

Knowledge and Skill Requirements Important for Success as a Systems Analyst

G. DARYL NORD

JERETTA HORN NORD

OKLAHOMA STATE UNIVERSITY

ABSTRACT

Continual progress has been made in the process of analyzing and developing computer-based information systems, yet no real consensus has been reached regarding the most effective tools, techniques, and methodologies for producing these systems. This article addresses this issue by identifying 1) skill attributes of successful systems analysts and 2) current and future importance of selected systems development tools and technologies. The study concentrates on four select skill groups: technical, systems, managerial, and business. A comparison of the ratings among skill groups is discussed as well as an identification of those skills which were perceived to be of significant importance. In addition, the perceived importance of selected systems development tools and technologies at the present time and five years into the future is presented along with an analysis and discussion of the most significant findings.

INTRODUCTION

Over the last 30 years, many different tools, techniques, and methodologies have been devised to assist the systems analyst in the development of computer-based information systems. Yet the experts seldom agree on the proper and correct approaches to employ during systems analysis and development. A myriad of studies has investigated the spectacular, consistent advancement in hardware and software development process. Studies have also been conducted that examined the many obstacles encountered during the development of successful information systems projects and the time and costs associated with the development process. As reported by Jones and Arnett [10], the system development life cycle (SDLC) remains the primary method for IS development in many organizations. Thus, the efficiency and effectiveness of IS design and development are crucial to the survival of an organization. Research has shown that a critical factor in systems development is the innate knowledge and skills of the systems analyst [3].

Our review located existing research that identified an assortment of skills necessary for success as a systems analyst [3, 9, 11]. To complete a systems study, the experienced analyst relies upon a background of skills and knowledge. Therefore, it is imperative that research identify the skills that analysts indicate are important for their success so

companies can provide essential training and universities can implement appropriate curriculum.

THE RESEARCH STUDY

The study was designed to detect and identify skill attributes of successful systems analysts. Therefore, the research concentrates on four select skill groups: technical, systems, managerial, and business. Former studies have attempted to identify systems analysts' behavioral skills, technical skills, and knowledge requirements with little, if any, attention to any supplementary requirements [1, 9, 14]. In addition, this study identifies the current and future importance of selected systems development tools and technologies.

The questionnaire employed in this research was divided into four sections on skill requirements, a fifth section on demographics, and a final section on technology issues of interest today and five years in the future. The four skills sections of the instrument utilized a five-point semantic differential scale, with five being very important and zero signifying no importance.

The questionnaires were sent to 500 randomly selected directors of MIS from *The Directory of Top Computer Executives*. The MIS Directors were subsequently asked to select systems analysts to complete and return the questionnaires.

THE STUDY FINDINGS

Usable questionnaires were returned by 98 analysts, providing the data for this article. Table 1 shows the characteristics of the systems analysts who responded. The profile indicates that the typical responding analyst has been in the MIS field for 11 or more years and worked as an analyst for six or more of those years.

Figure 1 reveals the mean values of the technical skills group. The results seem to indicate that the more conventional skills such as database concepts, mainframe hardware and software, and programming knowledge were perceived to be the more important technical skill requirements. Figure 2 shows that the system skills deemed most important center around activities performed during the systems design phase of the systems development life cycle (SDLC), the chief exception being the emphasis on the need to possess project management skills. As evidenced by Figure 3, the responding analysts seemed to agree that each of the specified management skills were of significant perceived importance, with the average being from a low of about 4.0 to a high of nearly 5.0. In general, communication skills and decision-making skills were rated highest. Figure 4 shows that the business

TABLE 1
System Analyst Data

Demographics	Percentages
Years in MIS Field	
0-5	3.06%
6-10	14.29%
11-15	19.39%
16-20	17.35%
Over 20	45.92%
Years as a Systems Analyst	
0-5	18.56%
6-10	28.87%
11-15	16.49%
16-20	2.62%
Over 20	15.46%

