

Telecommuting: As an Alternative Work Arrangement for Saudi Female Graduates

Sulaiman Al-Hudhaif

*Assistant Professor, Department of Business Administration,
College of Administrative Sciences, King Saud University, Riyadh, Saudi Arabia*

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Abstract. Work away from the office (telecommuting) is often more easily arranged in situations where certain tasks can be performed individually and relatively independent of the work of others. This paper focuses on telecommuting as an attractive work alternative in the Saudi society. The subject was studied from two different perspectives: namely, employers' and employees'. In specific, it will answer questions such as (1) To what extent have local employers been aware of telecommuting as an applicable work alternative? (2) What are the obstacles and difficulties that affect the implementation of telecommuting in Saudi Arabia, and (3) How can these work arrangements be implemented as a promising work alternative for Saudi female graduates by utilizing the available information technology (IT)? Therefore, the objectives of this paper are to study telecommuting from the local perspective, to highlight current findings in MIS literature, and to discover any other cultural factors related to this subject. The result of this empirical study indicates the need to educate the public about this work arrangement as a promising alternative for employing Saudi women. Also, there is a substantial consensus among manager respondents in accepting telecommuting for female recruitment. On the other hand, telecommuting will increase isolation of employees since Saudi females find working almost the only chance to leave home and socialize with peers in society.

Introduction

The task of acquiring, developing, motivating and maintaining a high quality workforce is becoming a real challenge facing human resources management. The current Saudi women workplace complexities, such as growing workforce diversity, changing social forces, attention to work-family conflict and alterations in worker lifestyle have been usually met with alternative work arrangements such as flextime, compressed workweeks, job sharing and permanent part-time employment. At the same time advanced technology has made it increasingly feasible to work from remote places, and telecommuting has become one of the important valid mechanisms that management may utilize to deal with the above complex issues.

Telecommuting (working from a remote location away from the main office) began in the 70's, but has grown significantly in this decade due to technological advancements

in information processing and the power of personal computer networks. The telecommuter is defined as an employee who works outside the corporate building and who receives and transmits most of his work through workstations and telecommunication media such as satellites and telephones.

The growth and acceptance of distributed processing, the sophistication of networking technology and the supporting software and teleconferencing applications all have made a large portion of office work virtually time and space independent. Such recent dramatic improvements in technology, together with increased social concerns and satisfaction in controlling the time and place of work, have made "telecommuting" a significant work alternative that is attractive to people whose jobs involve a large amount of individual work.

Work away from the office or plant is often more easily arranged in situations where certain tasks can be performed individually and relatively independent of the work of others. Even in situations where work sharing and coordination is handled electronically, with the support of IT, working in remote places does not make any difference.

According to a recent survey by Link Resources Inc. of New York, the number of telecommuters in the United States has risen by more than 30% since 1995 to 11.1 million in 1997 [1]. As businesses come to realize the benefits of having their employees stay at home, this trend has led computer manufacturers to rethink their business models in order to deliver remote access solutions that span from a user's home all the way to corporate offices.

It is anticipated that telecommuting will continue to grow rapidly in the following years [2] presenting new challenges for information systems managers. Even the most traditional and conservative firms will find more of their workers working from home. Corporations will struggle with such new problems as preventing isolation and burnout, measuring productivity, and training supervisors to manage remote workers. Media publicity about the "electronic cottage" has made it increasingly obvious that a more flexible work and leisure life is becoming a practical option for many people. At the same time traditional home occupations are receiving new attention and creditability.

Problem definition

The research project is about telecommuting as it becomes a significant work alternative and seems to be attractive. It would address the following issues:

- To what extent telecommuting is socially applicable alternative for Saudi female? In particular:

- Is there enough appreciation and perception of its capability and applications?
- What sort of obstacles and difficulties would affect the spread of telecommuting applications in the Kingdom?
- How can this work arrangement be implemented as a promising work alternative for Saudi female graduates who can work at home utilizing IT to link them to their employer?

Research objectives

The objectives of this research can be summarized as follows :

- 1) To measure the level of awareness among local private sector companies regarding telecommuting
- 2) To study various technical, psychological and economical aspects of this technology in relation to the local society.
- 3) To explore and emphasize the applicability of this technique to provide a convenient and satisfactory work opportunity that is socially acceptable.

Literature Review

The issue of telecommuting has received increasing attention in both practice and research with most of the concentration on the participants. During the last ten years, the author has found hundreds of short articles in well-known professional journals which discussed this subject. Nevertheless, the author tried his best to present here the overall findings in academic articles that have contributed to this area in a research context.

Despite the recognition that telecommuting is becoming a revolution, most of the efforts to study telecommuting were concentrated on the following question: What happens to the corporate culture, wages/benefits structure, child care, and family as more people convert to work at home?. Who will benefit and who will lose?

Telecommuting, a term coined by Jack Nilles in the mid-1970's, describes the substitution of telecommunications and computers for the commute to a central office. Since that time, other writers have introduced similar terms (such as alternative work sites, distance workers, work-at home programs, electronic cottage and teleworking) to describe the same concept.

One of the problems encountered in the study of telecommuting is the lack of a generally accepted definition. In some cases, telecommuting has been defined broadly to include all at-home or remote site work activities. As such, both self-employed persons

and those who work exclusively at home would fit this definition. Telecommuting must be viewed and studied as a unique alternative work arrangement. For our purposes, telecommuting is defined as a work arrangement where organization *employees regularly work at home or at remote sites one or more complete workdays a week utilizing IT methods* instead of working in the office. This definition is supported by Hartman and Stoner [3] and excludes self-employed business owners.

In 1970, almost none was using a computer at home. Franden [4] located only one female programmer who at the time used a computer terminal in her home.

Nilles *et al.* [5] elaborated on the energy crises in the seventies and how this prothe idea of saving gasoline by “telecommuting” to satellite centers located near workers’ homes.

The research done by Olson [6] viewed office work in the home as a logical extension of the automated office. This study pointed out ways in which corporate culture permits the growth of remote work by company employees.

The earliest serious research made in this area was by Pratt [7]. He performed research that confirmed that there are several advantages to the employer, including higher retention of employees, a decrease in disability benefits/employees benefits and lower cost of office work stations. Pratt also concluded without empirical testing that productivity and quality of work may also increase. Further, the research indicated that telecommuting will help employers who may face the possibility of employing handicapped workers, women with young children, and others who find it difficult or impossible to work on-site.

