

# THE IMPACT OF DESKTOP PUBLISHING TECHNOLOGY ON SIX MAJOR PRINTING FIRMS IN KUWAIT

**\*Dr. Nabil A. Al Jerdi**  
**Muwaffaq A. Majid**

## **Introduction**

Radical changes are taking place in the graphic-art industries as new technologies emerge. The application of microprocessors, lasers, digitization, screen-based technologies, and telecommunications are among the many innovations that are bringing about these changes. Today, many printing and publishing enterprises in the West have shifted or are in the process of shifting production to a hybrid environment based on desktop publishing systems (DTP). Electronic image processing, digital color separation, electronic page composition and advanced type control have become media of integration by passing the traditional mechanical stages of production.

The prepress production area in Kuwait has its own social structure, along with a set of values, procedures, and traditions, some relating to design and Arabic language. These social and cultural factors do not easily change; instead, when a new technology such as DTP is introduced, it is shaped by the existing structure and absorbed by it. The new technologies are a special challenge to Kuwait, since they originate in the West and often require highly sophisticated personnel and infrastructures. This study addresses this issue through an investigation of the technological impact of DTP systems on prepress employees in six major printing firms which are located on the Press Avenue in Kuwait - Arab times, Kuwait Times, Al-Anbaa, Al-Qabas, Al-Seyassah, and Al-Watan.

---

\* Assistant professor, Mass Communication, Kuwait University.

## **Background**

The political, social, and economic development of Kuwait during its march since independence has had a positive impact on the printing industry. The graphic arts outlets in Kuwait have become large informational and commercial establishments and are represented by the printing and publishing industries. The commercial printing industry is a very important and expanding part of Kuwait's economy. The fast, huge printing presses are no longer satisfied with printing only their daily newspaper. They have embarked on parallel lines, carrying out all the functions of commercial printing presses. Kuwait now publishes six daily newspapers; four in Arabic and two in English. Kuwait's press is not confined to the officially licenses newspapers and magazines. There is also a wide range of private magazines published by organizations, establishments, companies, banks, syndicates, and federations. To cope with the production of this large number of publications, there are now 150 printing firms, 57 publishing houses, 49 graphic design studios, and 11 color service bureaus (Arab Business Machines 1994, p.10).

## **Objectives of the Study**

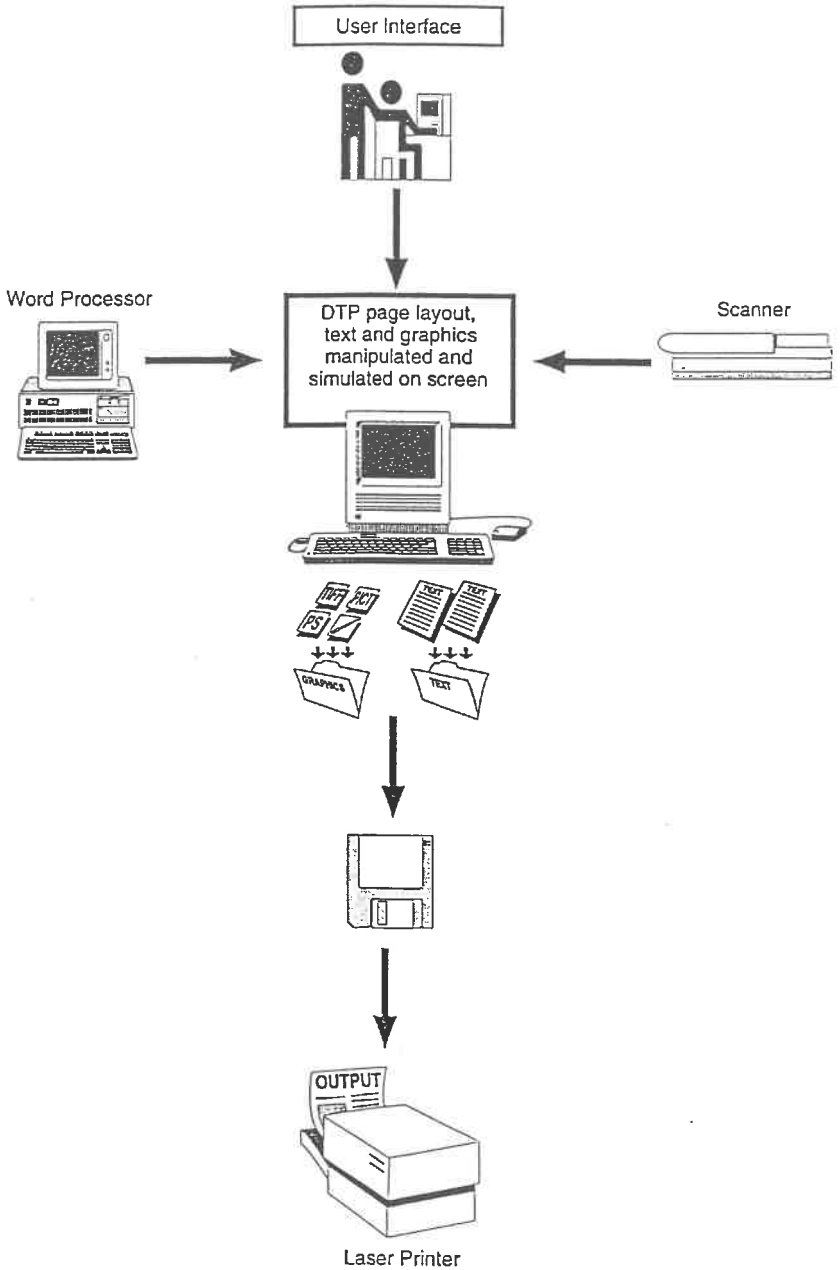
With the flexibility and advanced capabilities that computer technology now offers, questions arise as to how DTP systems are used in prepress operations in the printing industry in Kuwait and what their impact will be. This study seeks to answer these two major questions:

