1 2 3 4

Other (Please specify): _____ 1 2 3 4

e. **Do you charge a fee for candidates to use your placement services?** 1 2 3 4

	Yes	No
Graduating students	___	___
Alumni candidates	___	___

f. **If so, how many total dollars will be collected (estimated) from fees in 1972-73?** 1 2 3 4

_____

g. _____

_____ 1 2 3 4

h. _____

_____ 1 2 3 4

Necessary
Desirable
Undesirable
Not Acceptable

Section B

Assessment of Current Status and Opinion

This part of the final instrument will be designed to assist in assessing the current and future items for inclusion in fast retrieval systems for:

1. Graduating students
2. Alumni candidates

The task for the panel of experts is to rate each item as to its relevance for the final instrument. Please circle the number that best describes your feeling about the inclusion of each criterion in the final instrument.

When referring graduating students and alumni candidates to prospective employers, which of the following items are important? 1 2 3 4

First - How important is the item at your placement office at the present time with your present fast retrieval system?

Second - In your judgment, how important should the item be at your placement office with a fast retrieval system?

EXAMPLE:

Items		Of extremely high importance	of high importance	of medium importance	of low importance	of no importance
Father's occupation	is	—	—	—	X	—
	Should be	—	X	—	—	—

In the above example, the person indicated that he believes the item "father's occupation" is presently of low importance at his placement office, but he believes it should be of high importance.

If you have extreme difficulty in responding to an item as it is worded, it would be appreciated if a brief indication of the problem was indicated in the "Comments" column.

		Of extremely high importance	of high importance	of medium importance	of low importance	of no importance	Comments:	
Candidate's Name	Is	—	—	—	—	—		
	Should be	—	—	—	—	—		1 2 3 4
Campus address	Is	—	—	—	—	—		
	Should be	—	—	—	—	—		1 2 3 4
Campus Telephone Number	Is	—	—	—	—	—		
	Should be	—	—	—	—	—		1 2 3 4
Home address	Is	—	—	—	—	—		
	Should be	—	—	—	—	—		1 2 3 4

		Necessary	Desirable	Undesirable	Not Acceptable
Home telephone number	This portion of this page would be arrayed similar to the previous page to this.	1	2	3	4
Undergraduate major		1	2	3	4
Undergraduate minor(s)		1	2	3	4
Undergraduate grade point average		1	2	3	4
Graduate major		1	2	3	4
Graduate minor(s)		1	2	3	4
Graduate grade point average		1	2	3	4
Campus activities		1	2	3	4
Hobbies and interests		1	2	3	4
Publications		1	2	3	4
Faculty recommendations		1	2	3	4
Personal recommendations		1	2	3	4
Professional recommendations		1	2	3	4
Sex		1	2	3	4
Marital status		1	2	3	4
Year born		1	2	3	4
Race		1	2	3	4
First job preference		1	2	3	4
Second job preference		1	2	3	4
Third job preference		1	2	3	4
Fourth job preference		1	2	3	4
Fifth job preference		1	2	3	4
Over fifth job preference		1	2	3	4
Student teaching reports		1	2	3	4
Present employer		1	2	3	4
Present job title		1	2	3	4
		1	2	3	4

		Necessary Desirable Undesirable Not Acceptabl
Previous employers		1 2 3 4
Previous job titles		1 2 3 4
Years experience in previous jobs		1 2 3 4
First locational preference		1 2 3 4
Second locational preference	This portion of this page would be arrayed similar to the page previous to this.	1 2 3 4
Third locational preference		1 2 3 4
Highest degree achieved		1 2 3 4
Date file activated most recently		1 2 3 4
Employment status (unemployed, just looking, etc.)		1 2 3 4
Certification held		1 2 3 4
Placement office rating (numberic)		1 2 3 4
Placement office rating (words)		1 2 3 4
List of courses		1 2 3 4
Unofficial transcript		1 2 3 4
Candidate's page		1 2 3 4
_____		1 2 3 4
_____		1 2 3 4
_____		1 2 3 4

APPENDIX C

THE PANEL OF EXPERTS

Panel of Experts

Alabama

Mr. Scott Farley, Placement Director, 400 Martin Hall, Auburn University, Auburn, Alabama 36830. Telephone: 205-826-4313.

Arizona

Dr. Robert F. Menke, Director of Career Services, Arizona State University, Tempe, Arizona 85281. Telephone: 602-965-3614.

California

Mrs. Nansi E. Corson, Manager, Student and Alumni Placement Center, University of California - Berkeley, Berkeley, California 94720. Telephone: 415-845-8633.

Florida

Mr. Maurice E. Mayberry, Director of Placement, University of Florida, Gainesville, Florida 32601. Telephone: 904-392-1601.

Illinois

Mr. Richard J. Thain, Director of Placement and Associate Dean of Students, Graduate School of Business, University of Chicago, Chicago, Illinois 60637. Telephone: 312-753-3675.

Indiana

Dr. Alex C. Moody, Director of Placement, Alumni Center, Indiana State University, Terre Haute, Indiana 47809. Telephone: 812-232-6311.

Prof. Richard D. Willemin, Director of Placement, 222 Main Bldg., University of Notre Dame, Notre Dame, Indiana 46556. Telephone: 219-283-6255.

Iowa

Mr. J. W. Paquette, Director, Office of Career Planning & Placement, Drake, University, Des Moines, Iowa 53011. Telephone: 515-271-3721.

Maryland

Mr. R. Bruce Ritter, Director, Career Development Center, Cumberland Hall Basement, University of Maryland, College Park, Maryland 20742. Telephone: 301-454-2813.

Massachusetts

Mr. Victor R. Lindquist, Director, Office of Career Planning & Placement, Boston University, Boston, Massachusetts 02215. Telephone: 617-353-3588.

Massachusetts (Continued)

Mr. John E. Steele, Director of Placement, 232 Baker Library, Harvard University Graduate School of Business Administration, Boston, Massachusetts 02163. Telephone: 617-495-6233.

Michigan

Mr. Charles D. Alexander, Director of Placement, North Hall, Central Michigan University, Mt. Pleasant, Michigan 48858. Telephone: 517-774-3068.

Missouri

Mr. Leo A. Eason, Director, University Placement, Box 1091, Washington University, St. Louis, Missouri 63130. Telephone: 314-863-0100.