Other subsequent studies by Pratt [8] addressed the hypotheses that all home workers are alike. These studies showed that clerical women work full-time either as employees or as contract labor doing word processing or data entry. Managers, both males and females work only part-time at home because their job function involves managing people. Professional people typically include computer programmers and analysts, university professors, research scientists, physicians, management consultants, lawyers, and stock brokers. In the group interviewed, one third worked full-time at home, the rest part-time or intermittently. Entrepreneurs traditionally used the home as part of their start-up strategy to test new business ideas with minimum overhead cost.

Two subsequent studies by Christensen [9] and Gerson and Kraut [10], were conducted to explore employee benefits. In their research, they found that employees save cost of commuting, buy business clothes and pay for restaurant meals. Most parents find it impossible to work while caring for young children. The most important factor to many home workers is the time saved by not commuting or socializing at the office. However, the research showed that workers who do not receive full wage and benefit compensation equivalent to their on-site peers can incur an economic loss by working at

home. Employees found that fluctuating work assignments and wages make it difficult for them to plan their time and expenditures.

Research also indicated that more men than women work at home, primarily because they work part-time or overtime in connection with a primary job [11]. Research done in the 80's indicates that nearly two million self-employed men work eight hours or more per week at home in the United States. In contrast, more women than men work exclusively at home. Pratt also concluded that the majority of home-based business owners are married with a spouse present in the home. The total population working entirely at home as either employees or business owners amounts to 1.1 million. Over 75% of these work in white-collar jobs (45% are managers and professional workers, 30% are in technical, sales, and administrative support). The remaining 25% work in precision production and blue collar jobs.

The aforementioned research also revealed that men and women work in the same occupations, but hold different jobs. Males are executives, engineers, teachers, salesmen, and other professionals. Women work in lower paying jobs such as teaching elementary or secondary grades, performing administrative support (such as secretaries and data processors) and working as maids or in other service occupations. This research also indicated that in the United States, 95% of home-based employees have white collar jobs, such as managers, engineers, teachers, technicians, and salespeople (including real estate and commodities). The majority of formal telecommuting programs involve clerical personnel who type or enter data. Most of the tasks performed in these occupations, such as keeping business records and word processing, can be done at computers.

Pratt [12] has classified home-workers into three distinct groups of workers:

- 1) *Employees who work at home full-time* under formal agreement with their employer.
- 2) *Employees who work at home part-time* for less than two or three days per week with only informal approval of their employer.
- 3) *Home-based business owners* who buy their own computer with software that fits the nature of their business.

A survey of attitudes toward telecommuting of female computer professionals in Singapore was carried out by Yap and Tang [13]. Out of 459 respondents, 73% were in favor of telecommuting. Instead of working at home full time, most would prefer to work at home one to three days a week and to work at the office on the other days. They would telecommute only on necessary occasions, such as when they have young children. They were concerned with work and interaction-related problems that might arise from telecommuting. The findings suggest that telecommuting will be of particular interest to (1) married employees, (2) those who have lot of individual independent work, (3) those who find the journey to work frustrating, (4) and those with supervisors and co-workers who are supportive to telecommuting.

Goodrich [14] interviewed 525 telecommuters and 50 managers across the United States, and found that personal factors (income, another job, parenting growth, more control over life and time, stress of commuting) and commercial factors (growth of productivity, need for more sales, control absenteeism more organizational flexibility) have influenced the growth of telecommuting. He elaborated on the need for a predictable period of adjustment when an individual begins tele-work and the need to set up slightly different styles of living and working. This period of adjustment ranges from one to three months. He also mentioned that during the adjustment period there is usually a temporary decrease in productivity. Telecommuters surveyed recommended that the tele-workers should not stay at home more than four days at a time, and should come to office at least one day a week to talk with their supervisors and meet other coworkers, so as not to feel isolated and to experience the creativity and cohesiveness generated by meeting other colleagues on a regular basis.

Roderick and Jelley [15] reported that a total of 75 mid-level managers in Texas were surveyed to examine telecommuting. The findings indicate that the main reasons employees take work home are to meet deadlines, to avoid interruption at the office, and to make up for insufficient office work time. Advantages and disadvantages were also elaborated upon, and will be discussed later.

Management by Objectives (MBO) is the concept behind telecommuting. This was discussed in an article by Filipczak [16]. MBO teaches that employees should be managed and rewarded on what they produce, not on how much time they spend in the office or on the procedures they follow to achieve their results.

Hartman and Stoner [3] stated that telecommuting does not change or alter the nature of the job. Rather, it affects the circumstances and dynamics that surround the job. In other words, telecommuting cannot magically transfer a boring job into an exciting one. The study also concluded that telecommuting must be accepted as a reasonable and legitimate alternate work arrangement with rewards and promotional systems consistent with those of on-site workers. This can be achieved by the establishment of clear, specific and measurable goals and guidelines delineating the nature of reporting relations. The study also stressed that, as a key to telecommuting success, telecommuter self-control should be substituted for direct supervisory control.

The telecommuting approach needs a strategy to succeed [17]. It is not enough just to perform work well. The work should be planned and presented in such a way that telecommuters suffer little decline in their workplace visibility. This can be achieved by (1) Knowing how to meet schedules in advance, (2) Finding reasons to visit the office as often as possible, (3) Arranging to have office memos forwarded through mail, (4) keeping the supervisor informed, and (5) Installing an answering machine.

Christensen [18] attempted to describe or justify current management's reluctance to accept telecommuting services. Seven myths of telecommuting were

examined: (1) Telecommuting is high-tech and computer-driven. (2) Telecommuting is full-time, five days a week. (3) Home is the exclusive work site. (4) Telecommuting is a substitute for child-care. (5) Telecommuters are predominantly women doing low-level clerical work. (6) Unions are obstacles. (7) Employees cannot be seen and hence cannot be trusted.

Jurik's study [19] examined both the empowerment and constraining dimensions of telecommuting (particularly self-employed people) for women and included control group of men. It examined both commonalties and variations in telecommuters' experiences by comparing respondents from different social strata. It identified similarities and differences in workers' motivation and freedom to choose, as well as difficulties in balancing telecommuting with family and personnel commitments. The finding revealed the importance of considering individual agencies, structural and economic forces, gender, race and class relations in the analysis.