- How is the adoption of DTP systems affecting the processes involved in prepress operations?
- How is it affecting the people involved in the process - their jobs, their responsibilities?

## **A Brief Review of DTP Systems**

There have been several waves of change moving through prepress tech-

Figure 1  
Desktop Publishing Work Flow



nology during this century, and desktop publishing represents the fourth and most recent wave of revolutionary changes in this area (Speirs 1993, p.6). The changes caused by desktop publishing, in fact, have been so dramatic, that they have resulted in a redefinition of the entire structure of the prepress industry (Pira International 1994, p.16). Desktop publishing means essentially the application of microcomputers and generalized software in the computerization of such prepress functions as typesetting, page design and layout, artwork manipulation and camera-ready copy production - all done on a computer system which fits on a desktop (Figure 1). The term itself has been objected to by some as not only inelegant, but actually inaccurate since it doesn't really enable people to "publish" in the strict sense that publishing also means distribution, promotion, and other ancillary activities.

The roots of desktop publishing go back to the 1950s and 1960s with the marriage of photocomposition and computers. That first step was an attempt to use typesetting equipment linked with computers to set type; then, later, the system was expanded to format or lay out pages, a technique referred to as pagination (Mortimer 1994, p.24). Since that time, the use of computer technology in publishing print materials has developed at a rapidly accelerating pace.

The computer that helped launch the PC-based DTP industry was the Macintosh (Apple Olympia Expo, 1994). The introduction of the Apple Macintosh computer in the 1980s was a giant step toward desktop publishing. The Macintosh was developed as a graphics-oriented machine and as part of an integrated hardware and software system. In fact the term desktop came into use in 1984, about the same time as the creation of Aldus Corporation by Paul Brainard (Aldus Corporation, 1994). Aldus was formed as the basis for developing a program that would combine the functions of a low-cost microcomputer with a laser printer to produce camera-ready copy. The result was a program called PageMaker,



which was marketed as a desktop publishing program. In the ten years since then, not only have new programs been introduced to the market almost every month, but new versions of existing programs have been introduced as well. In addition to PageMaker, there are other page design programs and programs which manipulate typefaces, alter photographs, draw, and paint. The hardware required to run all this software grows increasingly more complex, faster and more powerful (Campbell 1992, p.36).

From the beginning of the digital revolution, prepress specialists have been hoping the new technologies would increase productivity by eliminating production steps. Desktop and PostScript technologies helped by allowing the output of both halftones and typesetting on final film (Bruno 1992, p.22). The next step may be the elimination of films and plated themselves. Eliminating steps in the printing process - whether proofs, films, or platemaking - has been the focus of intense activity in the past several years (Technical Association of the Graphic Arts 1993, pp. 64-67).

### **Technological Changes in the Publishing Field**

The computer first nudged its way into the creative communication process in the early 1960s when the electronic word processor was introduced to the publishing industry (Luna 1992, p.11). Initially, these machines were used to enhance typesetting and to eliminate manual spacing of type. Before long, word processors were on reporters' desks, allowing them to perform the original and final keyboarding of documents. Editors could edit "on screen" and type was sent electronically to typesetting or large computers equipped with pagination software. This eliminated keyboard operators and typesetters and launched the publishing industry into a technological revolution (Seybold 1991, p.41). Type now goes from writer to prepress negative via computer. With all these technological innovations, the creative process remained relatively untouched until a plethora

of writing software flooded the market. Programs now correct content, context, stylistic convention, readability levels, and spelling. Important facets of the writing-editing-thinking process, freeing the author to spend more time on other phases of the creative process (Society of Typographic Designers 1993, pp. 12-13).