FIGURE 1
Technical Skill Means

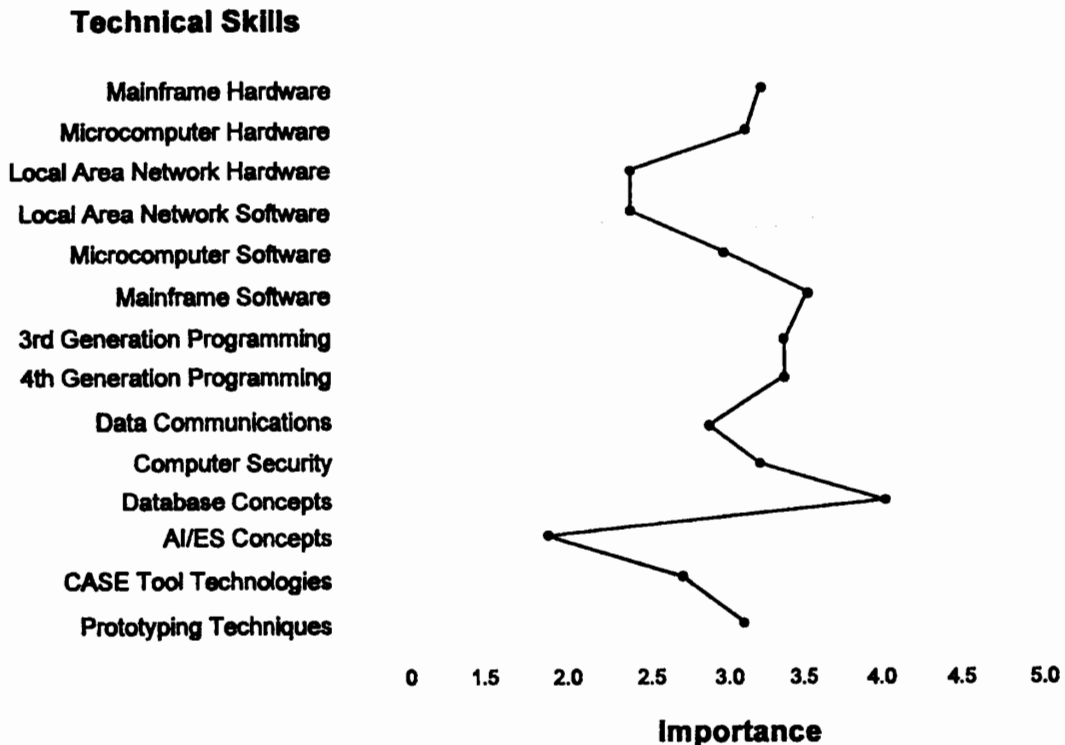


FIGURE 2

System Skill Means

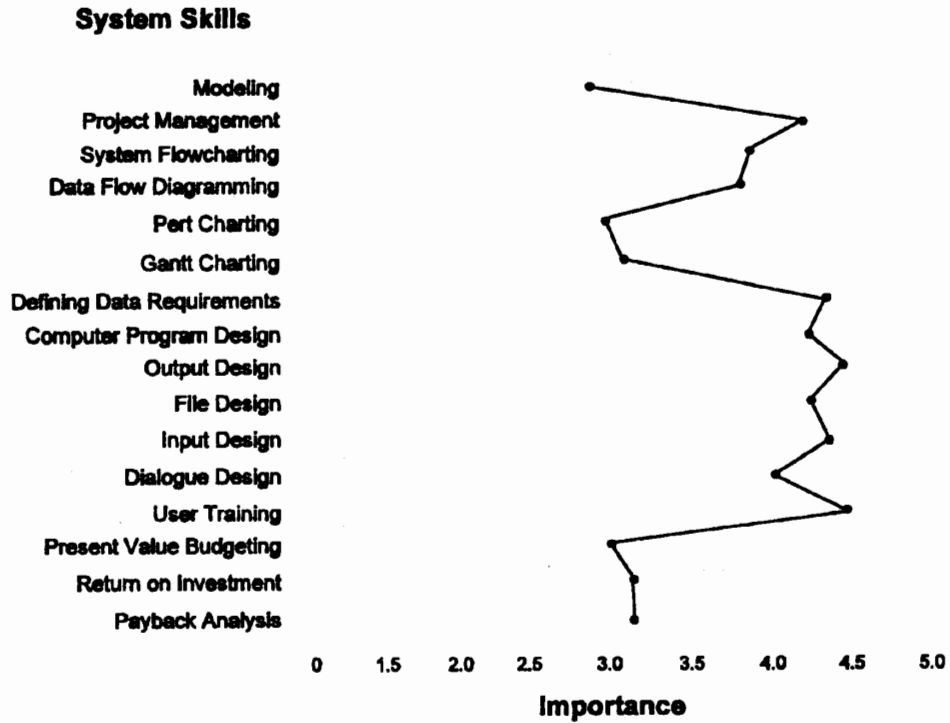


FIGURE 3

Management Skill Means