Jurik also investigated small businesses, entrepreneurs and paid home laborers and presented the two following competing images of telecommuters:

- Telecommuters as self-employed home-workers who are viewed as liberated innovators getting away from many of the constraints of conventional employment. Their jobs require a great deal of thought or independent action. This is said to offer more satisfying work and more flexibility. This includes job categories such as computer programmers and research specialists. These telecommuters work at home most of time, but may come into the office periodically for weekly or monthly meetings.
- In contrast to the liberated innovator image, structural theories of labor exploitation see telecommuters as constrained, contingent workers with limited options for secure and conventional employment. This structural orientation focuses on the macroeconomics and cultural determinants of the home worker. This category includes workers who perform data entry and word processing activities and the like.

Advantage and disadvantages of telecommuting

As we mentioned earlier, most of the available literature in telecommuting was devoted to highlight the benefits and drawbacks. Ford and Butts [20], Goodrich [14] and Young [21] all outlined and elaborated on the advantages and disadvantages of telecommuting obtained from practical experiences. These can be summarized as follows:

Advantages

Most of the benefits to the employee are rather obvious. Telecommuting provides flexibility and accommodation for a variety of workers with a distraction-free environment, eliminating the stress of driving in rush hour traffic while commuting to work every day. Besides the obvious savings in gasoline and vehicle wear, there is no loss of time in travelling to and from work. Further, the costs of appropriate office clothing and lunches are forgone by working at home. Telecommuting is particularly advantageous for new mothers or physically handicapped people who find travel burdensome or are unable to leave home, but need to stay in the workforce. A related advantage is the flexible scheduling of work time, with the ability to work around family commitments. Therefore, parents may find a comfortable balance between the randomly timed demands of children and task requirements.

Telecommuting also provides advantages to the employer. It is an attractive work style for prospective employees in many categories of managerial, professional and clerical jobs. The employer can recruit or attract some people who otherwise might be unable or unwilling to travel to company locations. This work methodology will attract or retain highly valuable (skilled) employees who might otherwise be unavailable due to disability, child care responsibility, relocation or personal preferences. Considering the high value of trained, proven employees, this flexibility in employee utilization gained through telecommuting will become increasingly important as qualified employees become harder to find and keep.

Other main advantages to employer are greater staffing flexibility and lower cost. If the company needs additional employees for special temporary projects, allowing them to telecommute may solve the problem of where to keep them.

Another benefit for the employer is the ability to control office space costs. Telecommuting can be used by companies to avoid the cost of building or leasing additional offices, or perhaps as a temporary solution while acquiring new space. Since office space contributes greatly to overhead, most of the companies are looking to use their space more efficiently.

A further advantage is gaining the ability to better balance the demand on the organization's mainframe computer. By telecommuting, the workload will be distributed over the whole day and hence minimize or eliminate the need for further investment in larger computation or speed capacity.

A final advantage to the organization is the general expectation that telecommuting increases workforce productivity due to high satisfaction and long periods of uninterrupted time for more concentration on work. Respondents also indicated that they enjoyed higher level of both energy and job satisfaction due partly to eliminating the frustration and lost time from traditional commuting. Given telecommuting technology, these employees could choose to work nights, weekends or other times to complete an important task with complete access to the necessary data or information.

Disadvantages

While the advantages of telecommuting establish a convincing case for its potential use in today's increasingly electronic work environment, there are some inherent disadvantages.

The major drawback is that telecommuters can be socially, intellectually and professionally isolated. In some instances, work and "home life" simply will not mix unless home and family time is separated from work time.

Also, not everyone has the temperament ability to work at home. Some people can not be productive without direct supervision and step-by-step guidance. From the employer's point of view, it is difficult to monitor and control the performance of workers without immediate supervision.

From a sociological perspective, working at home is a controversial issue. Those who oppose it claim that if home workers were given better choices, such as a quality child-care center, they would work at their regular workplace, which would increase job satisfaction. In terms of economic factors, home workers suffer whether they are employees or self-employed. They work less, earn less, and receive fewer benefits.

One obvious disadvantage to the individual employee is the reduced opportunity to become involved with co-workers and informal, face-to-face communication. As a consequence, the telecommuter loses contact with the organization and vice versa. There is less feedback and interaction with supervisors, and less informal information (such as casual remarks that keep employees in a corporate group with shared values and goals).

Telecommuting can also hinder career advancement for the individual. The old saying "out of sight, out of mind" comes to play when selecting personnel for promotions. The normal absences of telecommuters could mean that coworkers remaining at the office have a better chance to be known and advanced faster.

Telecommuting programs have disadvantages for organizations as well. These are mostly based on perceived or actual loss of control. For example, telecommuters may be accused of giving personal projects priority over the company's work or using company equipment while working part-time for others. Further control or security problems are caused by reducing the organization's control over sensitive corporate information and work procedures by allowing an external computer terminal to have access to the company's databases.

A related problem concerns the maintenance and control of computer equipment placed in an employee's home, as few telecommuters provide their own equipment. The problem is not just potential equipment damage or abuse, but also the additional insurance problem when the equipment is not on-site.

A major personnel disadvantage expressed by many managers is the impact of telecommuting on both informal and formal employee interaction. The importance of such interaction to the successful completion of a project is often cited as a major disadvantage of allowing employees, especially professionals, to work at home. The absence of frequent feedback from supervisors and associates can cause misdirection, unnecessary errors, or even duplication of work.

Failure to identify with the company's culture and the absence of team spirit are disadvantages for the company as well as the employees. Many companies take pride in employee loyalty and a family-like work environment. These companies see telecommuting as a threat to morale and a potential cause of turnover as employees lose their sense of belonging.

Studies of office automation by Pratt [11] report concern that even though home-based clerical workers have chosen to work at home, they have much less leverage over conditions of employment than people in other categories. The main issue is that employers may be illegally classifying employees as independent business people to avoid costs. Employers are accused taking employer-paid benefits away from their home-based employees. These benefits include health insurance, pensions, and employment tax. If the home-based workers are paid on the basis of piece rates instead of an hourly wage, they are losing paid coffee breaks, computer down-time and time to correct errors. A major court case in the insurance industry is bringing these issues into focus.

Theoretical Framework

The above literature review indicates that the subject of telecommuting was studied and investigated thoroughly and is being increasingly accepted worldwide as a work philosophy. From the local prospective, telecommuting in business has not yet been studied or investigated formally. It seems a promising work alternative for Saudi female graduates who can work at home, utilizing IT to be linked to their employers.