### **Technological Changes in the Applied Arts**

The commercial art field attached to the publishing industry was the first of the visual arts fields that opened its doors to computer-aided design (Vince 1992, p. 33). Unlike most studio artists, graphic designers have had more time to acclimate to the changing innovations associated with the print media. Because designers were witness to changes in the print industry, they are better equipped for the transition (Walker 1992, pp. 123-132). The design industry is currently undergoing the same kind of technological revolution that publishing houses experienced in the 1960s and 1970s. Desktop design, photograph manipulation, graphics and high-end prepress software have replaced many of the tools and drawing tables in studios. Design houses worldwide are scrambling to stay abreast of the flood of hardware and software innovations. Packaging design firms are using 3-D programs for design and presentation work, enabling both client and designer to explore many possibilities (Wilson-Davis 1991, pp. 53-75). The drafting table has been replaced with a hard disk full of typesetting, design, multimedia, and illustration applications. The designer is becoming a broad-based multimedia resource and is shifting to a different level of communication with clients. Iagemaking disciplines are enjoying an evolution of epic proportions (White 1990, p.73).

As the design field shifts from specialized to generalized it will evolve from a service industry to a power in the channels of communications, and possibly to a leadership role in marketing and promotion (Young 1993, p.22). The de-

signer's involvement with the computer is an integral part of this movement. New designers will require computing skills to step into the changing field. Universities can no longer teach traditional design and production methods to prepare students entering any of the visual communications industries (sig-graph 1993, P.107).

### **Impact on the Creative Process of Design**

The computer is now one of the major devices used in conceptualizing, developing, and producing materials for both the print and electronic mass communications media (London College of Printing 1993, p.33). In addition, it has become the tool/medium of choice for designers, artists, and of particular interest to advertising industry art directors (XY Vision 1994, pp. 16-18).

Just as the computer has taken over some perfunctory duties in writing, the image-generating station can take over calculations for the designers and artist.

With the use of software, the computer can, in terms of process and methodological approaches, think (Vince 1992, p.36). In this way it enters into a symbiotic relationship with the artist, allowing him or her to spend more time on high-end tasks such as designing, defining, and refining a given image and/or concept. The storage capacity of the machine allows an artist to make many changes in a work, saving each change separately, thereby offering a more relaxed approach to decision making. The artist can save many variations on any theme, be they color, scale, or texture. This flexibility will have a far greater impact on the artist than the word processor has had on the writer, since the writer usually ends with one main document and the artist can end with many variations of a particular image (Feldman 1992, p.116). Researchers expect that this will significantly alter the design process. With increased flexibility in the end stages of production, the artist might well delay or lengthen the final decision making processes that generally occur earlier in the creative stages. Thus, the creative

processes may experience shifts in working energy expended, experimentation, and even creative play (Computer Art & Design 1991, p.52).

## **Methodology**

The purpose of the study was to investigate the impact of desktop publishing technology on six major printing firms in Kuwait - Arab Times, Kuwait Times, Al-Anbaa, Al-Qabas, Al-Seyassah, and Al-Watan .. and to identify the personal and job-related factors that affect DTP operators in these firms. The Study sample of 150 cases (N=150) included prepress employees involved with computerized prepress systems as typesetting and page layout and design. In order to obtain the necessary personal data, the investigators designed a self-administered questionnaire (Appendix A). The survey questionnaire was a subject information inquiry which was designed to obtain basic information from prepress employees in six printing firms in Kuwait. The basic data of these DTP operators provided a guide to their overall work conditions and specific experiences involving desktop publishing technology. The first part of the survey consisted of items on personal computer ownership, computer-based prepress operation, hours per week in prepress operation, hours per week in prepress work, tenure, and years in computer education, mechanical experience in prepress production, experience in computer training, workplace conditions, present job description, the changes in staff structure and responsibilities resulting from using DTP, and the impact of DTP systems on the process of production and the design of their publications.

## **Data Analysis**

Descriptive statistical analysis was employed in this study. Multivariate (frequencies, mean, and percentages) analysis was used to describe and explain the impact of DTP technology on employees in six printing firms in Kuwait. Appendix B includes a summary of all 13 tables.

