The Socio-Economic Impact of ICTs in Rural Iran

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Preface

Sharing rural ICT experience is a very important issue. Over 60 percent of people in the Asia-Pacific region and about 40 percent of the global population live in rural areas. In 2005 UNESCO Tehran Cluster Office commissioned the Virtual System Processing Company (VSP) to undertake research on the social and economic impact of rural ICTs to share with others working in this field at national and regional levels.

VSP was created by ICT researchers from the Iran University of Science and Technology (IUST). They are involved in numerous projects in rural Iran to encourage the use of ICTs to help find practical, long-term solutions to social, economic and environmental problems. VSP aims to develop national research capacity to inform policies on ICTs for rural development.

This report is based on qualitative and quantitative research methodologies. The qualitative methods consisted of open-ended interviews with officials and telecenter operators. The quantitative methods consisted of detailed interviews with telecenter users, a questionnaire (Appendix 1) and data from other sources. Iran’s rural ICT network began to be developed in 2000, when the remote northern village of Shahkooh opened the country’s first multi-media center. In 2004 two well-equipped telecenters opened in the nearby villages of Gharnabad and East Livan and Iran developed its National Rural ICT Strategic Plan.

These two telecenters were selected the research because of the length of time that they had been operational and the availability of data. Interviews with users in these two villages were made with the help of telecenter operators.

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Introduction

Limited access to Information and Communication Technology, ICT, means that rural communities lack basic information that could assist them to improve their livelihoods. ICT services can support development in rural areas. A third of all Iranians (33.65 percent) live in 68,000 villages across the country. Most of these villages have yet to use ICTs as a development tool.

With the cooperation of local communities and the government two Iranian Rural Telecenters were built in June 2004 to provide communities with access to the internet and applications such as e-government, e-commerce, e-learning, e-banking and other e-services. Another goal in establishing the telecenters was to create an enabling environment for research and teleworking to increase employment opportunities. The telecenters are public places where people can use computers, the internet, and other media; get training; and obtain a variety of other communication-related services.
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Background of Study

There does not appear to be a universally-accepted definition of a telecenter beyond the general concept of a physical place providing public access to communication and information services. Telecenters can be publicly or privately owned, be part of a public or private franchise, or be provided by international donors. They range from phone shops to cyber-cafés and cottage telecenters for tele-work, and custom, multi-purpose community telecenters (MCTs). Some even provide advanced services such as medical diagnosis and tele-medicine.

Some definitions are below:

- Public places where people can use computers, the internet, and other media; get training; and often obtain a variety of other communication-related services. (Roman and Colle, 2001)
- A place with access facilities and info-com services, including information or additional facilities that can be used as shared facilities by the society and for the benefit of the surrounding society in the CTC location. (Indonesian Infocom Society, 2002)
- A rather loosely used word to describe places that offer the public connectivity with computers and networks. (Roman and Colle, 2001)
2.1 The History of Telecenters

Nilles (1988) distinguishes "regional center telecommuting" from home-based telecommuting, and then further classifies the former type into "satellite center", "local center," and "neighborhood center" telecommuting. Satellite centers are defined as "facilities set up by large organizations to house only their own telecommuting staff." Users of the satellite center would generally have a much shorter commute to work since the center is closer to their homes than the office. Local centers are described as "facilities that house a number of telecommuters from different organizations in a single structure."

Except for serving multiple employers instead of a single employer, these centers are the same as satellite centers. Neighborhood centers are smaller facilities that provide space for only a few telecommuters. They act as mini-satellite or local centers. This type of center is located within walking distance of the telecommuter's home.

These distinctions have not been uniformly observed. For example, the terms "local work center" and "satellite office" have often been used generically to refer to telecommuting centers, without distinguishing whether they are single- or multiple-employer facilities and how close they are to the telecommuter's home. Other terms are also employed. In particular, "teleworking" is commonly used as a synonym for telecommuting, especially in Europe and Japan, but also in the United States. Consequently, the phrase "telework center" has appeared in the names of facilities in Hawaii and Washington State, and was at one point being used in the planning of facilities in Kentucky.

In 1991, however, the telecommuting community was informed that the words "telework" and "telework center" had been trademarked by a California consulting firm, and that use of those words without acknowledgement could bring about legal action. This brought a storm of protest, both in the U.S. and abroad, since there was believed to be ample evidence that the terms in question were in the public domain (Gordon, 1991a, 1991b, 1991c).