The aim of this research is to study the telecommuting from the local prospective by utilizing current findings in the MIS literature and to discover any other cultural factors related to this subject.

The conceptual framework for this study is built around the following aspects:

- 1) Discovering the attitudes of major local employers and potential employees with regard to the concept of telecommuting and determining the extent of awareness about this technology in the local environment.

- 2) Finding the opportunities and drawbacks associated with this concept from personal and managerial perspectives with local cultural orientations.
- 3) Examining the social and economical feasibility of telecommuting from the viewpoint of potential female employees and major Saudi employers, while taking the local environmental factors into consideration.
- 4) Attempting to explore the possibility of implementing successful telecommuting, which is an arrangement that can enhance productivity and/or job satisfaction of the participants.

Hypotheses Development

From the previous literature review, it becomes possible to develop some hypotheses to guide our research. Here are some major concepts:

- 1) Level of awareness towards telecommuting
- 2) The general attitudes towards telecommuting
- 3) The importance of the gender as telecommuter
- 4) The social feasibility of telecommuting
- 5) The managerial concerns towards telecommuting

In general we can draw two main research questions :

- *To what extent is telecommuting known as an applicable and feasible work arrangement for local business organizations to recruit Saudi female graduates?*

Under this question, the following hypotheses can be tested :

- H1:** There is a significant relationship between management's perception of benefits and drawbacks of telecommuting and previous experiences with telecommuting.
- H2:** The applicability of telecommuting in Saudi society is independent from the gender of the employee.

- *What sort of cultural, economical or technological obstacles might influence implementation of telecommuting in local business organization?*

Under this question, the following hypotheses can be tested.

H1: The social acceptance of telecommuting by Saudi women is highly associated with the reasons that women work (socializing/or earning).

H2: The acceptance of telecommuting by Saudi women is highly associated with the acceptance of applying lower pay system.

Nature of the Study

This study is based on testing hypotheses to enhance the understanding of the relationship which exists among the study's variables. It is an investigation or (correctional) study to delineate the important variables that are associated with the research subject. The intention here is not to establish a casual connection between one factor and another (cause – effect relationship), but merely to see if some relationship does exist among the variables investigated and to determine the intensity of this relationship.

Sampling Plan

The sampling plan is the process of selecting a sufficient and representative number of respondents from the working population. The research was designed to test some hypotheses that involve variables concerning both the female employee and the employer (managers in business organizations). Therefore, two populations will be targeted.

Working populations

In this study, we have two distinct populations intentionally identified to achieve the purpose of research.

- 1) All Saudi female undergraduates on senior levels in local universities (potential female employees).
- 2) All operations managers in middle management levels of major Saudi business organizations.

Convenience sampling

Probability sampling design is used when the representativeness of the sample is of extreme importance for purpose of wide generalization. However, since this study is exploratory one, we are less concerned with full generalization than we are about obtaining information in a quick and inexpensive way. Time limitation is the main critical factor and hence non-probability sampling will be used. Convenience and purpose sampling are found to be the most appropriate types of non-probability sampling to address the situation.

1) Female employees

Due to the small number of Saudi females working in business organizations (with the exception of banking industry) and the difficulty anticipated in accessing them within the time frame allowed, the senior female students of the Business Administration Department in the College of Administrative Sciences in King Saud University were targeted. In addition, the sample was selected for convenience because its members possessed the best educational background for the subject studied. The sample consisted of 105 female students who had already finished the first two years of college.

2) The business employers

Middle level managers were selected as the target population because they usually supervise employees whose jobs are most suitable for telecommuting. Further, they are easier to access than the top managers. The sampling plan was designed to address at least one manager in each company in a sample of 60 companies selected from the directory of the top 100 companies in the Kingdom. The headquarters of these companies are in Riyadh. Accordingly, we expected to collect a combined sample of at least 250 respondents.

The Methodology

Data collection

A survey was used for gathering data from a representative sample of individuals. A questionnaire was chosen as the instrument to collect the primary data because of its convenience, relatively low cost and the facilitation of subsequent data analysis. Design of the questionnaire was based on relevant concerns of managers and employees on the issues of telecommuting as reported currently in MIS literature.

The questionnaire was carefully designed to meet our purpose. Effort was directed to maintain relevance and accuracy in all questions, which were mostly fixed-alternative. Face validity was used to solicit opinions of experts about the appropriateness of scales and measurement tools.

For the sake of measuring attitudes towards certain telecommuting issues, the LIKERT scale is used (a five-point scale, with 1 = strongly agree, and 5 = strongly disagree). For measuring other variables, rating (category itemized) scales were used in the questionnaire.

The scales implemented in this study were used previously in similar studies in related literature and hence their validity and reliability were approved. Double barreled, ambiguous and leading questions were avoided. Also, the length of the questionnaire and sequence of questions were carefully controlled to ensure maximum attention.

For both employees and managers, rating questions were used to determine respondents' perception of advantages and disadvantages of telecommuting found in

literature. A four-point scale was used, and a space was left for the respondent to fill in his/her own opinion. Two ranking questions asked managers to speculate on the reasons that telecommuting is needed. Also, to determine the jobs that might lend themselves to telecommuting, respondents were given a list of ten job titles and asked to select five and rank them according to perceived suitability for telecommuting. One yes/no question was used to check respondent perceptions of male and female telecommuters. Finally, extra space was given for respondents to include any additional comments or additions.

To determine the nature of the population, some demographic questions were asked at the end of the questionnaire. These included age, marital status, education level and number of years on the current job. An attempt was made to stress the difference between telecommuting and working from home since the researcher believes that many who do great deal of work at home are not necessarily telecommuters.

A personally administrated questionnaire was used. The main advantage of this method is that complete responses can be obtained in a short time and the researcher has the opportunity to introduce the research topic and motivate the respondents to give their maximum attention. Clear instructions about the desired type of response were given at the beginning of each question to minimize answering time to and facilitate with editing and coding. All respondents were assured that their answers would be treated with confidentiality. Respondents' and companies' names remained anonymous.

Data processing and analysis

All questionnaires were edited for blank responses. If 25% of the questionnaire was left blank, the whole questionnaire was disregarded. Each questionnaire was given a number and all the categories in the scales were pre-coded to facilitate data entry.