Table (1) shows that 92 percent of all DTP operators are males while only 12 percent are female. Most of the females work in the typesetting area while males handle page makeup and design. Table (2) shows the age distribution of DTP operators. As DTP is based on computer technology which attracts young people, 78 percent of all operators are between the ages of 21 to 25 (who are considered computer literate). Only 2 percent of DTP operators are above the age of 50. Table (3) shows that the majority of operators are high school graduates, with only 11 percent having college degrees. Table (4) reveals that 35 percent of all operators have spent 6 to 10 years in the printing industry. Table (5) shows that 63 percent of all employees do not have a personal computer at home while only 37 percent own a PC at home. Table (6) reveals that a majority of 89 percent did not attend any DTP courses while 11 percent had some formal instructions in DTP. Table (7) shows that only 35 percent had experience with traditional prepress operations (mechanicals) while the majority of 65 percent had no experience with mechanicals. Table (8) reveals that 96 percent of all employees do not belong to any professional organization regarding DTP while the remaining 4 percent have some kind of membership with professional DTP organizations outside Kuwait. When asked whether DTP systems make their jobs more accurate, all respondents gave positive answers as shown in the table (9). Similarly when they were asked whether there is a visible effect on design and production due to the use of DTP systems, 93 percent noticed a visible effect as opposed to only 7 percent who did not detect a visible effect as shown in table (10). Table (11) shows that the majority of 73 percent were not involved in purchasing decisions of DTP systems while 27 percent were involved. When asked whether they noticed any changes in staff structure since DTP systems were introduced in their firms, 86 percent noticed changes in staff structure as opposed to 14 percent who did not notice any changes, as shown in table (12). Table (13) shows the reasons

for installing DTP systems; 63 percent of all respondents thought that the main reason for installing DTP systems was to save time, 21 percent thought that the main reason was to improve quality of publication production while 16 percent thought the reason for installation was to increase profit.

### **Discussion**

As computer users become more sophisticated, their needs for training become more specific. Training for DTP is very specific. Challenges exist if users are to exploit and operate the new technology to best advantage. The study shows that the graphics communication industry in Kuwait is already experiencing a shortage of skilled personnel in the prepress area of production.

Computer technology is playing an important role in defining the scope of today's prepress employee and microcomputers are addressing the needs of both the creative and practical tasks of DTP operators. A decade ago, employees had little exposure to computer graphics as early systems were far from user-friendly. But during the intervening years, the tidal wave of this technology washed over the graphic arts industries, as powerful computer tools enable prepress employees to gain control over production. Design, typesetting, and page layout can all be created in the same place by one person or group. As the study shows, the advantages of DTP systems are quicker turnover, less chance of errors, cost reduction, and a more personalized involvement with the actual product.

Many DTP operators willingly accept the computerization of publication production but balk at high-tech interface with the creative, conceptual phases of the prepress process. However, the development of computer technology, both hardware and software, as well as the expansion of the creative values and standards have led to the development and consolidation of a visual language unique to computer generated images. This was clear in the study as most DTP operators

found DTP systems easy to operate. The microcomputer has become an ideal tool for accessing, organizing, manipulating, visualizing, and evaluating information relative to prepress production.

The computer configured as an artist's workstation is a powerful tool, and a catalyst for visual thinking. Although it is viewed as a tool, it can significantly influence the conceptual creative process. What used to be solid and permanent artwork is now reduced to a flickering collection of dots on a screen. To the computer, artwork is not physical object but an idea which opens limitless possibilities for creative interaction. Problem solving is altered because visual material is not fixed, but exist as changeable numeric data. This data can be acted upon by both the hardware and the software and until a piece is fixed on paper or film, it is subject to change, yielding a flexibility that is unparalleled in any other medium. This phenomenon is represented in the study as most employees for felt that DTP systems offer the user an opportunity to examine the creative act as a multidimensional process, in which decisions can be interrelated in such a way that for more fascinating possibilities and solutions begin to emerge.

Unlike previously introduced tools or media, the computer possesses its own power and actually performs many rudimentary hand manipulations, thus leaving the user freedom and time for other tasks. Given this time, is the user skipping parts of a creative cycle, or is he or she using the time to be more creative? What actually transpires cognitively when he or she uses a mouse, stylus, or keyboard instead of a brush? Is he or she moving away from the mediative sport of blending, shading, smelling, and wearing paint? Educators must understand these dynamics, because the technological revolution has become a permanent part of visual communication, and teachers must be prepared to instruct at the edge of it, not simply record it as history.