While the costs of litigation to fight the trademark were considered prohibitive, the terms have continued to surface in the popular press and elsewhere, and it appears that the trademark is not currently being defended. Nevertheless, until recently, newer telecommuting facilities in the U.S. have avoided using...
the word telework in their names, giving rise to titles such as "Tele-business Work center" and "Alternative Worksite Center".

The telecommuting center concept is dynamic and, as this report shows, is being implemented in a variety of ways. Hence, the terminology will likely continue to evolve as well. With a few more years of implementation experience, it may be possible to develop a robust typology of variations on the telecommuting center idea. In the meantime, however, we have chosen in this report simply to use the generic phrase "telecommuting center", modified as appropriate with adjectives such as "single-employer", "multi-employer", "neighborhood", and "rural".

For brevity, we often abridge the phrase "telecommuting center" to "telecenter". The word telecenter is achieving widespread circulation in the U.S. and internationally, apparently having been invented more or less independently in a number of places (Gordon, 1992b, 1992f, 1993c; Henricks, 1993). And while UC Davis' use of "telecenter" has also been challenged by a recently-incorporated California firm whose name contains the word (Harris, 1993), the challenge is considered to be without legal merit (MacDonald, 1993).

2.2. Telecenters across the World

Most remote work facilities are tele-cottages: small centers, typically located in rural areas that provide work stations with advanced telecommunications and data links for use by the local population. Tele-cottages are being used as a tool to promote economic development in depressed rural areas. They are a promising means of stemming the ongoing migration of rural populations into already overcrowded urban centers.
Training in the use of telecommunications and data processing equipment is often provided by the operators of the tele-cottages, as well as assistance in small business formation and brokerage of services. The tele-cottage concept originated in Scandinavia in 1985 and is spreading rapidly to other parts of the globe.

The second major type of remote work facility found in other countries is the single-employer center. These offices can be large or small. The term "satellite office" is usually used to describe this type of center. However sometimes, as in Japan, satellite office can also refer to multi-employer remote work facilities.

Another form of remote work facility is the multi-employer telecenter. A number of these facilities have been opened on an experimental basis, providing work stations for a total of 6 to 100 employees drawn from five to twelve employers. The Marne-la-Vallée neighborhood work center in France, the Benglen neighborhood work center in Switzerland, the Nykvarn neighborhood work center in Sweden and the Shiki Satellite Office in Japan all took this form. The planned Atsugi Satellite Business Park in Japan will also be of this type.

Other types of remote work facilities include the resort office, the creative office, the office train, the floating office, and "off-shore" facilities of firms that relocate data and information processing jobs from areas or countries with high wage rates to areas or countries with lower wages for the same work. The latter type of facility most often contains a decentralized function with on-site supervision, and hence may not be telecommuting in the strictest sense.

However, it is illustrative of the fact that much information work is location-independent (unlike off-shore manufacturing, for which the transportation costs of raw materials and finished products are still key location factors), and can be done anywhere in the world that has adequate telecommunication linkage to the head office. As a remote work concept, an off-shore information processing facility is related to a telecommuting center. Indeed, "true" telecommuting and off-shore data processing with an on-site supervisor may be combined in the same rural tele-cottage.
Australia
In 1992, the Australian government approved funding over four years for a maximum of 30 telecenters. The program is similar to the Community Tele-Services Centers (CTSC) concept in that its purpose is to provide remote areas with advanced telecommunications and computing equipment and links to services in other regions in order to promote local employment and business prospects (Gordon, 1992f).

Telecommuting in Australia is closely linked with the Open Learning Network Centers (OLNC) program. OLNCs originated as a way to provide distance education for children living in the "outback" (rural Australia). Today OLNCs are found in urban settings as well. Existing governmental policies seek to include work and social welfare activities in these educational centers. OLNCs with these additional functions are referred to as tele-cottages (Isomura, 1993b).

Telecom Australia is experimenting with a tele-cottage at Walcha in New South Wales. The small satellite office, located in a rural area, was scheduled to open July 1992 (Wood, 1992).

Canada
Information from two experiments in Canada is provided in this section. The first, the BC TEL satellite office in Langley, British Columbia, is a fixed location with employees permanently assigned. The second, the Bank of Montreal floating office program, is an example of the non-territorial office concept. Participating employees give up a fixed office location and work from home, a branch office or customer premises in return for a more flexible work schedule.

France
Information on two telework arrangements reported in France is provided in this section. One is an experimental neighborhood work center established by the French government. The second is a satellite office arrangement implemented by a private firm in response to a labor shortage in Paris.