SPSS software was utilized for data analysis. Both descriptive and inferential statistics were used. Since we had extensive nominal scales, the simple tabulation, frequency tables and percentages were calculated, as well as the mode and standard deviation. Cross-tabulation was used to determine the form of relationship between two variables and the bivariate analysis to check if there was a significant relationship among specific variables or whether they were independent from each other by using the X^2 test. This test helped to identify the level of significance in the analysis of frequently distribution. By grouping the sample according to certain variables, we intended to measure the difference between their means.

Results and Findings

In this research the subject was studied from two different directions, taking into consideration the opinion of both employers and employees. The respondents were selected from two different populations, namely female senior students (potential employees) and middle managers in Saudi business organizations.

Demographic data

The female students were of a homogenous sample with very similar demographic characteristics. Managers were predominantly from professional and managerial occupations. 50% of the respondents were between 36 and 50 years old, and 36% were less than 36 years of age. The majority was married (80%), with 70% of them carrying a university degree and 20% had a graduate degree. Most of the managers contacted were experienced, with 16% of them having less than 5 years experience. The rest had experience ranging from 6 to 20 years.

Collected data

We faced a great deal of difficulty in the task of data collection, primarily due to shortage of time (two weeks) and also due to the fact that target respondents were managers in business organizations and thus were found to be difficult to access and always busy. Even the supervisors in lower management usually hesitated to accept questionnaires before having approval from top management.

A cultural problem sometimes occurred. While explaining the research topic to some managers, immediate disappointing responses were encountered due to lack of interest or unwillingness to participate. Nevertheless, we tried our best to collect data within the allowed time, and exclude the invalid responses.

Out of the 120 questionnaires distributed on female students, 115 questionnaires were returned, and 109 were found to be valid for data entry. This means a response rate of almost 90%. Almost 130 questionnaires were distributed to managers. Only 101 were received, and 94 questionnaires were found to be valid for data entry. This means a 75% response rate. Every questionnaire was given a number, and any questionnaire with missing data was excluded from data entry.

Analysis of Answers

[1] Female Graduates Respondents

1) Telecommuting and employee isolation

The first question was designed to investigate research hypothesis (1), exploring motives behind work for Saudi women. As shown in the table below 63% of the sample were against (disagree and strongly disagree) the assumption that money is the main motive behind work. This gives an indication that Saudi women are working for reasons other than money, primarily socialization and establishing contacts and relationships outside the home environment. This might be one of the main disadvantages of telecommuting, (leads to employee isolation), which was measured in other questions. It was found that more than half (56%) of the respondents rated this disadvantage as important.

Table 1. Money is the main motive behind work

	Value	count	%
Strongly agree	1	4	3.7
Agree	2	32	29.4
Do not know	3	4	3.7
Disagree	4	51	46.8
Strongly disagree	5	18	16.5
Total		109	100

The mean of this variable has been calculated at 3.4, with a standard deviation of 1.18, which indicates that a majority of the sample is against our assumption.

2) Female graduates’ perceptions of participation in society

The respondents were asked individually how they perceive participation in society. As shown below, a substantial percentage (53%) liked to have a full time job. 37.6% did not object to working from home, either for their account or for other’s account, and a minority preferred to work as a housewife or as a part-time worker. The above findings indicate that half of the sample prefers to work full time outside the home, and almost a third prefer to work from inside the home as telecommuters.

Table 2. Perceptions of participation in society

	Value	Count	%
Housewife	1	6	5.5
Full time employee	2	58	53
Part time employee	3	5	4.6
Work inside house for others	4	17	15.6
Work inside house for herself	5	23	21.1
Total		109	100

3) Frequency in dealing with computers

An attempt was made to explore the extent to which the women sampled used computers, and the frequency of use. This would help to determine any sort of relationship between using computers and attitudes towards telecommuting.

The majority of the sample (47.7%) had used computers sometimes, 44% had used them rarely, and 9% always used computers. The mean is 2.35, with standadeviation of 0.6, which indicates that more than half of the sample used computers sometimes. However, the remainder had rarely used computers.

Table 3. Frequency in dealing with computers

	Value	Count	%
Sometimes	2	52	47.7
Rarely	3	48	44.0
Always	1	9	8.3
Total		109	100

4) Awareness level of telecommuting

As expected, half of the sample had no idea about the meaning of telecommuting, 41% had an approximate idea, and the rest (8%) had a very clear idea. The mean falls exactly between the no idea group and the approximate idea group. This indicated that the sample's knowledge of computers was generally moderate.

Table 4. Awareness level of telecommuting

	Value	Count	%
I have no idea	3	55	50.5
Approximate idea	2	45	41.3
Very clear idea	1	9	8.3
Total		109	100

5) Difficulty of transportation for women

The female respondents were asked a question to measure the level of difficulty they would face in attaining transportation after graduation. This question was intended to determine any relationship between accepting telecommuting and transport difficulty. It was found that only 11% of the sample expected to face extreme difficulty in transportation to work, while 32% expected no difficulty at all. The majority of the sample (57%) expected difficulty, but with acceptable levels. This is illustrated in the following Table:

Table 5. Difficulty of transportation

	Value	Count	%
Acceptable difficulty	2	62	56.9
No difficulty at all	3	35	32.1
Extreme difficulty	1	12	11
Total		109	100

6) Agreement on telecommuting

In order to determine the attitude towards telecommuting, respondents were asked to rate the possibility of accepting a job after graduation which required telecommuting. The results were relatively balanced between 42.1% for telecommuting and 47.7 against telecommuting, with 10.1 agreeing under a certain condition. The results can be shown in the Table below:

Table 6. Accepting a job required telecommuting

	Value	Count	%
Strongly agree	1	10	9.2
Agree	2	36	33
Agree with conditions	3	11	10.1
Disagree	4	44	40.4
Strongly disagree	5	8	7.3
Total		109	100

The mean of the above responses was 3.03, with a standard deviation of 1.18, which indicated almost balanced answers. Nevertheless, if we take the conditional agreement into consideration, the sample in general was inclined towards accepting telecommuting, but not in a substantial trend.

The conditions stated by the respondents in general were:

- Continuous contact with supervisors to minimize problems.
- Having the required experience and reasonable income.
- Choice being given to move to normal work when available.
- Being married with responsibilities, otherwise preferring work outside the home.
- Clear standards and procedures of work and definite number of hours.
- If she did not provide something useful for her employer, she stop working.
- Not leading to complications in work
- Conditions would be made after she knows about the nature of work
- Telecommuting should satisfy her aspiration and self-esteem.

