

The Application of Information Technology in the* Field of Home Economics in Korea

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1. Introduction

Just twenty years ago, technology of information seemed very remote from everyday life in Korea. It had previously belonged only to some special professionals or organizations. However, continuing technical developments enabled the technique to be applied more widely, utilized more easily and made available to more people. Especially, the introduction of the personal computer lead to a new era in the use of technology, particularly in terms of availability. In 1983, some Korean companies started to manufacture personal computers and that was the beginning of wide use of the technology [1]. Today, information technology is an unavoidable part of Korean society not only in business, research and education but also in daily life such as booking reservations, personal

banking and shopping etc..

2. How Information Technology Is Used

Information technology is applied in diverse forms for many different purposes. Nevertheless, the use of information technology will be described here in three main areas: communications networks, software for computing, and expert systems(artificial intelligence), since these are the areas which concern most Korean home economists.

2.1. Communications Networks

Communications networks make the sharing of information more efficient. Through various means of linkage, information can be accessed immediately and can be altered

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or read simultaneously by many people [2].

For research and teaching, about 10 Korean universities have jointed BITNET(Because It's Time NETwork). This is an academic linkage connected to more than 900 universities and research centres all over the world. These links are achieved mostly by means of LANs(Local Area Networks), Electronic Mail or FAX(FACSimile).

LAN is the linkage of personal and other computers within a limited area by high-performance cables so that users can exchange information. Some of the most complex LANs are found on university campuses and in large corporations in Korea. Such networks may comprise several smaller networks interconnected by electronic bridges.

Electronic Mail is an electronic communication medium used to send textual messages such as letters, memos, and reports. Electronic mail involves either one-to-one communication or one-to-many communication in a network. Electronic mail services are provided privately and publicly, and private electronic mail is possible in LAN, so that one user can send his files to another who is on the same LAN. Public electronic mail facilities are provided by on-line information services such as the news service KETEL provided by The Korea Economic Daily Telepress. KETEL sends information about current affairs, financial and stock market, economy and industry, trade, cultural events, weather, bulletins, editorials and so on.

A facsimile(FAX) machine scans a sheet of paper and converts its image into a coded form that can be transmitted via the telephone system. A FAX machine on the other end receives and translates the transmitted code and prints a replica of the original page. FAX has taken the Korean business world by storm. Aside from business, FAX is used very widely in collaboration with other research centres and supervising distant research students.

2.2. Application Software

With the successive improvement and enhancement of

application software for better serviceability and easier use, computer-illiteracy is evidently being reduced. Application software is the use of a computer for a specific purpose, such as laying out the text and graphics of a newsletter or printing payrolls. So far, the most frequently used applications are for database management, word processing, CAD(Computer Aided Design) and CAI(Computer-Assisted Instruction).

A database is a collection of related information about a subject organized in a useful manner that provides a base or foundation for procedures such as retrieving information, drawing conclusions, and making decisions. Software for database management provides the tools for data retrieval, modification, deletion, and addition. The most common use of the database for research and education is bibliographical service, which is an on-line information service that specializes in maintaining huge computerized indexes to scholarly, scientific, medical, and technical literature. Most Korean university libraries are using, or are on the way to using on-line bibliographical service. Also most of the academic societies keep information such as the special field, address and publications of their members in a computerized database.

Word processing programs provide the tools a writer needs to create and edit text. More advanced application software for a similar purpose is Desktop Publishing, which can merge text and graphics on the same page. There are a few Korean word processing programs which allow the input of several different kinds of characters such as Korean, English, German, Chinese, Japanese and so on. Such software has made sharing of printed information much quicker and more frequent with wider applications.

Computer Aided Design(CAD) has become a mainstay in a variety of design-related fields such as textile design, interior design, and clothing design. The benefits of using CAD software which as suited to the objects are various: it is time saving, reducing or eliminating tedious repetitious jobs, and increasing accuracy. As a consequence, a designer can concentrate on variety in designs and possibly get

better designs. A paint program is used for textile design or fashion illustration. A paint program enables users to paint the screen by switching the individual dots or pixels that make up a bit-mapped screen display on or off. When the design involves more mathematical information such as interior design or clothing pattern design, a drawing program is used. A drawing program uses object-oriented graphics to produce line art. At the moment, the Korean textile industry is undergoing change towards this new technology; otherwise they could not compete in the business anymore. With this change, Korean textile and clothing related educational institutions are trying to introduce CAD technology to the students.