Page layout is an area that was given early attention by desktop technology

because it became apparent that this was the main application the graphic arts industry wanted most. Electronic page composition has eliminated the need for labor-intensive and craft-oriented tasks of many graphic design studios. One of the most tedious jobs the designer performs is 'keylining' a piece. Keylining is the process in which the type and artwork are pasted to a board, colors are separated by 'cutting' overlays, and instructions are provided for the printer. Desktop publishing workstations have been extremely beneficial in assisting the prepress employee in completing this task. The conventional 'paste-up' or 'mechanical' artist is on the way out and 'x-acto knives' and 'waxers' are replaced with computer tools in which the prepress employee can move the elements around and alter the size and position of the image. A monitor shows in full color what the actual page will look like. When completed, the page can be outputted fully 'keylined'. The DTP operator can create an electronic composition for the planned design on a computer, often in much less time than using traditional methods. Design alternatives can be created and changes can be easily made by altering the original. The study shows that this saves time and minimizes the amount of material handling. Last minute changes are less expensive and often much easier to accomplish.

As desktop technology is completely undercutting the pricing for high quality color work, proofing systems have improved in quality and are producing closer process color matches to press sheets than ever before. Advertising agencies are using proofing systems for ads in which they electroically transmit the rough concept to the client for viewing and critiquing, which proved to be useful in the conceptual stages of the project. Color management software can now ensure that images brought in from a variety of sources are reproduced faithfully. The fruits of the industry's labor regarding technology and standards for matching artwork to proofs to press sheets are paying off after many years of research, development, and operator training.

Typography is visual engineering, and typographic design is the art of using type effectively. Communicating with type depends on an acute understanding of the basic visual elements - space, shape, form, size, color, etc. A designer is responsible for choosing and sizing a type style that will enhance the visual concept without compromising the informational content of the message. Until the 1980's, typeface design was controlled by a small number of type foundries like Linotype and Monotype, the big names from the 'hot-metal' era. Typographical traditions that evolved centuries ago now appear to be under threat from desktop publishing technology. The democratization of type design and font manufacturing has offered the user an incredible variety of fonts. A key milestone in the evolution of electronic type is 'Postscript', the page-description language to control imagesetters and laser-printer output. Postscript fonts are defined as 'Bezier' curves, a scalable mathematical outline that can be reproduced at different resolutions and sizes while maintaining a high quality output.

The richness of the Arabic language is reflected not only in the spoken word but also in its styles of letterforms. The Arabic script has contributed to Arabic culture through calligraphic art. In fact, the Arabic scribe still holds a high social status and an important place in Arabic graphic communication. In the 1960's Linotype and Monotype had made available a range of Arabic typefaces for metal setting. During the 1980's, third party producers of Arabic typefaces began to appear using digital technology. The thrill of the latest technology in Arabic type digitization is the return to traditional hand-lettered styles which combines calligraphy with element of drawing. Examples of such typefaces include the traditional cursive script such as 'Naskh', 'Thuluth', 'Kufi', and 'Diwani'. The growing sophistication of electronic publishing design and reproduction gave way to a growing number of Arabic publishing programs. Notable was the introduction of an Arabic version of Letraset's 'Design Studio' called 'Al Nashir Al Sahafi' de-

veloped by Diwan, a London-based company. Unfortunately, the spread of software piracy in the Arab world makes it difficult for font and software developers to introduce new products. Unless the right of font designers and software developers can be protected by legislation and education, then this time of maximum opportunity for Arabic types will dissipate.

The advances in computer technology that are so apparent in the most advanced industrialized countries have not left the Press Avenue in Kuwait unaffected. A good indicator of the prosperity of the graphic arts industries throughout the country is the adoption of computer graphic workstations by a number of printing houses. Nowhere has this trend been more apparent than in the Press Avenue where printing economies have spurred tremendous leaps in computer technology. As a successful technology evolves, more and more companies acquire it. But not all who could use it do so at once. Diffusion follows an S-shaped path through the economy: the innovation is taken up slowly at first, then by a rapidly increasing number of companies, finally by a few laggards. Because innovation is often embodied in new investment, technological advances will happen most quickly in companies that are expanding fastest. Within these companies, the early buyers, predictably, will be those who see the most profit in the new product or process. [They also tend to be large companies, able to afford the financial risks of being pioneers]. Though the technology is by then proven, some firms still hang on before installing it until its cost has fallen enough to make the investment worthwhile.

There are added burdens upon DTP operators, as they must acquire both depth in a specialized visual discipline, and a general understanding of digital systems. User interface is a central issue for DTP operators who have been turned off by their first encounter with a computer system. Common frustrations are the inflexibility of the tools; the complexity of their use. Another curse is the

incompatible nature of not only operations but also the English language since these systems are Western products. Conventional graphic arts education in vocational centers in Kuwait has functioned well in providing the requisite visual skills, but has little experience in computer graphics education. Accordingly, it is currently in the hands of the individual in these printing firms to independently acquire some level of familiarization with aspects DTP programs, while the mainstream educational institutions come to grips with these issues.