7) Telecommuting contribution to job opportunities

The respondents were asked to express their own opinions regarding the extent to which telecommuting might contribute to increasing job opportunities for Saudi women. The predominant response was positive, with a mean of 2.8 and standard deviation of 1.1. There is a clear inclination towards considering the importance of telecommuting to provide jobs for women. Percentages are shown in the following Table:

Table 7. Telecommuting contribution to job opportunities

	Value	Count	%
Very high extent	1	12	11
High extent	2	32	29.4
Moderate extent	3	35	32.1
Limited extent	4	22	20.2
Do not contribute	5	8	7.3
Total		109	100

8) Agreement to a quantity-based salary

The issue of salary basis for telecommuters was raised frequently in the literature and investigated this research. Respondents were asked a question regarding whether they would accept a quantity-based salary in telecommuting jobs instead of a time-based salary. The majority of the sample (45%) disagreed to a quantity-based salary. 20% agreed and 19% did not know. The remainder exhibited extreme responses. The mean is 3.119, which indicates that respondents were inclined not to agree with quantity-based salaries.

Table 8. Accepting a quantity-based salary

	Value	count	%
Strongly agree	1	12	11
Agree	2	22	20.2
I do not know	3	21	19.3
Disagree	4	49	45
Strongly disagree	5	5	4.6
Total		109	100

9) Comparing income from telecommuting with other types of income

Having found that a majority of the sample would refuse a quantity-based salary, we found that they accepted having a lower salary in comparison with a standard one from offices. Only 20% of the sample asked for 100% equality. However, 56% agreed they would accept a salary 30% lower normal for the same work, 13% agreed to half the salary and 10% agreed to lower than half.

10) Disadvantages of telecommuting

Most of the advantages mentioned in the literature were listed in a table. Respondents were asked to rate their importance on a four-point scale. The results are shown in the following table:

Table 9. Disadvantages of telecommuting as seen by women

Weight	1	2	3	4	
	Very important	Important	Less important	Not important	Mean
	%	%	%	%	
Training needs	35.8	22	33	9.2	2.15
Lack of technology	34.9	24.8	32.1	8.3	2.13
Employee isolation	22	29.4	34.9	13.8	2.40
Lack of direct supervision	29.4	41.3	22.9	6.4	2.06
No access to documents	11.9	50.5	32.1	5.5	2.31
Home disturbances	19.3	33	39.4	8.3	2.36
Damage to documents	11	43.1	38.5	7.3	2.42
Lack of job security	41	30	30	7	2.02

From the above responses, most perceived important factor is job security and lack of direct supervision, while the least important factor is the fear of damage to documents.

11) Advantages of telecommuting

Table 10. Advantages of telecommuting as seen by women

Weight	1	2	3	4	
	Very important	Important	Less important	Not important	Mean
	%	%	%	%	
Join work and family	45	33	22	0	1.77
Less need for child care	48.6	27.5	23.9	0	1.75
Comfort environment	22	30.3	33.9	13.8	2.39
Less clothing cost	11.9	12.8	34.9	40.4	3.03
Lower cost of transport.	20.2	29.4	38.5	11.9	2.44
Limited mixing with men	18.3	18.3	30.3	33	2.78
Environmental factors	8.3	19.3	43.1	29.4	2.93
Freedom of work time	27.5	22.9	27.5	22	2.44
Job satisfaction	21.1	33	43.1	2.8	2.27

Table 10 indicates that the most perceived advantages of telecommuting are: “less need for child care” and “joining work and family” while the least important advantages are: “less clothing cost” and “environmental factors”.

There is a significant association found between accepting telecommuting and the following variables:

- Awareness level of telecommuting
- Frequency in dealing with computers
- Damage to work documents
- Difficulty of accessing work documents

[2] Managers Respondents

1) Awareness level of telecommuting

In order to address one of our main research hypotheses, the level of awareness among managers was measured using a four-category question. It has been found that 51% of the sample have basic knowledge about telecommuting and only 10% have actual experience with it. The following table summarizes the results:

Table 11. Awareness level of telecommuting

	Value	Count	%
Aware and have used telecommuting	1	10	10.6
Aware and have not used telecommuting	2	31	33.0
Basic knowledge of telecommuting	3	48	51
Not aware of telecommuting	4	5	4.3
Total		94	100

2) Definition of telecommuting

As the literature stresses differences between telecommuting and work from home, we used a question to measure how respondents are able to differentiate between the two definitions.

Those respondents who admitted that they or their subordinates telecommuted (26% of the sample) were asked how they actually practice it. The results were as follows:

- **Effective use of electronic media to exchange information** **13%**
- **Just carry some documents in briefcase to home occasionally** **13%**

Nevertheless, the frequency of use tends to be high. 16% of the respondents practice telecommuting in its two forms, the frequency ranging from daily to 2-3 times per week.

3) Technology use

In order to attain a clear picture of the extent to which IT infrastructure is available within Saudi firms, respondents were asked how often their companies use IT media (computers, fax, E-mail, internal and external databases) for their core operations.

83% of the sample always uses IT, while the remainder uses it sometimes. This indicated that there would be no potential technical obstacles facing implementation of telecommuting, since a majority of business organizations have the required infrastructure to technically support telecommuters at home.

4) Reasons for adopting telecommuting

The respondents agreed that the principle reason employees take work home are (1) to meet deadlines, (2) to make up for insufficient time at the office and (3) due to better working conditions at home. The respondents were given seven reasons for which employees would take work home. They were asked to select three from this list and rank them according to their importance. The following table shows the weight of each reason, based on the number of selections and weight of importance. The following Tables summarizes the results:

Table 12. Reasons for adopting telecommuting

	Weight
Deadlines	150
Not enough time at the office	108
Better working conditions	88
Frequent interruptions	79
Better productivity	55
Many phone calls in the office	41
More convenience	41

5) Possible telecommuting jobs

From a list of 10 job titles, respondents were asked to select five jobs that would lend themselves to telecommuting. The list was compiled after reviewing current literature on this topic. As expected, word processing received the highest weight, followed by data entry and report writing. The following table shows job ranking according to the weight of each job on the basis of respondents' answers:

Table 13. Possible telecommuting jobs

	Weight
Word Processing	285
Data Entry	245
Report Writing	177
Translation	169
Consulting	144
Date Processing	99
Computer Programming	96
Auditing	71

6) Support of telecommuting

When we measured managers' attitudes towards telecommuting for Saudi women, we found them substantially supportive of using telecommuting for the employment of Saudi women (84% of the total sample supported it). The mean of the above variable is calculated at 1.7, which gives an indication that managers' attitudes towards telecommuting is generally positive. The following table summarizes the frequency distribution:

Table 14. Support of telecommuting

	Value	Count	%
Strongly support	1	30	36
Support	2	50	54
Do not know	3	6	6
Do not support	4	3	3
Strongly against	5	1	1
Total		90	100

7) Contribution of telecommuting to jobs for Saudi women

Next respondents were asked their opinions regarding the extent to which telecommuting might contribute to more job opportunities for Saudi graduates. The respondents substantially agreed that telecommuting would provide job opportunities. These answers were in line with their previous support, as 69% of the sample selected a high and very high extent of contribution.