New York

Mr. John L. Munschauer, Director, Career Center, 14 East Ave., Cornell University, Ithaca, New York 14850. Telephone: 607-256-5221.

Ohio

Mr. James L. Galloway, Director of Placement, 360 Student Services Bldg., Bowling Green State University, Bowling Green, Ohio 43402. Telephone: 419-372-2356.

Rhode Island

Mr. Raymond H. Stockard, Director, Office of Career Planning & Placement, 70 Lower College Rd., University of Rhode Island, Kingston, Rhode Island 02881. Telephone: 401-792-2311.

Tennessee

Mr. Howard H. Lumsden, Placement Director, Alumni Hall, University of Tennessee, Knoxville, Tennessee 37916. Telephone: 615-974-5435.

Texas

Mr. John M. Brooks, Director, Business Employment Service, P. O. Box 13677, North Texas State University, Denton, Texas 76203. Telephone: 817-788-2311.

Washington

Prof. James W. Souther, Director, Placement Center, 301 Loew Hall, University of Washington, Seattle, Washington 98105. Telephone: 206-543-0535.

APPENDIX D

AN INSTRUMENT TO EVALUATE PERSONNEL DATA RETRIEVAL SYSTEMS IN PLACEMENT OFFICES

AN INSTRUMENT TO EVALUATE PERSONNEL DATA RETRIEVAL SYSTEMS IN PLACEMENT OFFICES

Developed by
L. Patrick Scheetz
Assistant Director of Placement
Michigan State University
East Lansing, Michigan 48823
Telephone: 517-355-9541

May 15, 1973

Instructions

This instrument is designed to evaluate personnel data retrieval systems in placement offices. Please check the appropriate answer or provide the answer to each question as requested.

Section A. Placement Office Operations

1. Credential filing system

   a. Do you provide a placement service for:

	Yes	No
Graduating students ..	___	___
Alumni candidates	___	___

   b. How many candidates (new registrants) were registered with your placement service (completed credential forms) in 1971-72?

Graduating students _____
Alumni candidates _____

   c. How many credentials of candidates were provided (mailed, hand carried, or given) to prospective employers from your office in 1971-72?

Graduating students _____
Alumni candidates _____

   d. How many candidates from your areas of responsibility were placed (full-time employment, homemaker, armed services, graduate school, or remained in same position) in 1971-72?

Graduating students _____
Alumni candidates _____

   e. How many students graduated in 1971-72 from the academic departments in your areas of placement responsibility?

_____

   f. How many 8 1/2 inch by 11 inch pages were contained in an average candidate credential in 1972-73?

Graduating students _____
Alumni candidates _____

   g. What was the average cost for copying a candidate credential in your placement office in 1972-73?

Graduating students _____
Alumni candidates _____

h. What was the average cost for mailing candidate credentials from your placement office in 1972-73?

Graduating students	_____
Alumni candidates	_____

i. Do you have compulsory registration for:

	Yes	No
Graduating seniors	___	___
Masters candidates	___	___
Doctoral candidates	___	___

j. Which of the following items are normally contained in credentials of graduating students and alumni on file in your office? (Please provide a representative sample of a graduating student and alumni candidate credential.)

	Graduating Student		Alumni Candidate	
	Yes	No	Yes	No
Credential cover	___	___	___	___
Credential forms	___	___	___	___
Candidate's page	___	___	___	___
List of courses	___	___	___	___
Unofficial transcript	___	___	___	___
Personal recommendations . . .	___	___	___	___
Academic recommendations . . .	___	___	___	___
Professional recommendations .	___	___	___	___
Student teaching report(s) . .	___	___	___	___
_____	___	___	___	___
_____	___	___	___	___

k. Please briefly explain how your credential filing system operates. Include information about active credentials, referrals, bulletins, vacancy notices, and credential sending.

2. Fast Retrieval System

a. What system do you use for quickly identifying graduating students and alumni candidates to prospective employers? Is your system a locator card system, manual filing system, cardex system, findex system, rolidex system, data processing system, or other? Please briefly describe the operation of your system:

b. What are the advantages and disadvantages of your fast retrieval system?

Advantages:

Disadvantages:

c. What were the total costs for operating your fast retrieval system in 1972-73 (estimated to the nearest ten dollars)? Include labor, equipment, and materials in your estimate.

3. Budget

a. What was your total placement budget in 1972-73? _____

b. What was your placement budget for salaries in 1972-73?

Administrative: _____

Clerical staff: _____

c. What was your equipment budget in 1972-73? _____

d. What was your placement supplies and services budget in 1972-73? _____

Communications: _____

Postage: _____

Printing: _____

Office Supplies: _____

Other (Please specify) _____ _____

_____ _____

e. Do you charge a fee for candidates to use your placement services?

	Yes	No
Graduating students	___	___
Alumni candidates	___	___

f. If so, how many total dollars will be collected (estimated) from fee in 1972-73? _____

Section B. Assessment of Current Status and Opinion

This part of the instrument is designed to assist in assessing current and future items for inclusion in a fast retrieval system for graduating students and alumni candidates. When referring graduating students and alumni (experienced) candidates from your fast retrieval system or a futre fast retrieval system, how important are each of the following items?

First - How important <u>is</u> the item at your placement office at the present time with your present fast retrieval system?

Second - In your judgment, how important <u>should</u> the item <u>be</u> at your placement office with a future fast retrieval system?

EXAMPLE:

ITEMS		LEVELS OF IMPORTANCE					COMMENTS
		Of extremely high importance	of high importance	of medium importance	of low importance	of no importance	
Father's occupation	Is	___	___	___	X	___	
	Should be	___	X	___	___	___	

In the above example, the person indicated that he believed the item "father's occupation" was presently of low importance at his placement office, but he believed it should be of high importance in a future fast retrieval system for his placement office.

If you want to explain your answer to any items, please do so in the "Comments" column.