Jamaica
Jamaica Digiport International (JDI), established in 1988, is a joint venture among the US company American Telephone and Telegraph (AT&T), the British company Cable and Wireless and Telecommunications of Jamaica. JDI
is an offshore provider of advanced telecommunications to information processing firms in Jamaica. These firms use the JDI facilities to do data processing work for US clients. Approximately 600 people are employed at the JDI facility, at wage rates that are 10-20 percent of the US rate for comparable work (Qvortrup, 1992).

Japan
In Japan, the need for office decentralization is perceived because of high land prices in urban core areas and difficulties with locating in an urban core area (congestion and long commute times). These difficulties are particularly acute in Tokyo. In addition, predictions of a serious labor shortage led businesses to consider possibilities for drawing married women with children back into the work force in great numbers. In Japan, women traditionally stop working when they marry or have children.

United Kingdom
The tele-cottage concept is spreading throughout the United Kingdom. The first of these small, rural remote work centers was established in December 1989, and approximately 45 were operational by 1993 (International Flexwork Forum, 1993b). In addition, prefabricated, modular telecenter buildings are being marketed (Gordon, 1993c) and there is interest in franchising the "Telecenter" concept (Beacon Group and Roarke Associates, 1993). While most telecenters are located in rural areas, some are being established in urban areas near London.
2.3. Assessing the Development Impacts of Telecenters

Telecenter impact assessments answer if and how access to ICTs benefits the individuals and communities they serve. Telecenters often focus on ICT and improving communication and therefore will only be able to influence wider development issues such as business and education development to the extent to which information and communication is important to individual users. Social development processes are long term and complex. The telecenter will be able to demonstrate clearly the outcomes of deliverable of its efforts (e.g. number of computers provided, numbers of people trained, etc). However, even with detailed baseline information and ongoing monitoring, it will always be limited in the extent to which it can demonstrate how these outcomes have led to development impacts. In the following we review the international telecenter assessments.

2.3.1 Rural Telecenter Impact Assessments and the Political Economy of ICT for Development (ict4d)

Information Communications Technologies for Development (ict4d) is a movement involving a broad spectrum of “stakeholders” that links increased access to ICTs to economic and social development.

The approach taken in this Framework is to break the evaluation of telecenters into stages – first the stage of Pre-project evaluation, and the second that of One-year implementation evaluation. The first aims to study whether an area is an appropriate location for a telecenters project. The second evaluation looks at whether the telecenters, over a period of time (one year here) have accomplished any short term goals. The main instruments for such an evaluation include a survey, an economic survey, and interviews with telecenters owners/operators.

The aim of this effort is to find a way to substantiate claims made by ICT4D telecenter projects (supported by different stakeholders in sites around the world) to decide if and how access and training are creating positive social and economic development. (Jessica Rothenberg-Aalami, 2005)

2.3.2 Hawaii Telework Center Case

The Hawaii Telework Center is located about 20 miles from downtown Honolulu, in a suburban technology park at 300 Kahelu Avenue, Suite 45, Mililani, HI 96789. Restaurants and a supermarket are nearby amenities, and
it is located within walking distance of mass transit. Parking at the center is free in a lot shared by other employers.

The overall findings of the evaluation report were very positive. The authors suggest that telework centers are feasible entrepreneurial operations and that the large-scale use of such centers would result in substantial transportation benefits for the State of Hawaii.

2.3.3 Ballard Neighborhood Telework Center Case
The Ballard Neighborhood Telework Center in Seattle, Washington, was conceived by private-sector entrepreneurs as a means of serving the community, gaining knowledge of telecenter development, and promoting their respective businesses. Global Telematics, a public policy consulting firm, and Market Street Computer Systems, Inc. (MSCS), a computer consulting firm, were responsible for the development of the center. The primary motivation of the founding partners was to create a physical model of a multi-employer neighborhood work center, and then to offer it at market rates to prospective tenants, including participants in the Washington State Telecommuting Demonstration Project.

The Ballard center did generate some media interest and additional business for the founders' companies. The center founders still receive inquiries about implementing telecenters, and requests for tours of the Ballard facility. Word-of-mouth and tours are currently the primary ways by which the center is promoted (Niles, 1993b).

2.3.4 Sweden - Nykvarn Neighborhood Work Center Case
The following case study is based on a comprehensive report (Engström, Provvonon and Sahlberg, 1986) of the remote work experiment conducted in Nykvam, Sweden. Personal interviews were also conducted with project planners Dr. Mats-G Engström, the director of the Nykvam project, and Gunnar Eriksson, a member of the Nordic Institute for Studies in Urban and Regional Planning (NORDPLAN). The Nykvam case study follows a format similar to that of the other seven case studies which were based on completed surveys.