Sophisticated electronics have made it virtually impossible for most printing firms to service their own equipment or to even find qualified technicians to serve as full-time technical support staff. Most enterprises have resorted to expensive service contracts with equipment vendors and still face the inconvenience of not having a service representative available to them in a timely fashion when problems occur. While all desktop publishing users require service at some point, the equipment and products of these systems are for the most part reliable. Manufacturers of these systems have the resources for research and development, testing, and successfully implementing their technology.

There is no limit to the microcomputer's potential as a powerful creative production tool. The computer, of course, does not replace intelligence or ability, it promotes and elevates new abilities and create new means of expression. If the printing firm approaches DTP systems with an open mind, then it can go beyond the preconceived notion that a computer is solely a production tool and use it to fulfill a wide range of diverse and creative tasks in production. Computer technology need not be financially prohibitive. The potential user needs to decide on the priorities for use and purchase a DTP system that best serves those needs. Most systems are modular in composition and peripherals can be added as finances permit and the need merits.

What does the future hold for a communication industry which has fed off the

freshness and vitality of new computer oriented individuals? How well will the computer graphics art of today hold up against the supercomputer graphics art that will surely exist in the next century? No matter how these questions are answered, the designers who are pioneering this rapidly expanding field are establishing a new direction that will fundamentally alter the way graphic art is accomplished.

### **Conclusions and Recommendations**

This study concentrated on the perceptions of DTP operators regarding a variety of job-related and workplace factors. Further research, however, could explore the perception of managers, trainers, and supervisors in regard to these work-related characteristics to determine the extent their perceptions match or differ from that of DTP employees. In addition, it is important to study employees performance who have worked with other computer technologies in the graphic-art industry, such as scanners, controllers, visual data terminal, printing machines, and teleprinters. These computer technologies are prevalent and important job-related factors that influence employees' performance. Thus, although the present findings of this study should be useful to both employers and employees in the graphic arts and other organizations to improve and maintain workers' job satisfaction and productivity levels, more refined theory and expanded research may be necessary to clarify certain ambiguous and problematic areas.

The study is potentially important because it combines theoretical conceptualization and practical fieldwork. It will offer senior managers in the graphic communication industry in Kuwait a keen awareness of the impact and potential uses of electronic publishing systems. It is hoped that the set of recommendations provided by the study will assist managers and directors in private and public sectors in Kuwait who choose to adopt electronic publishing systems to plan their

projects based on the new technology. The study will also contribute to the literature on technological change in the graphic arts industries by providing researchers, educators, and distributors with a through understanding of the factors that influence the adoption of computer integrated publishing systems in developing countries.

**APPENDIX A**  
**DTP OPERATORS SURVEY**

For purposes of this questionnaire, "Desktop Publishing" means the computerization of many of the prepress operations (such as typesetting, page layout, production of camera-ready copy) involved in publication production.

Please answer all questions by ticking the most appropriate box or completing the blanks.

1. Sex

Femal

Male

2. How old are you?

..... years old.

3. What is the highest level of schooling you have completed?

Elementary

Intermediate

Secondary

Diploma

College/University

Graduate school

4. Do you have a personal computer at home?

Yes

No

5. Is it easy for you to operate your desktop publishing system?

Yes

No

--

6. Do desktop publishing systems help you to do your job more accurately than before?

Yes

No

7. How many hours a week do you use desktop publishing systems?

1 to 5 hours

6 to 10

11 to 15

16 to 20

21 to 25

26 to 30

31 to 35

36 to 40

Over 40 hours

8. How long have you been working in this firm?

1 to 4 years

5 to 8 years

9 to 12 years

13 to 16 years

17 to 20 years

21 to 24 years

25 to 28 years

Over 28 years

9. How long have you used desktop publishing systems in your job?

6 months to 1 year

2 to 3 years

4 to 5 years

- 6 to 7 years
- 8 to 9 years
- Over 9 years

10. Please place a checkmark by all the following prepress operations handled on computers in your firm?

- Typesetting
- Design
- Page make-up
- Colour separation
- Direct-to-plate
- Direct-to-print

11. Did you work with mechanicals in the graphic arts field before?

- Yes
- No

12. What do you work in your present job?

- Typesetting
- Design
- Colour separation
- Page layout
- Other.. (specify)

13. Since the introduction of desktop publishing systems in your firm, have you noticed any changes in the prepress staff structure and responsibilities?

- Yes
- No

14. Did you required any retraining when your firm added desktop publishing systems?

- Yes
- No

--

15. If you require training on computer, how did you receive this training?

- Dealers and vendors
- Training consultants
- Attending courses
- Books or videos
- Reading manuals
- Other.. (specify)

16. Are you involved in the purchasing decisions for your firm's desktop publishing systems?

- Yes
- No

17. What are your predictions for the future of desktop publishing systems in Kuwait?

.....  
.....  
.....