ITEMS		LEVELS OF IMPORTANCE					COMMENTS
		Of extremely high importance	of high importance	of medium importance	of low importance	of no importance	
1. Candidate's Name	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
2. Campus Address	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
3. Campus Telephone Number	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
4. Home address	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	

ITEMS		LEVELS OF IMPORTANCE					COMMENTS
		Of extremely high importance	of high importance	of medium importance	of low importance	of no importance	
5. Home Telephone Number	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
6. Undergraduate major	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
7. Undergraduate minor(s)	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
8. Undergraduate grade point average	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
9. Graduate major	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
10. Graduate minor(s)	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
11. Graduate grade point average	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
12. Campus activites	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
13. Hobbies & Interests	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
14. Publications	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
15. Faculty recommendations	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
16. Professional recommendations	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
17. Sex	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	

ITEM		LEVELS OF IMPORTANCE					COMMENTS
		Of extremely high importance	of high importance	of medium importance	of low importance	of no importance	
18. Marital Status	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
19. Year born	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
20. Race	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
21. First job preference	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
22. Second job preference	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
23. Third job preference	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
24. Student teaching reports	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
25. Present employer	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
26. Present job title	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
27. Years experience in present job	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
28. Previous employers	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
29. Previous job titles	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
30. Years experience in previous job	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	

ITEMS		LEVELS OF IMPORTANCE					COMMENTS
		Of extremely high importance	of high importance	of medium importance	of low importance	of no importance	
31. First locational preference	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
32. Second locational preference	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
33. Highest degree achieved	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
34. Date file activated most recently	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
35. Employment status (unemployed, just looking, etc.)	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
36. Certification held	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
37. List of courses	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
38. Unofficial transcript	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
39. Candidate's page	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
40. _____	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
41. _____	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	
42. _____	Is	___	___	___	___	___	
	Should be	___	___	___	___	___	

APPENDIX E

A LETTER TO SCHEDULE APPOINTMENTS AT THE SELECTED PLACEMENT OFFICES

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48823

PLACEMENT BUREAU • OFFICE OF THE DIRECTOR • STUDENT SERVICES BUILDING

May 4, 1973

X
X
X
X

Dear :

As part of my doctoral study at Michigan State University, I am studying personnel data retrieval systems in placement offices at selected midwestern universities. As a result of this study, I hope to complete a doctoral dissertation on this subject.

To accomplish this I would like to schedule a half hour personal interview with you or one of your representatives on (date) , 1973, at (time).

Thank you for your consideration of this matter, and I would appreciate a confirmation on this appointment as soon as possible.

Sincerely,

L. Patrick Scheetz
Assistant Director of Placement

LPS:da

APPENDIX F

A QUESTIONNAIRE TO SURVEY THE OPINIONS OF EMPLOYERS ABOUT ITEMS FOR INCLUSION IN A FAST PERSONNEL DATA RETRIEVAL SYSTEM FOR PLACEMENT OFFICES

Q U E S T I O N N A I R E

A STUDY OF PERSONNEL DATA RETRIEVAL SYSTEMS IN PLACEMENT OFFICES

By

L. Patrick Scheetz
Assistant Director of Placement
Michigan State University
East Lansing, Michigan 48823
Telephone: (517) 355-9541

May 7, 1973

Assessment of Employer Opinions

The purpose of this instrument is to select which items are important for inclusion in a fast personnel retrieval system for placement offices. When graduating students and alumni (experienced) candidates are referred to you by placement offices, how important are each of the following items? Please check one level of importance after each line.

ITEMS	LEVELS OF IMPORTANCE					COMMENTS
	Of extremely high importance	of high importance	of medium importance	of low importance	of no importance	
Candidate's Name	___	___	___	___	___	
Campus Address	___	___	___	___	___	
Campus Telephone No.	___	___	___	___	___	
Home Address	___	___	___	___	___	
Home Telephone No.	___	___	___	___	___	
Undergraduate Major	___	___	___	___	___	
Undergraduate Minor(s)	___	___	___	___	___	
Undergraduate Grade Point Average	___	___	___	___	___	
Graduate Major	___	___	___	___	___	
Graduate Minor(s)	___	___	___	___	___	
Graduate Grade Point Average	___	___	___	___	___	
Campus Activities	___	___	___	___	___	
Hobbies & Interests	___	___	___	___	___	
Publications	___	___	___	___	___	
Faculty Recommendations	___	___	___	___	___	
Personal Recommendations	___	___	___	___	___	
Professional Recommendations	___	___	___	___	___	
Sex	___	___	___	___	___	

ITEMS	LEVELS OF IMPORTANCE					COMMENTS
	Of extremely high importance	of high importance	of medium importance	of low importance	of no importance	
Marital Status	___	___	___	___	___	
Year Born	___	___	___	___	___	
Race	___	___	___	___	___	
First Job Preference	___	___	___	___	___	
Second Job Preference	___	___	___	___	___	
Third Job Preference	___	___	___	___	___	
Student Teaching Reports	___	___	___	___	___	
Present Employer	___	___	___	___	___	
Present Job Title	___	___	___	___	___	
Years Experience in Present Job	___	___	___	___	___	
Previous Employers	___	___	___	___	___	
Previous Job Titles	___	___	___	___	___	
Years Experience in Previous Jobs	___	___	___	___	___	
First Locational Preference	___	___	___	___	___	
Second Locational Preference	___	___	___	___	___	
Highest Degree Achieved	___	___	___	___	___	
Date File Activated Most Recently	___	___	___	___	___	
Employment status (unemployed, just looking, etc.)	___	___	___	___	___	
Certification Held	___	___	___	___	___	
Placement Office Rating (Numeric)	___	___	___	___	___	
Placement Office Rating (Words)	___	___	___	___	___	

ITEMS	LEVELS OF IMPORTANCE					COMMENTS
	Of extremely high importance	of high importance	of medium importance	of low importance	of no importance	
List of Courses	___	___	___	___	___	
Unofficial Transcript	___	___	___	___	___	
Candidate's Page	___	___	___	___	___	
_____						
_____						
_____						

Thank you for completing this questionnaire. Please return it in the enclosed self-addressed and stamped envelope.

APPENDIX G

A LETTER OF TRANSMITTAL FOR THE EMPLOYER QUESTIONNAIRE

MICHIGAN STATE UNIVERSITY EAST LANSING · MICHIGAN 48823

PLACEMENT BUREAU · OFFICE OF THE DIRECTOR · STUDENT SERVICES BUILDING

May 7, 1973

X
X
X
X

Dear :

As part of my doctoral study at Michigan State University, I am studying personnel data retrieval systems in placement offices at selected midwestern universities. As a result of this study, I hope to complete a doctoral dissertation on this subject.

To accomplish this, I would like to have the enclosed brief questionnaire completed by you or one of your representatives and returned in the enclosed self-addressed and stamped envelope by May 30, 1973.

Your cooperation in this study will be greatly appreciated.