The Neighborhood 90 project was the development and study of one of the world's first neighborhood work centers. It was completed by a team of researchers at NORDPLAN, an inter-disciplinary institute for advanced planning studies in fields such as transportation and communications. The goal of the Nykvam project was to clarify and measure the advantages and disadvantages of the combination of remote office work and new information
technology. The funding allowed the project organizers to offer a fully-equipped office free of charge to willing participants. The offices were comparable to, or better than, the parent offices of the participants. One participant noted that his parent office did not have any computers and that after using the ones in the Nykvarn office he had become his company’s computer guru (Engström, Provvonon and Sahlberg, 1986).

The Nykvarn remote work experiment was a large step forward in the understanding of remote work at a telecenter. The employers participating in the Swedish project seemed more willing and less skeptical than their U.S. counterparts to allow their employees to work away from the office, and to base employee performance on results, not time spent in the office (Engström, 1993).

2.3.5 ITU Evaluation of Multipurpose Community Telecenter Pilot Projects Case

One objective of the program is to evaluate the social, economic and cultural impact of providing access to such facilities and services and thereby sensitize policy makers to the needs and cost-effectiveness of providing such tools for development. Another objective is to assess the needs and demand for ICT in rural and remote areas.

This Case presents a common framework for evaluation of Rural telecenters projects including research questions to be answered, indicators and tools. (Johan Ernberg, ITU, 1998)

2.3.6 South Africa, Preliminary Evaluation of Telecenter Pilot Projects Case

In South Africa the Government established the Universal Service Agency (USA) to spearhead this effort. In 1997, the USA conceptualized a telecenter pilot project for this purpose. Six pilot telecenters were set up in the Northern Province, Northern Cape, KwaZulu Natal, North West Province, Free State and Eastern Cape provinces. The idea was to learn from this pilot project and hopefully come up with the most appropriate method for serving rural people. The USA was aiming to fine-tune this method of service delivery based on the lessons from the pilot and start with the implementation of about sixty of these telecenters during 1998. This survey was directed in these indexes: Accessibility - Functionality - Service usage -Sustainability: Operational costs, expenditure and income. (Fikile Khumalo, 1998)
2.3.7 IDRC, Telecenter Evaluation: A Global Perspective Case
IDRC supports a variety of Telecenter experiences in Asia, Africa and Latin America; some represent collaborations with ITU, UNESCO, and other partners. A number of commissioned studies and papers have been prepared, and efforts toward systematic and useful evaluation frameworks and methodologies are currently being developed in Africa and Latin America. This global working session on telecenter evaluation has helped to create awareness about and strengthen these local, national and regional initiatives, while providing our partners in exchange experiences and initial results with each other. This assessment Case Review: To explore in depth the challenges and opportunities of telecenter evaluation in Latin America, Asia and Africa; - To understand and compare emerging evaluation frameworks and methodologies; - To assess the needs and resources available for telecenter baseline evaluation, monitoring, impact assessment, and to identify salient issues affecting telecenter performance; - To provide an opportunity for telecenter operators, project leaders, and researchers to exchange experiences and lessons across regions. (Ricardo Gómez and Patrik Hunt, IDRC, 1999)

2.3.8 India, Sustainable Access in Rural India (SARI) Project Case
Sustainable Access in Rural India (SARI) project has been widely acclaimed for its efforts to provide comprehensive information and communication services through computers and internet in rural areas in the Tamil Nadu state in India. The project aims to show that viable markets exist for information and communication services in rural poor areas by inventing and deploying innovative technologies, assessments, and business models (SARI website, 2003). Starting in Nov. 2001, the project has so far set up internet kiosks in 39 villages in Madurai district in Tamil Nadu based on a commercial business model. Detailed interviews with the kiosk users and operators reveal that on the whole, kiosks seem to be reaching only 4-8 percent of the village population (only 4-8% of the village households have used the kiosk at least once since its inception). This indicates that only a very small fraction of the village households have benefited from the kiosk. However, the detailed field study revealed a number of other important factors which are relevant for making an accurate assessment of the social and economic impacts of the kiosks. (Rajendra Kumar, 2003)
Research Methodology

Qualitative and quantitative methods have been employed for conducting the research in this specific sector. The qualitative methods consisted of interviews with project officials and Telecenter operators. The quantitative methods consisted of conducting detailed interviews with the Telecenter users based on a questionnaire and using data from other sources. Three Telecenters are selected for detailed study. The questionnaire is available in Appendix 1. These three villages were picked based on factors such as the duration of operation of the Telecenters, and availability of other data sources for making a comparative study. Interviews with users in these three villages were made with the help of Telecenter operators from each Telecenter.