8) Expected difficulty for companies when implementing telecommuting

The respondents were asked a question that addressed the level of difficulty a manager expects to face in his company when telecommuting is applied. The calculated mean of all answers is 2.93 (around the moderate difficulty). Most selected moderate difficulty (40%).

Table 15. Difficulty of implementing telecommuting

	Value	Count	%
Extreme difficulty	1	8	8
High difficulty	2	24	23
Moderate difficulty	3	40	40
Limited difficulty	4	22	21
No difficulty	5	6	6
Total		90	100

9) Difficulty in dealing with telecommuters

To complement the above question, we used another question to measure managers' opinions towards the level of difficulty in dealing with telecommuters. We obtained almost same mean (3.0) where 36% selected moderate difficulty.

Table 16. Difficulty in dealing with telecommuting

	Value	Count	%
Extreme difficulty	1	9	9
High difficulty	2	16	17
Moderate difficulty	3	36	38
Limited difficulty	4	24	26
No difficulty	5	9	9
Total		90	100

To additionally measure Saudi managers' attitudes towards female telecommuters, a yes/no question was used. Relatively balanced answers were obtained. 56% of respondents denied an increase of difficulty in the case of female telecommuters. However, the rest expected more difficulty in dealing with female telecommuters compared to male telecommuters.

10. How telecommuting can benefit Saudi business organizations

Eleven ways that telecommuting could benefit firms were evaluated by all respondents. The results are shown below.

Table 16. Benefits of telecommuting as seen by employers

		Weight
1	Suitability for the handicapped	1.38
2	Increased productivity	1.88
3	Decreased work pressure	1.98
4	Lower overhead costs	1.98
5	Fewer number of employees	2.04
6	Higher job satisfaction	2.06
7	Less travel time and cost	2.10
8	Less pollution	2.13

Managers are obviously aware of possible higher productivity and chances for company to deal with work pressure. Concerns about less travel time and lower number of employees were rated last among the eleven benefits.

11) Disadvantages of telecommuting for Saudi organizations

In the opinion of managers who responded to this study, the chief disadvantage of telecommuting for employers is the risk of reduced information security. The other highly rated disadvantages are increasing the loss of face-to-face interaction, difficulty of supervision and lower managerial control. Resistance to change received moderate importance.

The managers were not quite so concerned with the cost in general (training, equipment and telephone bills).

Table 18. Disadvantage of telecommuting as seen by employers

		Mean
1	Risk of reduced information security	1.6
2	Less face-to-face interaction	2.11
3	Difficult of supervision	2.20
4	Less managerial control	2.29
5	Resistance to change	2.41
6	Cost of equipment	2.64
7	Training cost	2.75
8	Cost of telephone bills	2.78

Testing significance

We established the null hypotheses (no dependency) based on the expected frequency in each category. The deviation of the actual frequencies in each category

were compared with the hypothesized frequencies. The greater the difference between them (X^2), the less the probability that they can be attributed to chance. Simply, the X^2 test summarized the differences, and this was more conveniently calculated by using SPSS capabilities (which give the significant level directly). For the female sample, there was significant association (significant dependency) found between the degree of accepting telecommuting and the following variables:

- Awareness level of telecommuting
- Frequency in dealing with computers.
- Fear of damage to work documents.
- Difficulty in accessing work documents.
- Lack of direct supervision.

In the managers' sample, cross-tabulation and the X^2 test were also used between the variable "awareness level of telecommuting" and all variables concerning benefits/drawbacks of telecommuting. Significant relationships were found to exist in all tests made (over 0.05). This supports our initial hypotheses that the perception of the importance of telecommuting benefits/drawbacks is associated with previous experiences with the technique.

Moreover, the relationship between the level of expected difficulty in companies when implementing telecommuting and the drawbacks of telecommuting was tested. The significance level here was also found to be high.

Discussions

1.0 Limitations

Because of the small sample used in this study and limitation of geographical scope, it may not be possible to generalize the findings of this study to the larger population in the Kingdom. However, because of the population encompassed (mid-level managers from a wide variety of companies), it seems reasonable to assume that the information in this report will be of value to managers who are considering implementing a telecommuting program in their organizations.

Moreover, we believe that this study lays the grounds for and provides the general understanding about the problems facing our female graduates and how telecommuting programs address these problems while keeping under the religious and traditional values.

2.0 Answers to Research Hypotheses

Awareness level

- 55% of women surveyed have no idea about telecommuting and 45% have only an approximate idea.

- 51% of manager respondents have basic knowledge about telecommuting and 33% of them are aware of it, but do not practice it.
- Only 10% of female respondents have actual experience with telecommuting.

This supports the hypothesis that there is general ignorance among more than half of the combined populations regarding telecommuting as a work arrangement and the remainder have either a basic or an approximate idea. This stresses the point that there is a need to educate the public about this work arrangement as a promising method for employing Saudi women.

Social feasibility

From the above results, it has been found that there was a substantial consensus among manager respondents to accept telecommuting for recruiting women. Also, more than 70% of the male sample believed that telecommuting would contribute (to a high or very high extent) to provide new jobs for Saudi female graduates.

On the other hand, some hesitation exists among women towards this work arrangement, due to the fact that almost 62% of the sample value socialization during work and hence do not agree that the earning is a prime motivation. The following table compares the responses of managers with that of female students regarding telecommuting contribution to women’s jobs.

Table 19. Contribution of telecommuting as seen by managers and female students

	Managers	Female students
Very high extent	27%	12%
High extent	42%	32%
Moderate extent	18%	35%
Limited extent	5%	22%
Do not contribute	2%	8%

The above comparison reflects a major concern that telecommuting will increase isolation of the employee since Saudi women find working almost the only chance to leave home and socialize with peers in society.