Sincerely,

L. Patrick Scheetz
Assistant Director of Placement

LPS:da

Enclosure

APPENDIX H

A REPORT OF RESPONSES TO PARTICIPATING PLACEMENT OFFICERS

ASSESSMENT OF CURRENT STATUS AND OPINION

This instrument was designed to assist in assessing current and future items for inclusion in a fast retrieval system for graduating students and alumni candidates. When referring graduating students and alumni (experienced) candidates from present or future fast retrieval systems in placement offices, the respondents to this questionnaire were requested to determine the importance of each item.

Thirty-six placement office responses were received from this survey. One placement office at one of the institutions did not have any system for identifying candidates for prospective employment opportunities. Therefore, only the "should be" section of the questionnaire was completed by that placement office.

The respondents were requested to determine the level of importance of each item as follows:

First - How important <u>is</u> the item at your placement office at the present time with your present fast retrieval system?

Second - In your judgment, how important <u>should</u> the item <u>be</u> at your placement office with a future fast retrieval system?

Using the method for analysis of responses developed by Hickey,[1] the responses were assigned the following directional weightings:

+3	Extremely High Importance
+1	High Importance
0	Medium Importance
-1	Low Importance
-3	No Importance

The three point weighting was utilized because it gave greater weighting to those responses that indicated a greater degree of confidence by the respondent in his answer. Where a respondent assessed a medium importance to an item, a score of 0 was assigned.

The sum of scores was tabulated for each item and divided by the total number of respondents for each item in the questionnaire. The resulting mean was the statistic s that indicated the respondents' composite weighting of the item for its relevance for inclusion in their present and future fast retrieval systems.

---

[1]Howard W. Hickey, "Development of Criteria for Evaluating Alternative Patterns to Reduce School Segregation in the Inner City" (Unpublished Ph.D. dissertation, Michigan State University, 1968), p. 81-82.

Areas for acceptance and rejection of items were established for the mean of the responses s as follows:

$s \geq +1.75$	Necessary	(N)
$+1.74 \geq s \geq +0.50$	Desirable	(D)
$+0.49 \geq s \geq -0.49$	Indeterminate	(I)
$-0.50 \geq s \geq -1.74$	Undesirable	(U)
$s \leq -1.75$	Not Acceptable	(NA)

According to these areas of acceptance and rejection, whenever the statistic s was greater than or equal to + 0.50, the item was accepted for inclusion in a present or future fast retrieval system (D). The rank N merely indicated a much stronger response by the respondents. Whenever the statistic s was less than or equal to - 0.50, the item was rejected (U). The rank NA represented a much stronger rejection of the item for inclusion in a fast retrieval system.

The rank I indicated that concensus was not reached by the respondents for inclusion of the item in a present or future fast retrieval system. For this rank, s was greater than or equal to - 0.49 but less than or equal to + 0.49. This tended to occur where there was great divergence of opinion by the respondents.

At the end of this section, the respondents were permitted to add additional items for inclusion and evaluation. The responses from these items were listed at the end of the analysis.

In summary, a placement officer should determine his own level of acceptance and rejection when determining which item should be included in his present or proposed fast retrieval systems. This study should only be used as an indication of the responses from thirty-five placement offices at ten selected midwestern universities.

ASSESSMENT OF CURRENT STATUS AND OPINION

	ITEMS	LEVELS OF IMPORTANCE Response Frequency and Weighting							
		Of extremely high importance (+3)	of high importance (+1)	of medium importance (0)	of low importance (-1)	of no importance (-3)	Number of Respondents	Response Mean s	Rank[2]
1.	**Candidate's Name**								
	Is	29	4	2	0	0	35	2.60	N
	Should be	29	2	3	1	1	36	2.36	N
2.	**Campus Address**								
	Is	21	10	1	1	2	35	1.83	N
	Should be	22	11	1	1	1	36	2.03	N
3.	**Campus Telephone Number**								
	Is	18	12	3	0	2	35	1.71	D
	Should be	19	12	3	0	2	36	1.75	N
4.	**Home Address**								
	Is	18	12	4	1	0	35	1.86	N
	Should be	19	13	3	1	0	36	1.92	N
5.	**Home Telephone Number**								
	Is	15	9	8	2	1	35	1.40	D
	Should be	16	11	6	2	1	36	1.50	D
6.	**Undergraduate Major**								
	Is	25	7	3	0	0	35	2.34	N
	Should be	26	6	4	0	0	36	2.33	N
7.	**Undergraduate Minor (s)**								
	Is	6	7	7	1	14	35	- .51	U
	Should be	6	8	7	2	13	36	- .42	I
8.	**Undergraduate Grade Point Average**								
	Is	6	17	6	4	2	35	.71	D
	Should be	6	19	5	5	1	36	.81	D
9.	**Graduate Major**								
	Is	25	6	3	0	1	35	1.89	N
	Should be	26	6	3	0	1	36	2.25	N
10.	**Graduate Minor (s)**								
	Is	6	10	5	1	13	35	- .34	I
	Should be	6	12	5	1	12	36	- .19	I
11.	**Graduate Grade Point Average**								
	Is	7	14	8	2	4	35	.60	D
	Should be	7	13	9	4	3	36	.58	D

[2] See the areas for acceptance and rejection on page one.

ITEMS	LEVELS OF IMPORTANCE Response Frequency and Weighting					Number of Respondents	Response Means	Rank
	Of extremely high importance (+3)	of high importance (+1)	of medium importance (0)	of low importance (-1)	of no importance (-3)			
12. Campus Activities								
Is	2	12	19	0	2	35	.34	
Should be	3	15	17	0	1	36	.58	
13. Hobbies & Interests								
Is	0	3	15	15	2	35	- .51	U
Should be	0	3	19	13	1	36	- .36	I
14. Publications								
Is	1	14	9	6	5	35	- .11	I
Should be	1	16	9	5	5	36	- .03	I
15. Faculty Recommendations								
Is	4	12	7	6	5	35	- .00	I
Should be	3	14	7	7	5	36	- .03	I
16. Professional Recommendations								
Is	7	11	7	5	5	35	.34	I
Should be	7	14	8	4	3	36	.61	D
17. Sex								
Is	6	9	7	10	3	35	.23	I
Should be	6	8	7	8	7	36	- .08	I
18. Marital Status								
Is	0	10	14	6	5	35	- .31	I
Should be	0	9	15	6	6	36	- .42	I
19. Year Born								
Is	5	5	16	6	3	35	.14	I
Should be	5	6	15	7	3	36	.14	I
20. Race								
Is	5	7	0	7	16	35	- .94	U
Should be	8	10	3	6	9	36	.69	D
21. First Job Preference								
Is	7	16	9	1	2	35	.86	D
Should be	9	17	8	1	1	36	1.11	D
22. Second Job Preference								
Is	6	9	14	4	2	35	.49	I
Should be	8	10	13	4	1	36	.75	D
23. Third Job Preference								
Is	1	7	11	11	5	35	- .46	I
Should be	2	7	12	11	4	36	- .27	I
24. Student Teaching Report								
Is	11	1	0	0	23	35	- .94	U
Should be	12	1	0	0	23	36	- .83	U