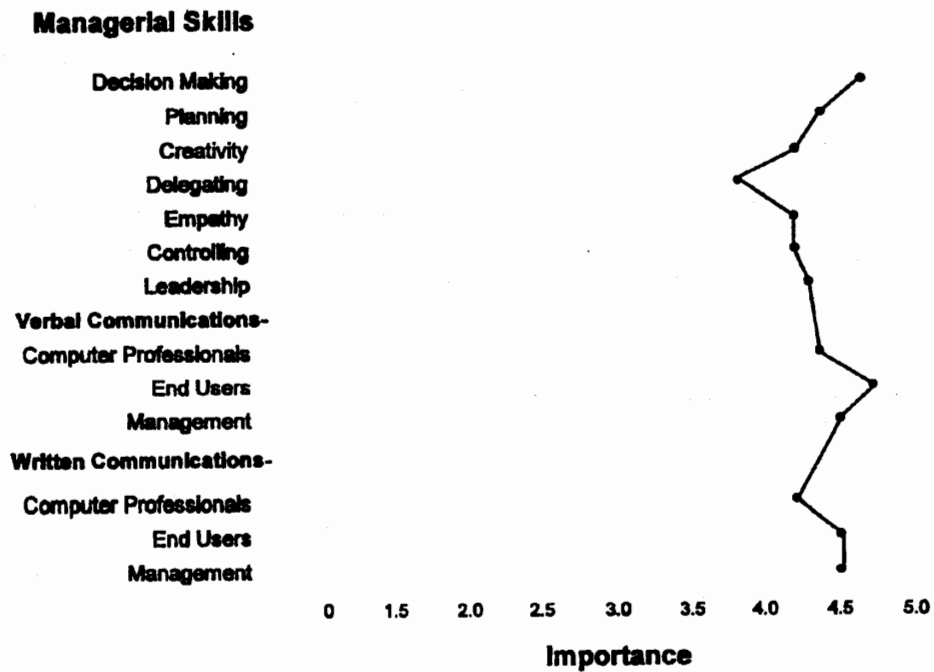
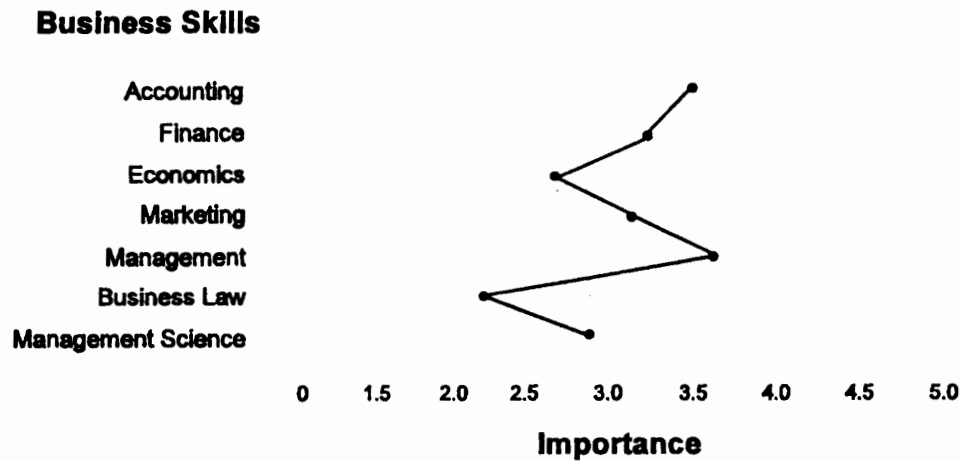


FIGURE 4
Business Skill Means



skills perceived to be of most importance were accounting and management.