In order to respond to information security concerns for certain businesses, a related branch of the same company can be instituted, if other cost implications were simplified.

3.0 Obstacles facing telecommuting in Saudi society

- *From manger’s perspective*

Reduced information security, limitation of management control and face-to-face interaction were the principal concerns to Saudi managers. However, moderate difficulty was anticipated by managers when dealing with telecommuters, and that difficulty,

according to 56% of the sample, would not be affected when the employees are female. This is found to be in accordance with what has been mentioned in the MIS literature.

- *From employee's perspective*

Lack of job security, need for direct guidance and need for training were the most important obstacles in the minds of potential employees.

- *Concerning about compensation*

56% of the female sample disagreed with a quantity-based salary as the compensation method. This can be justified by the lack of awareness with the nature of telecommuting and the fact that time-based salary is very difficult to be implemented in such a work arrangement.

56% of the female sample would accept income from telecommuting, which is less than 30% of the portion who would accept normal work. This supports our hypothesis that employees would accept a lower salary against the perceived benefits of telecommuting as stated in literature.

- *Concerning about technical issues*

88% of companies surveyed always use IT. This means that technical difficulties associated with telecommuting are expected to be minimal, since Saudi business organizations are well-equipped with IT infrastructure adequate to support telecommuters. The introduction of the Internet in the Kingdom will enhance the technical feasibility of telecommuting through Telnet services (remote logins).

Comments Added by Managers

The questionnaires included a space for managers to include their comments and inputs in their own words. The following statements are comments provided by managers regarding telecommuting:

- Management must evaluate both the technical and economic feasibility of telecommuting in their organization. They can enhance telecommuting productivity and satisfaction by being sensitive to telecommuter requests for better equipment and technical support.
- Effective employee-supervisor communication is critical to enhance telecommuting productivity and satisfaction. Female telecommuters are expected to be very concerned about direct guidance and supervision that might influence their performance.
- There should be a minimum number of hours each month that allotted to visiting work premises.

- To enhance the social acceptance of telecommuting, management must provide an environment of emotional support and implement an effective and tailored performance evaluation system.
- This type of work arrangement is required in our culture, and will provide a wide range of jobs to Saudi women for individual work. Its success depends on careful planning and clear specific goals to outline the job description.
- Telecommuting is very appropriate for Saudi women and also for handicapped people. IT helps some companies where work is seasonal so that they do not need to keep excess labor throughout the year.
- A suggestion was given to implement telecommuting in separate compounds as branches of the mother company.
- We should educate the public about the role of women in national development and dismiss negative impressions about female workers.

Recommendations

- In light of annually increasing numbers of female graduates and other cultural and Islamic constraints concerning the work of Saudi women, telecommuting must be socially accepted as a reasonable and legitimate work arrangement. The public should be educated to fully appreciate the importance of the Saudi female role in national development while keeping in view Islamic traditions.
- Management should be more careful when selecting workers for telecommuting participation. Telecommuters must demonstrate strong self-discipline to minimize the problem of family disruption. Face-to-face daily contact is not possible, but control is possible. Telecommuters' self-control, which is a key for telecommuting success, is substituted for direct supervisory control.
- Organizations should provide suitable managerial and organizational settings to manage the expected resistance to changing work arrangements. Moving towards telecommuting in Saudi firms can be accomplished by providing proper training and appropriate procedures.
- Implementing telecommuting optionally and gradually on the most suitable jobs, such as word processing, data entry, etc..., is suggested by this study.
- Businesses should establish clear specific and measurable goals to be attained by telecommuters and establish a basis for performance appraisal and managerial control.

- There is a need to establish specialized training centers for new telecommuters to raise their level of skills to be able to deal with this new work arrangement.
- To enhance job security, female telecommuters should have a reward and promotional system consistent with those of on-site workers.
- Universities should emphasize the importance of telecommuting as an alternative work arrangement for Saudi females in MIS related courses.

Recommendations for Future Studies

Due to the limitations of this study, it cannot be generalized on the entire Saudi population.

Therefore, future studies should be extensive and comprehensive and consider the following items:

- Larger samples of managers.
- Large sample of women, for example; including students from other colleges at different year levels.
- Covering all geographical locations of the Kingdom.
- Including governmental organizations.

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العمل عن بعد كأسلوب بديل لإيجاد فرص وظيفية للخريجات السعوديات

سليمان الحذيف

أستاذ مساعد بقسم إدارة الأعمال

كلية العلوم الإدارية

جامعة الملك سعود، الرياض، المملكة العربية السعودية

ملخص البحث. العمل عن بعد غالباً ما يكون مناسباً للأعمال التي يمكن أداؤها انفرادياً وتكون أقل اعتماداً على عمل الآخرين. هذا البحث يركز على العمل عن بعد كبديل مناسب للبيئة السعودية. الموضوع تمت دراسته من جانبين: الموظف وصاحب العمل. بالتحديد هذا البحث يجيب عن أسئلة مثل: إلى أي مدى يدرك أصحاب العمل السعوديين العمل عن بعد كبديل عملي لإيجاد فرص العمل؟. ماهي المعوقات والصعوبات التي قد تؤثر على تطبيق العمل عن بعد كبديل لإيجاد مثل تلك الفرص في المملكة العربية السعودية؟ ماهي الترتيبات اللازمة لتطبيق العمل عن بعد كبديل مناسب لخريجات الجامعات وذلك باستغلال التكنولوجيا المتاحة. بناء عليه فإن الأهداف الرئيسية من هذه الدراسة هي: دراسة العمل عن بعد من منظور محلي، توضيح ما توصلت إليه أدبيات نظم المعلومات من نتائج في ذلك المجال، اكتشاف العوامل البيئية الأخرى الوثيقة الصلة في ذلك الموضوع. تشير نتائج هذه الدراسة إلى الحاجة إلى توعية وتنقيف المجتمع بفرص العمل عن بعد كبديل مناسب للمرأة السعودية. كذلك هناك شبه إجماع بين المدراء الذين شملتهم هذه الدراسة على قبول العمل عن بعد كبديل مناسب لتوظيف المرأة السعودية. ولكن هناك تخوف من أن العمل عن بعد سوف يزيد انعزالية الموظف خصوصاً أن المرأة السعودية تجد أن الذهاب إلى العمل فرصة للاحتكاك بالمجتمع وتغيير الجو المنزلي.