ITEMS	LEVELS OF IMPORTANCE Response Frequency and Weightings					Number of Respondents	Response Means	Rank
	Of extremely high importance (+3)	of high importance, (+1)	of medium importance (0)	of low importance (-1)	of no importance (-3)			
25. Present Employer's Name								
Is	7	14	8	2	4	35	.60	D
Should be	8	13	9	3	3	36	.69	D
26. Present Job Title								
Is	5	19	7	1	3	35	.68	D
Should be	6	20	7	1	2	36	.86	D
27. Years Experience in Present Job								
Is	9	22	2	0	2	35	1.23	D
Should be	9	24	2	0	1	36	1.33	D
28. Previous Employers (Previous to Present Employer)								
Is	2	14	13	2	4	35	.17	I
Should be	3	14	13	3	3	36	.31	I
29. Previous Job Titles (Previous to Present Job Title)								
Is	3	13	14	2	3	35	.31	I
Should be	3	14	15	2	2	36	.42	I
30. Years Experience in Previous Jobs (Previous to Present Job)								
Is	5	19	7	2	2	35	.74	D
Should be	6	19	8	2	1	36	.89	D
31. First Locational Preference								
Is	8	15	7	4	1	35	.91	D
Should be	7	15	8	4	2	36	.72	D
32. Second Locational Preference								
Is	1	8	14	7	5	35	- .31	I
Should be	1	9	15	7	4	36	- .19	I
33. Highest Degree Achieved								
Is	13	20	2	0	0	35	1.69	D
Should be	13	19	3	1	0	36	1.58	D
34. Date File Activated Most Recently								
Is	5	8	8	8	6	35	- .09	I
Should be	6	8	9	9	4	36	.14	I
35. Employment Status (Unemployed, Just looking, Employed)								
Is	9	11	4	9	2	35	.66	D
Should be	10	13	5	7	1	36	.92	D
36. Certification Held								
Is	7	6	6	4	12	35	- .37	I
Should be	9	6	7	3	11	36	- .08	I
37. List of Courses								
Is	2	7	12	6	8	35	- .49	I
Should be	4	8	12	5	7	36	- .17	I

ITEMS	LEVELS OF IMPORTANCE							
	Response Frequency and Weighting							
	Of extremely high importance (+3)	of high importance (+1)	of medium importance (0)	of low importance (-1)	of no importance (-3)	Number of Respondents	Response Mean s	Rank
38. Unofficial Transcript								
Is	1	4	7	5	18	35	-1.49	U
Should be	1	7	7	5	16	36	-1.19	U
39. Candidate's Page								
Is	5	9	5	4	12	35	- .46	I
Should be	6	10	6	4	10	36	- .17	I
40. Present Salary								
Is	4	9	10	1	4	28	.29	I
Should be	4	11	10	0	4	29	.38	I
41. Candidate's Picture								
Is	3	2	2	2	9	18	-1.00	U
Should be	3	6	4	3	3	19	.16	I
42. Placement Evaluation (Words, numbers, memory, etc.)								
Is	2	9	7	2	4	24	.04	I
Should be	2	10	7	2	3	24	.21	I
43. Date Available for Employment								
Is	9	14	8	2	0	33	1.18	D
Should be	9	16	8	1	0	34	1.24	D
44. Physical Limitations[3]								
Is	1	0	0	0	0	1	3.00	
Should be	1	0	0	0	0	1	3.00	
45. Drug Use[3]								
Is	0	1	0	0	0	1	1.00	
Should be	0	1	0	0	0	1	1.00	
46. Credential Release Statement[3]								
Is	1	0	0	0	0	1	3.00	
Should be	1	0	0	0	0	1	3.00	
47. Social Security Number[3]								
Is	0	0	1	0	0	1	.00	
Should be	0	0	1	0	0	1	.00	
48. Educational Institutions Attended[3]								
Is	2	0	0	0	0	2	3.00	
Should be	2	0	0	0	0	2	3.00	
49. Dates of Attendance at Each Educational Institution[3]								
Is	1	0	0	0	0	1	3.00	
Should be	1	0	0	0	0	1	3.00	

[3]Because of the limited response received by these items, the validity of their mean is questionable.

	ITEMS	LEVELS OF IMPORTANCE Response Frequency and Weighting					Number of Respondents	Response Mean s	Rank
		Of extremely high importance (+3)	of high importance (+1)	of medium importance (0)	of low importance (-1)	of no importance (-3)			
50.	Citizenship[3]								
	Is	0	3	0	0	0	3	1.00	
	Should be	0	3	0	0	0	3	1.00	
51.	Draft Status[3]								
	Is	0	0	1	1	0	2	- .50	
	Should be	0	0	1	1	0	2	- .50	
52.	Number of Children[3]								
	Is	0	0	1	0	0	1	.00	
	Should be	0	0	1	0	0	1	.00	
53.	Language Competencies[3]								
	Is	0	0	1	0	0	1	.00	
	Should be	0	0	1	0	0	1	.00	
54.	Extra Curricular Activities[3]								
	Is	0	1	0	0	0	1	1.00	
	Should be	0	1	0	0	0	1	1.00	
55.	Future Job Objective[3]								
	Is	0	0	1	0	0	1	.00	
	Should be	0	0	1	0	0	1	.00	
56.	Reasons For Leaving Each Job[3]								
	Is	0	1	0	0	0	1	1.00	
	Should be	0	1	0	0	0	1	1.00	
57.	Father's Occupation[3]								
	Is	0	1	0	0	0	1	1.00	
	Should be	0	1	0	0	0	1	1.00	

APPENDIX I

A LETTER OF APPRECIATION AND TRANSMITTAL FOR THE REPORT OF FINDINGS

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48823

PLACEMENT BUREAU • OFFICE OF THE DIRECTOR • STUDENT SERVICES BUILDING

June 13, 1973

X
X
X
X

Dear :

Thank you very much for the tour and information about your placement services. Our conversation was especially enlightening to me. Thank you for making my trip to (name of university) enjoyable and productive.