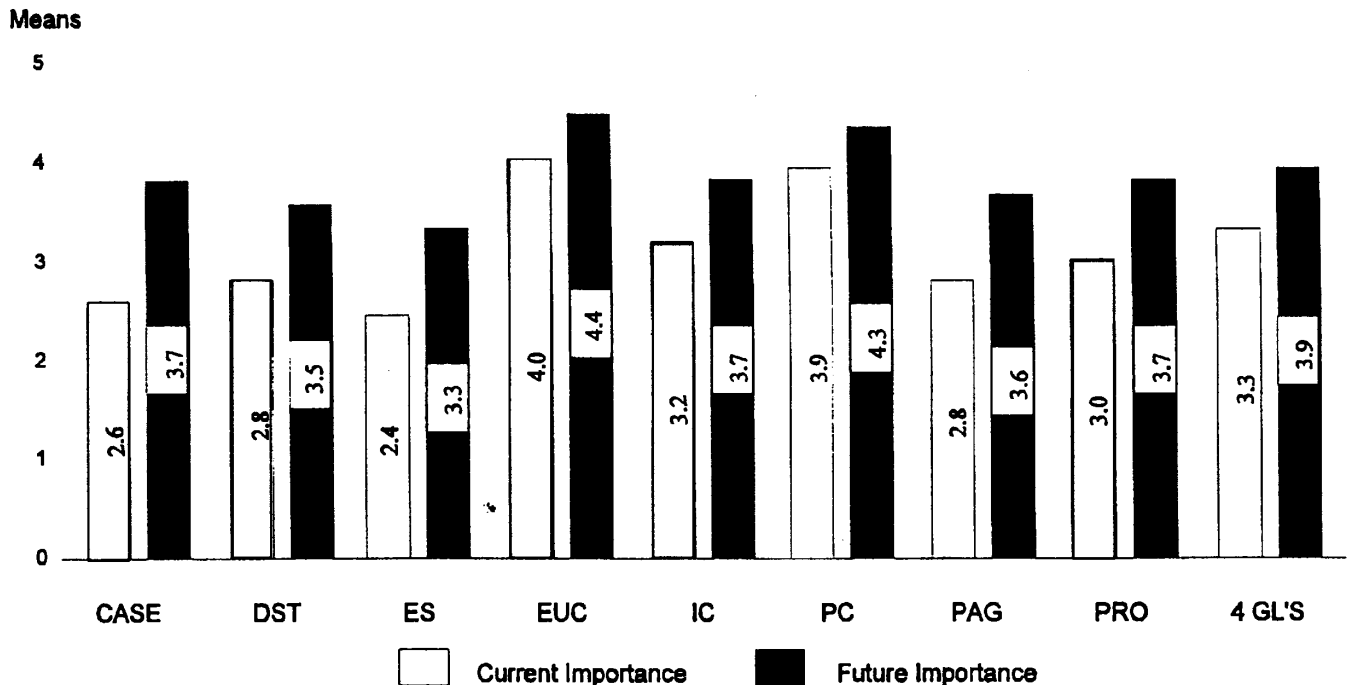
The current and future importance of selected systems development tools and technologies as perceived by the responding analysts is presented in Figure 5. The analysts were requested to indicate the current degree of importance of the specified developmental tools and technologies and the future importance of each. As shown in Figure 5, the findings reveal that analysts ranked end-user computing, fourth generation languages, and personal computing as currently being of most importance to their systems development work. The results also show that all nine tools and technologies are rated as increasing in importance to the analyst's job function in the future. Rating highest in both categories, current and future importance, were end-user computing and personal computing. This finding may be attributed to professional systems analysts finally recognizing the value and impact of the PC for systems development. CASE tools, expert system technologies, program application generators, and prototyping are perceived as increasing significantly in future importance to the respondents. The largest difference between the current and future importance of systems development tools and technologies was found with CASE tools. Surprisingly, this finding indicates that CASE tools haven't gained that much popularity at this point but analysts expect them to. Perhaps the most significant finding was that all of the development tools and technologies listed were deemed to be of importance to some extent and in all cases the level of importance is expected to increase in the future.

CONCLUSIONS

The major focus of this article has been to add to the body of knowledge pertaining to skill requirements important for success as a systems analyst. The findings suggest that analysts put the highest degree of importance on managerial and system skills. Within the system skills grouping, it is interesting to note that system flowcharting and data flow diagramming were rated about of equal importance. Since many systems development projects are related to accounting, the relatively high level of importance placed on accounting as a business skill seems appropriate. A consistency of the research results is revealed in the overall high importance level of all management-related skills and the similar importance placed on management as a business skill. As a group, technical skills were perceived to be of less importance than both system and management skills. Studies by Strout [14] and Arvey and Hoyle [1] have reported similar results in finding that, in general, behavioral skills seem more important to systems analysts' job performance than technical skills.

The significance of end-user computing and personal computing implies the necessity for Information Systems departments to increase training in PC areas for their professionals. Systems analysts appear to be indicating that many of the new tools and technologies will become even more important in systems development in the future, which signals an obvious implication for training and educating future systems analysts.

FIGURE 5
Systems Development Tools and Technologies



CASE: CASE Tools
 DST: Decision Support Technologies
 ES: Expert systems

EUC: End-User Computing
 IC: Information Centers
 PC: Personal Computing

PAG: Program Application Generators
 PRO: Prototyping
 4GL'S: 4th Generation Languages

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ABOUT THE AUTHORS

G. Daryl Nord is Professor of MIS at Oklahoma State University. He is currently Managing Director of the International Association for Computer Information Systems and past editor of the Journal of Computer Information Systems. He has served on the National Publications Committee and Member Services Committee for the Decision Sciences Institute. He has authored numerous conference proceedings and published in many journals, including the Journal of Small Business Management, Journal of Systems Management, Journal of Computer Information Systems, Computerworld, ACM:SIGSMALL, and others. Dr. Nord's research interests

are in the areas of applied artificial intelligence and expert systems, end-user computing, global information technology, and systems project development and management.

Jeretta Horn Nord is Associate Professor of MIS at Oklahoma State University. She is currently editor of the Journal of Computer Information Systems and director of publications for the International Association for Computer Information Systems. She has authored numerous proceedings and conference papers dealing with expert systems, artificial intelligence, fourth-generation languages, and executive information systems. Dr. Nord has published in the Journal of Computer Information Systems, Journal of Systems Management, Computerworld, Interface, ACM Publications, and others. She has also co-authored a Structured COBOL Programming text. Her current research interests are in the areas of global information technology, executive information systems, and end-user computing.