18. Do you have anything you would like to add?

.....  
.....  
.....

**Thank you for your assistance**

**Table 1**  
**Frequency and Percentage of Male/Female DTP Operators**

Sex	Frequency	Percentage (%)
Male	138	92
Female	12	8
<b>TOTAL</b>	<b>150</b>	<b>100</b>

**Table 2**  
**Age Distribution of DTP Operators**

Age Group	Frequency	Percentage (%)
Under 20 years	15	10
21 to 25	78	52
26 to 30	31	21
31 to 35	12	8
36 to 40	9	6
46 to 50	3	2
Over 50 years	2	1
<b>TOTAL</b>	<b>150</b>	<b>100</b>

Table 3  
Level of Education Attained by DTP Operators

Level of Education	Frequency	Percentage (%)
High School	81	54
Diploma	33	22
College Degree	11	7
Post Graduate	3	2
Continuous Education	22	15
<b>TOTAL</b>	<b>150</b>	<b>100</b>

Table 4  
Number of Years DTP Operators Have Spent in the Printing Industry

Years	Frequency	Percentage (%)
Less than 5 years	5	3
6 to 10	52	35
11 to 15	25	17
16 to 20	22	15
21 to 25	20	13
26 to 30	14	9
31 to 35	9	6
36 to 40	3	2
Over 40 years	0	0
<b>TOTAL</b>	<b>150</b>	<b>100</b>

**Table 5**  
**Frequency and Percentage of PCs Owned by DTP Operators**

<b>PC Ownership</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Yes	55	37
No	95	63
<b>TOTAL</b>	<b>150</b>	<b>100</b>

**Table 6**  
**DTP Courses Attended by DTP Operators**

<b>DTP Courses Attended</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Yes	16	11
No	134	89
<b>TOTAL</b>	<b>150</b>	<b>100</b>

**Table 7**  
**DTP Operators Experience with Mechanicals**

<b>Experience with Mechanicals</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Yes	52	35
No	98	65
<b>TOTAL</b>	<b>150</b>	<b>100</b>

**Table 8**  
**Professional Organizations Membership**

Membership	Frequency	Percentage (%)
Yes	6	4
No	144	96
<b>TOTAL</b>	<b>150</b>	<b>100</b>

**Table 9**  
**DTP Systems Job Accuracy**

Job Accuracy	Frequency	Percentage (%)
Yes	150	100
No	0	0
<b>TOTAL</b>	<b>150</b>	<b>100</b>

**Table 10**  
**Visible Effect on Design and Production**

Visible Effect	Frequency	Percentage (%)
Yes	140	93
No	10	7
<b>TOTAL</b>	<b>150</b>	<b>100</b>

**Table 11**  
**DTP Operators' Involvement in Purchasing Decisions**

Involvement in Purchasing Decisions	Frequency	Percentage (%)
Yes	40	27
No	110	73
<b>TOTAL</b>	<b>150</b>	<b>100</b>

**Table 12**  
**Changes in Prepress Staff Structure**

Noticed Changes	Frequency	Percentage (%)
Yes	129	86
No	21	14
<b>TOTAL</b>	<b>150</b>	<b>100</b>

**Table 13**  
**Reasons for Installing DTP Systems**

Reasons for Installing	Frequency	Percentage (%)
Improve Quality	32	21
Increase Profit	24	16
Save Time	94	63
<b>TOTAL</b>	<b>150</b>	<b>100</b>