A summary of my findings is enclosed for your information. Possibly it will assist you in your future placement decisions.

Have a very good summer vacation and a good placement season.

Sincerely,

L. Patrick Scheetz
Assistant Director of Placement

LPS:da

Enclosure

APPENDIX J

ANALYSIS OF PANEL OF EXPERT RESPONSES TO DRAFTED QUESTIONNAIRE

APPENDIX J

ANALYSIS OF PANEL OF EXPERT RESPONSES TO DRAFTED QUESTIONNAIRE

Item Number	Response Frequency and Weighting					Response Mean	Rank
	1 (+3)	2 (+1)	None (0)	3 (-1)	4 (-3)	a	
Credential Filing System							
a	7	1	0	0	0	2.75	N
b	6	2	0	0	0	2.50	N
c	5	3	0	0	0	2.25	D
d	4	2	1	1	0	1.62	D
e	4	3	0	1	0	1.75	D
f	1	4	0	3	0	.50	D
g	2	5	0	1	0	1.25	D
h	2	5	1	0	0	1.38	D
i	3	4	0	1	0	1.50	D
j	3	2	3	0	0	1.38	D
(1)	3	4	0	1	0	1.50	D
(2)	5	3	0	0	0	2.25	D
(3)	3	4	0	1	0	1.50	D
(4)	3	5	0	0	0	1.75	D
(5)	3	4	1	0	0	1.63	D
(6)	3	4	0	1	0	1.50	D
(7)	3	4	0	1	0	1.50	D
(8)	3	5	0	0	0	1.75	D
(9)	6	2	0	0	0	2.50	N
k	6	1	1	0	0	2.38	D
Total	75	67	7	11	0	1.76	D
Fast Retrieval System							
a	6	2	0	0	0	2.50	N
b	6	2	0	0	0	2.50	N
c	4	2	2	0	0	1.75	D
Total	16	6	2	0	0	2.25	D
Budget							
a	5	3	0	0	0	2.25	D
b	5	2	0	1	0	2.00	D
c	4	3	0	1	0	1.75	D
d	5	2	0	1	0	2.00	D
e	4	1	0	1	2	.75	D
f	3	1	2	1	1	.75	D
Total	26	12	2	5	3	1.58	D
Assessment of Current Status and Opinion							
1	6	1	0	1	0	2.25	D
2	6	2	0	0	0	2.50	N
3	6	2	0	0	0	2.50	N
4	6	1	0	1	0	2.25	D
5	4	2	1	0	1	1.38	D
6	7	1	0	0	0	2.75	N
7	4	3	0	1	0	1.75	D
8	3	4	0	1	0	1.50	D
9	7	1	0	0	0	2.75	N
10	5	3	0	0	0	2.25	D
11	3	4	0	1	0	1.50	D
12	3	5	0	0	0	1.75	D
13	1	6	0	0	1	.75	D
14	4	4	0	0	0	2.00	D
15	3	5	0	0	0	1.75	D
16	0	4	0	3	1	- .25	I
17	4	3	0	1	0	1.75	D
18	5	1	0	0	2	1.25	D
19	1	5	0	0	2	.25	I
20	1	5	0	0	2	.25	I
21	2	4	0	0	2	.50	D
22	6	2	0	0	0	2.50	N
23	4	4	0	0	0	2.00	D
24	3	2	0	3	0	1.00	D
25	2	1	0	3	2	- .25	I
26	2	1	0	2	3	- .50	U
27	1	1	0	1	5	-1.50	U
28	5	2	0	1	0	2.00	D
29	6	2	0	0	0	2.50	N
30	5	3	0	0	0	2.25	D
31	5	3	0	0	0	2.25	D
32	4	4	0	0	0	2.00	D
33	3	5	0	0	0	1.75	D
34	4	4	0	0	0	2.00	D
35	5	3	0	0	0	2.25	D
36	2	4	0	2	0	1.00	D
37	0	5	0	1	2	- .25	I
38	7	1	0	0	0	2.75	N
39	6	1	0	0	1	2.00	D
40	7	0	0	0	1	2.25	D
41	6	2	0	0	0	2.50	N
42	1	1	2	1	3	- .75	U
43	1	2	1	2	2	- .38	I
44	1	6	0	1	0	1.00	D
45	2	4	0	2	0	1.00	D
46	2	4	0	2	0	1.00	D
Total	171	133	4	30	30	1.43	D

APPENDIX K

ITEMS INCLUDED IN CREDENTIALS OF GRADUATING STUDENTS AND ALUMNI CANDIDATES

APPENDIX K

ITEMS INCLUDED IN CREDENTIALS OF GRADUATING STUDENTS AND ALUMNI CANDIDATES

Items	Institutions and Placement Offices																																						
	A1	A2	A3	A4	A5	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3	F1	F2	F3	G1	G2	G3	G4	G5	G6	H1	H2	H3	H4	H5	H6	I1	I2	I3	I4	I5	J1	J2	MSU
Graduating Student Credentials																																							
Credential Cover					1				1			2	1		1	1			1									1				1			1		1		
Credential Forms	1		1		2	1	1		2	1	1	4	2	1	2	1	1	1	1	1	1	1	1	1		1	1	3		1		1	1	1	1	1	1	1
Resume		1		1				2																	1				1										
Candidate Page					1							1	1			1			1									1				1							
List of Courses													1		1	1																1			1	3	1/2	
Unofficial Transcript					1							1			1												1				1					1/2	
Personal Recommendations																																							
Academic Recommendations	3				2				2			2	2		2	2			4						2		3	2		2		1	1		1		2	
Professional Recommendations													2		1																1							
Student Teaching Reports					2							1			2	1			2									1				1			2		3	1
Total Pages Included (Average)	4	1	1	1	9	1	1	2	5	1	1	11	9	1	10	7	1	1	9	1	1	1	1	1	3	1	5	8	1	3	1	7	2	1	8	4	8	2[a]
Alumni Candidate Credentials																																							
Credential Cover					1				1			1	1		1	1			1									1				1			1		1		
Credential Forms	2		1		3	1			2	1		4	2	1	2	1	2	1	1	1	1	1	1	1		1	1	3		1		1		1		1		
Resume		1		2				2																	1				1				1						
Candidate Page					1							1	1			1			2									1				1							
List of Courses													2		1	1			1									3				1			1		1		
Unofficial Transcript					1							2			2												1												
Personal Recommendations							NONE				NONE					1																							
Academic Recommendations					6				11				2		5	2			8								3	4		2		1			10	NONE		
Professional Recommendations												8	2		4	2												2				1					8	3
Student Teaching Reports																1												1							2			1
Total Pages Included (Average)	2	1	1	2	12	1	0	2	14	1	0	16	10	1	14	10	2	1	13	1	1	1	1	1	1	1	5	15	1	3	1	7	1	1	15	0	11	6[b]

[a]Graduating students in areas other than education have only one page in their credentials.