Computer Aided Instruction(CAI) is the use of instructional programs to perform instructional tasks, such as drill and practice, tutorials and tests. Unlike human teachers, a CAI program doesn't get bored or frustrated with a slow student. Ideally, CAI could use sound, graphics and on-screen rewards to engage a student in learning. There are many CAI programs available for primary school, middle and high school students. However, a great deal of this software is badly designed: the software is stilted, boring, and emphasizes drill and practice. Home economists who are specializing in child studies are expected to contribute their professional knowledge in developing more adequate and interesting CAI systems.

2.3. Artificial Intelligence(A.I.)

A.I. is a computer science that attempts to improve computers by endowing them with some of the characteristics associated with human intelligence, such as the capability to understand natural language and to reason under conditions of uncertainty.

The A.I. technology is employed to develop expert systems. This is a computer program containing much of the knowledge used by an expert in a specific field that assists nonexperts as they attempt to cope with problems. Expert systems contain a knowledge base that expresses

an expert's knowledge in a series of IF...THEN rules and an inference engine capable of drawing inferences from the knowledge base. The system engages you in a dialogue, prompting you to supply information needed to assess the situation. After the information is provided, the system's inference engine consults the rules and attempts to come to a conclusion. Most expert systems express such conclusions with a confidence factor, ranging from speculation to an educated guess to a firm conclusion.

Creating an expert system is more difficult than it appears. Research efforts now are focused on creating expert systems capable of acquiring the necessary knowledge without so much assistance. Expert systems that rely on IF...THEN rules are severely limited in their performance capabilities. Owing to their performance limitations, rule-based systems are not likely to displace human professionals.

However, expert systems have proven commercially viable for limited applications. For example, some house equipment is manufactured to be operated with the assistance of artificial intelligence. Rice cookers are programmed to heat, boil and simmer at various temperatures for various length of time depending on input from the user. Similarly, washing machines operate with the instructions from the knowledge base which defines water temperature, strength of water movement, washing time, tumble drying time and so on, depending on the material, finishing, and construction of the clothes.

3. How Korean Home Economists React to Information Technology

Korean home economists's activities responding to the impact of information technology can be understood in four aspects. The first aspect is concerned with observation of the changes in family life which were brought by information technology, and consequently investigate ways to cope with change. For example, the research "A Study on Credit Card Use Pattern with Seoulites" was carried out to examine effects of the credit card, which is one of

the result of the on-line communication system [3]. Other reserach investigated the effects of information technology on level of consumer information, children as consumers, and consumer behavior in household equipment utilization [4, 5, 6].

The second aspect is the use of Information Technology as a tool for research and education in home economics. As home economics is the study of real life, quite often multi-layered large database, multiple variables and highly specialised statistical analysis are required for research in home economics. These tasks can be done more accurately as well as quickly using modern technology in appropriate ways. For instance, for the research "A Study on the Consumer Complaining Behavior", the data were analyzed by the statistical methods of frequency, percentage, ANOVA, Duncan's Multiple Range Test, X^2 test, Pearson's correlation and multiple regression analysis [7].

The third aspect is more active involvement of home economists with technology. For the development of software with a special purpose, home economists can bring their expertise and information technology together. Recently, various softwares for generating, adjusting, manipulating and grading garment patterns have been developed. These developments were possible because of deep and sound understanding in both clothing and computing [8, 9, 10, 11].

The last aspect is the professional contribution of home economists towards developing expert systems which are to be beneficial to family life and other areas of home economists' interest. Home economists can contribute to building the knowledge base of the expert systems by offering their expertise. As a good example, some of the Korean home economists have developed expert systems for Nutrition Counseling, Health Care, Menu Planning and Quantity Food Service Management with the knowledge base which would not be possible without their efforts [12, 13, 14, 15, 16].

4. Conclusions and Prospect

Information Technology is not a matter of choice, it is there for us. Yet, it seems that the Korean home economists are not fully aware of the significance of the roll and impact of Information Technology. However, some of the Korean home economists have started to react in the various ways described above in order to utilize technology proactively and not to be face change passively. Such reactions is sure to continue and to move forward along with technical evolution. What home economists have to think about is how to use technology for family welfare. The technology can be used as a tool for saving energy, time and material etc., but technology cannot be any use for improving the quality of life in terms of mental, emotional, moral and psychological welfare without the determination of using technology in right direction. That might be the role of the home economists in Korea today.

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