## REFERENCES

- Aldus Corporation. (1994). Aldus FreeHand: design and illustration software. Edinburgh, UK: Aldus Europe Ltd.
- Apple Olympia Expo. (1994). MacUser Seminar, (October 1994), London, UK: MacUser.
- Arab Business Machines. (1994). Desktop Publishing Seminar (15-17 February) p.10 Kuwait: Al-Sane Group Co.
- Bruno, M. (1992). "Digital Colour Printing". Newsletter of the Technical Association of the Graphic Arts, (105):22.
- Campbell, A. (1992). The Mac Designer's Handbook. p.36. London, UK: Harper Collins Publishers.
- Computer Art and Design Annual. (1991). Print, 45(7):52.
- Feldman, T. (1992). Electronic Publishing Glossary. p. 116. London, UK: Chapman and Hall.
- London College of Printing & Distributive Trades. (1993). Professional Seminar. p.33 London, UK: Professional Development Unit, LCPDT.
- Luna, P. (1992). Understanding Type for Desktop Publishing. p.11. London, UK: Blueprint Publishing / Chapman and Hall.
- Mortimer, A. (1994). Colour Page Make up Systems for Publishers. p.24. Leatherhead, Surrey, UK: Pira International.
- Pira International. (1994). Proceedings of the Third Design conference (April 1994). p.16 Leatherhead, Surrey, UK: Pira International.
- Siggraph. (1993). "Education Committee for Computer Graphics Activities". Computer Graphics, 27 (1):107.
- Seybold, J. (1991). The Fourth Wave: Publishing Joins the Computer Mainstream. p.41. California, USA: Wadsworth Publishing Company.
- Society of Typographic Designers. (1993). Typographic. pp. 12-13. London, UK: Society of Typographic Designers.
- Speirs, H. (1993). Introduction to Printing Technology. p.6 London, UK: British Printing Industries Federation.
- Technical Association of the Graphic Arts. (1993). "Work Flow and System Parameters in Prepress Production". Index to TAGA proceedings 1949-1993. p. 64-67. New York, USA: TAGA.
- Vince, J. (1992). Computer Graphics. pp. 33-36. London, UK: The Design Council.
- Walker, J. (1992). Desktop Publishing Competencies Needed in the Business World. pp. 123-132. Missouri, US: University of Missouri-Columbia.
- White, J. (1982). Editing by design. p.73 New York, US: R. R. Bowker.
- Wilson-Davies, K., Bate, J. and Barnard, M. (1991). Desktop Publishing. pp. 53-57. London, UK: Chapman and Hall.
- XYVision Colour Systems. (1994). pp.16-18. Berkshire, UK: XYVision Colour Systems.
- Young, P. (1993). Design and Print. p.22. London, UK: Spy Design.



# مركز دراسات الخليج والجزيرة العربية جامعة الكويت

أنشئ مركز دراسات الخليج والجزيرة العربية بقرار من وزير التربية والتعليم  
العالي الرئيس الأعلى للجامعة بتاريخ ١٩/١٢/١٤١٤هـ الموافق ٢٩/٥/١٩٩٤م.

## أهداف المركز

- يهدف المركز إلى رسم سياسة متكاملة للبحوث الخليجية التي تنبع من احتياجات  
أقطار المنطقة وتعكس تطلعاته.
- جمع الوثائق التاريخية والمعلومات عن المنطقة مع العناية بالتراث الخليجي بصفة  
خاصة.
- التعاون مع المؤسسات العلمية المماثلة وتنظيم الندوات العلمية أو الاشتراك بها على  
المستويين الإقليمي والعالمي.
- تشجيع الباحثين والمختصين بشؤون المنطقة على إعداد الدراسات عن قضايا المنطقة  
الحيوية.
- تقديم خدمات استشارية لحكومات الأقطار الخليجية والمؤسسات المعنية وذلك بإجراء  
بحوث علمية في الموضوعات التي تحددها هذه الهيئات.
- تشجيع الباحثين الشباب وحفزهم على التعمق في دراسة القضايا الخليجية بالإعلان  
عن جوائز رمزية تشجيعية للبارزين وإقامة المسابقات وتنظيمها.
- طباعة البحوث والدراسات العلمية التي تتناول القضايا الخليجية ونشرها على  
نحو موسع.
- ترجمة كتب التراث والتاريخ الخليجي، وتعريب الأعمال العلمية  
التي تجرى عن المنطقة وتُنشر بلغات أجنبية.

## أنشطة المركز:

- إصدار مجلة دراسات الخليج والجزيرة العربية  
صدر من هذه المجلة ٧٧ عدداً ابتداءً من عام ١٩٧٥.
- تنظيم ٥ ندوات في مختلف الشؤون الخليجية ابتداءً  
من عام ١٩٨١
- إصدار ٣٤ كتاباً تتناول القضايا الاجتماعية والاقتصادية  
والسياسية .. الخ لمنطقة الخليج العربي.
- إصدار سلسلة وثائق الخليج والجزيرة العربية  
(صدر منها سبعة مجلدات) تغطي السنوات (١٩٧٥، ١٩٨٢)

## جميع

### المراسلات

باسم مدير  
المركز د. ميمونة  
خليفة الصباح  
ص.ب. ١٧٠٧٣  
الخالدية.  
الكويت  
الرمز البريدي  
72451

## الاشتراكات

- داخل الكويت  
الأفراد ٣ د.ك.  
للمؤسسات  
١٥ د.ك.
- الدول العربية  
الأفراد ٤,٠٠٠ د.ك.  
المؤسسات ١٥ د.ك.
- الدول الاجنبية  
الأفراد ١٥ دولار  
أمريكي  
المؤسسات ٦٠  
دولار أمريكي