[b]Alumni candidates in business, industry, and government have only two credential pages in their credentials.

APPENDIX L

ANALYSIS OF RESPONSES FROM SURVEYED PLACEMENT OFFICES FOR CURRENT STATUS AND OPINION

APPENDIX L

ANALYSIS OF RESPONSES FROM SURVEYED PLACEMENT OFFICES FOR CURRENT STATUS AND OPINION

Items	Is Or Should Be	Levels of Importance Response Frequency and Weightings (+3)	(+1)	(0)	(-1)	(-3)	Number of Respondents	Response Mean x̄	Rank[a]
1. Candidate's Name	Is	29	4	2	0	0	35	2.60	N
	Should Be	29	2	3	1	1	36	2.36	N
2. Campus Address	Is	21	10	1	1	2	35	1.83	N
	Should Be	22	11	1	1	1	36	2.03	N
3. Campus Telephone Number	Is	18	12	3	0	2	35	1.71	D
	Should Be	19	12	3	0	2	36	1.75	N
4. Home Address	Is	18	12	4	1	0	35	1.86	N
	Should Be	19	13	3	1	0	36	1.92	N
5. Home Telephone Number	Is	15	9	8	2	1	35	1.40	D
	Should Be	16	11	6	2	1	36	1.50	D
6. Undergraduate Major	Is	25	7	3	0	0	35	2.34	N
	Should Be	26	6	4	0	0	36	2.33	N
7. Undergraduate Minor (s)	Is	6	7	7	1	14	35	- .51	U
	Should Be	6	8	7	2	13	36	- .42	I
8. Undergraduate Grade Point Average	Is	6	17	6	4	2	35	.71	D
	Should Be	6	19	5	5	1	36	.81	D
9. Graduate Major	Is	25	6	3	0	1	35	1.89	N
	Should Be	26	6	3	0	1	36	2.25	N
10. Graduate Minor (s)	Is	6	10	5	1	13	35	- .34	I
	Should Be	6	12	5	1	12	36	- .19	I
11. Graduate Grade Point Average	Is	7	14	8	2	4	35	.60	D
	Should Be	7	13	9	4	3	36	.58	D
12. Campus Activities	Is	2	12	19	0	2	35	.34	I
	Should Be	3	15	17	0	1	36	.58	D
13. Hobbies & Interests	Is	0	3	15	15	2	35	- .51	U
	Should Be	0	3	19	13	1	36	- .36	I
14. Publications	Is	1	14	9	6	5	35	- .11	I
	Should Be	1	16	9	5	5	36	- .03	I
15. Faculty Recommendations	Is	4	12	7	6	5	35	- .00	I
	Should Be	3	14	7	7	5	36	- .03	I
16. Professional Recommendations	Is	7	11	7	5	5	35	.34	I
	Should Be	7	14	8	4	3	36	.61	D
17. Sex	Is	6	9	7	10	3	35	.23	I
	Should Be	6	8	7	8	7	36	- .08	I
18. Marital Status	Is	0	10	14	6	5	35	- .31	I
	Should Be	0	9	15	6	6	36	- .42	I
19. Year Born	Is	5	5	16	6	3	35	.14	I
	Should Be	5	6	15	7	3	36	.14	I
20. Race	Is	5	7	0	7	16	35	- .94	U
	Should Be	8	10	3	6	9	36	.69	D
21. First Job Preference	Is	7	16	9	1	2	35	.86	D
	Should Be	9	17	8	1	1	36	1.11	D
22. Second Job Preference	Is	6	9	14	4	2	35	.49	I
	Should Be	8	10	13	4	1	36	.75	D
23. Third Job Preference	Is	1	7	11	11	5	35	- .46	I
	Should Be	2	7	12	11	4	36	- .27	I
24. Student Teaching Report	Is	11	1	0	0	23	35	- .94	U
	Should Be	12	1	0	0	23	36	- .83	U
25. Present Employer's Name	Is	7	14	8	2	4	35	.60	D
	Should Be	8	13	9	3	3	36	.69	D
26. Present Job Title	Is	5	19	7	1	3	35	.68	D
	Should Be	6	20	7	1	2	36	.86	D
27. Years Experience in Present Job	Is	9	22	2	0	2	35	1.23	D
	Should Be	9	24	2	0	1	36	1.33	D
28. Previous Employers	Is	2	14	13	2	4	35	.17	I
	Should Be	3	14	13	3	3	36	.31	I
29. Previous Job Titles	Is	3	13	14	2	3	35	.31	I
	Should Be	3	14	15	2	2	36	.42	I
30. Years Experience in Previous Jobs	Is	5	19	7	2	2	35	.74	D
	Should Be	6	19	8	2	1	36	.89	D
31. First Locational Preference	Is	8	15	7	4	1	35	.91	D
	Should Be	7	15	8	4	2	36	.72	D
32. Second Locational Preference	Is	1	8	14	7	5	35	- .31	I
	Should Be	1	9	15	7	4	36	- .19	I
33. Highest Degree Achieved	Is	13	20	2	0	0	35	1.69	D
	Should Be	13	19	3	1	0	36	1.58	D
34. Date File Activated	Is	5	8	8	8	6	35	- .09	I
	Should Be	6	8	9	9	4	36	.14	I
35. Employment Status	Is	9	11	4	9	2	35	.66	D
	Should Be	10	13	5	7	1	36	.92	D
36. Certification Held	Is	7	6	6	4	12	35	- .37	I
	Should Be	9	6	7	3	11	36	- .08	I
37. List of Courses	Is	2	7	12	6	8	35	- .49	I
	Should Be	4	8	12	5	7	36	- .17	I
38. Unofficial Transcript	Is	1	4	7	5	18	35	-1.49	U
	Should Be	1	7	7	5	16	36	-1.19	U
39. Candidate's Page	Is	5	9	5	4	12	35	- .46	I
	Should Be	6	10	6	4	10	36	- .17	I
40. Present Salary	Is	4	9	10	1	4	28	.29	I
	Should Be	4	11	10	0	4	29	.38	I
41. Candidate's Picture	Is	3	2	2	2	9	18	-1.00	U
	Should Be	3	6	4	3	3	19	.16	I
42. Placement Evaluation	Is	2	9	7	2	4	24	.04	I
	Should Be	2	10	7	2	3	23	.21	I
43. Date Available for Employment	Is	9	14	8	2	0	33	1.18	D
	Should Be	9	16	8	1	0	34	1.24	D
44. Physical Limitations[b]	Is	1	0	0	0	0	1	3.00	
	Should Be	1	0	0	0	0	1	3.00	
45. Drug Use[b]	Is	0	1	0	0	0	1	1.00	
	Should Be	0	1	0	0	0	1	1.00	
46. Credential Release Statement[b]	Is	1	0	0	0	0	1	3.00	
	Should Be	1	0	0	0	0	1	3.00	
47. Social Security Number[b]	Is	0	0	1	0	0	1	.00	
	Should Be	0	0	1	0	0	1	.00	
48. Educational Institutions Attended[b]	Is	2	0	0	0	0	2	3.00	
	Should Be	2	0	0	0	0	2	3.00	
49. Dates of Attendance at Each Educational Institution[b]	Is	1	0	0	0	0	1	3.00	
	Should Be	1	0	0	0	0	1	3.00	
50. Citizenship[b]	Is	0	1	0	0	0	1	1.00	
	Should Be	0	1	0	0	0	1	1.00	
51. Draft Status[b]	Is	0	0	1	1	0	2	- .50	
	Should Be	0	0	1	1	0	2	- .50	
52. Number of Children[b]	Is	0	0	1	0	0	1	.00	
	Should Be	0	0	1	0	0	1	.00	
53. Language Competencies[b]	Is	0	0	1	0	0	1	.00	
	Should Be	0	0	1	0	0	1	.00	
54. Extra Curricular Activities[b]	Is	0	1	0	0	0	1	1.00	
	Should Be	0	1	0	0	0	1	1.00	
55. Future Job Objective[b]	Is	0	0	1	0	0	1	.00	
	Should Be	0	0	1	0	0	1	.00	
56. Reasons For Leaving Each Job[b]	Is	0	1	0	0	0	1	1.00	
	Should Be	0	1	0	0	0	1	1.00	
57. Father's Occupation[b]	Is	0	1	0	0	0	1	1.00	
	Should Be	0	1	0	0	0	1	1.00	

[a]See the areas for acceptance and rejection on page 30.

[b]Because of the limited response received by these items, the validity of their mean is questionable.

APPENDIX M

ANALYSIS OF RESPONSES FROM OPINIONS OF EMPLOYERS

APPENDIX M

ANALYSIS OF RESPONSES FROM OPINIONS OF EMPLOYERS

Items	Levels of Importance					Number of Respondents	Response Mean s	Rank
	Response Frequency and Weightings							
	(+3)	(+1)	(0)	(-1)	(-3)			
1. Candidate's Name	19	2	2	4	3	30	1.53	D
2. Campus Address	10	8	6	3	3	30	.87	D
3. Campus Telephone Number	8	11	6	3	2	30	.87	D
4. Home Address	7	9	10	2	2	30	.73	D
5. Home Telephone Number	6	9	8	5	2	30	.53	D
6. Undergraduate Major	19	7	3	1	0	30	2.10	N
7. Undergraduate Minors	1	12	11	5	1	30	.23	I
8. Undergraduate Grade Point Average	9	14	6	1	0	30	1.33	D
9. Graduate Major	18	9	3	0	0	30	2.10	N
10. Graduate Minors	2	10	12	5	1	30	.27	I
11. Graduate Grade Point Average	8	15	6	1	0	30	1.27	D
12. Campus Activities	6	9	13	1	1	30	.77	D
13. Hobbies & Activities	2	7	12	8	1	30	.07	I
14. Publications	2	7	12	8	1	30	.07	I
15. Faculty Recommendations	4	13	8	3	2	30	.53	D
16. Professional Recommendations	5	13	9	2	1	30	.76	D
17. Sex	1	4	7	6	12	30	-1.67	U
18. Marital Status	1	4	7	11	7	30	- .83	U
19. Year Born	1	2	12	9	6	30	- .13	I
20. Race	2	6	3	4	15	30	-1.23	U
21. First Job Preference	8	14	6	0	2	30	1.06	D
22. Second Job Preference	2	7	14	3	4	30	- .07	I
23. Third Job Preference	1	3	12	6	8	30	- .60	U
24. Student Teaching Reports	2	2	5	4	17	30	-1.57	U
25. Present Employer's Name	8	6	12	3	1	30	.80	D
26. Present Job Title	6	8	10	3	3	30	.47	I
27. Years Experience in Present Job	7	7	13	1	2	30	.70	D
28. Previous Employers	5	8	14	3	0	30	.67	D
29. Previous Job Titles	5	7	11	4	3	30	.30	I
30. Years Experience in Previous Jobs	5	14	10	1	0	30	.93	D
31. First Locational Preference	10	6	10	3	1	30	1.00	D
32. Second Locational Preference	4	7	8	5	6	30	- .13	I
33. Highest Degree Achieved	9	10	8	1	2	30	1.00	D
34. Date File Activated Most Recently	5	6	11	5	3	30	.23	I
35. Employment Status (Unemployed, just looking, etc.)	5	14	10	1	0	30	.93	D
36. Certification Held	3	3	13	3	8	30	- .50	U
37. List of Courses	5	12	10	3	0	30	.80	D
38. Unofficial Transcript	8	13	6	2	1	30	1.07	D
39. Candidate's Page	5	6	11	1	7	30	- .03	I
40. Availability to Travel	0	1	0	0	0	1	1.00	a
41. Relocation Ability	0	1	0	0	0	1	1.00	a

[a]Not rated because of limited response received for these items.

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