Economic and social indices defined for Qarnabad and Livan Sharqi villages are based on the surveys conducted in other countries on the villages. These indices are categorized as social and economic ones with the necessary information gathered through the questionnaires. In view of UNESCO’s insistence on youths and women, our sample spaces have been picked from female and young villagers in Qarnabad and Livan Sharqi.

3.1. The Research Questions

During study, we focused on the following questions:

- **Social impacts:** What are the impacts on youths, and on women? What are the impacts on health, education, beliefs and culture?
- **Economic impacts:** How does technology affect jobs and incomes in the village? Have the Telecenters resulted in the improved provision of job seeking and employment?
3.2. Selecting the suitable Indicators

Indicators tend to focus on performance, sustainability, content and overall impact. In this report, we focus on a Telecenter’s social and economic impact. Social impact, for example, comprises both outputs and impacts.

- Outputs are the measurable “actions” that result directly from the program operations (e.g., number people helped, number of services offered)
- Impact is the effects of the program on the social problem it was intended to address (e.g. computer literacy or job creation)

Outputs are generated for the duration of the project, and can be collected with certainty over a defined period of time if and when the proper systems are in place. Impacts may not be visible or measurable for a certain period of time after the project has ended. Monitoring the impact of a Telecenter will be helped by having a clear set of objectives and key performance/impact indicators, in particular by identifying in advance why a specific activity is being undertaken, how it is intended to improve the livelihoods of people and how this improvement will be measures. This will also require a system of internal monitoring and reporting in order to predict, monitor and assess performance. This system may monitor some factors such as:

- Outputs or deliverables from Telecenter activities such as numbers of people trained
- Processes of the Telecenter, such as the success of different partnerships
- Outcomes of Telecenter activities, such as improved education level

In our research we consider some indicators for monitoring social and economical impact of telecenters. The proposed indicators fall under two main categories, each with several subcategories:
Telecenter General indicators
   o Related Community Parameters
   o Basic Telecenter parameters

Impact indicators
   o Economic impacts
   o Social impacts

The Impact indicators were measured before and after implementation of telecenter.
3.2.1. Telecenter General Indicators
A number of qualitative and quantitative parameters together describe a Telecenter. Here these parameters classified as telecenter general indicators. Telecenter location, origin, ownership, and management, facilities and equipment, services, and staff are some of these indicators. In our research we consider these indicators for cognition of community parameters:

- Geographic location of the society
- Population size, age, gender, marital status, children
- Settlement type, geography, environmental setting
- Income distribution, savings, credit
- Main economic activities (sectors), products
- Commercial activity, businesses, trade patterns
- Occupation, employment status
- Main institutions, organizations
- Physical infrastructure, services
- Distance to other services (medical, government, communications, libraries, education, markets, etc.)
- Level of education
- Schools, other educational facilities
- School enrollment, drop-out rates, completion rates
- Adult literacy rate
- Population growth rate, life expectancy
- Water, sanitation services
- Healthcare programs, facilities, vaccination rates

Also In this research we consider some indicators for cognition of general telecenter situation as below:

**Origin, ownership, and management**
- Origin of Telecenter
- Ownership
- Management

**Facilities and equipment**
- Building
- Equipment
- Software
3.2.2. Impact indicators

Finding measures of impacts on individuals and the society is the key objective of our studies. Such measures involve very important research questions for many local, national, and international stakeholders.

- Is the Telecenter a positive force for development?
- Does it benefit some people more than others?
- Does it act as a catalyst for other positive initiatives and innovations at the local level?
- Does it help people to help themselves?

These questions convey the assumptions and vision of the promoters and fenders of Telecenter programs. Other questions are narrower and more practical.

- Is a Telecenter more beneficial to some economic sectors than to others? For every user who comes to the Telecenter, how many others are indirect beneficiaries?
- Are there drawbacks to the Telecenters, and who suffers as a result?

The next question is “Who caused what?” Causality is one of the big conundrums in measuring impacts.

- Did the Telecenter contribute to the rise in local economic productivity or the increased participation of women in local organizations?
- Were these economic and social changes already occurring and did they themselves act as catalysts for locating the Telecenter in that community?
In this research, we tried to find answers for this question.

**Economic Impacts**
For measuring economic impacts of Qarnanad and Livan telecenters on four community four main domain of impacts were selected.

*Income, prices*
- Change in household income
- Value of Sales (agricultural, non-agricultural)

*Work related*
- Percentage (especially youth) employed and earning wages in community
- Percentage of successful job searches using Telecenter
- Increase in hours of service through reduced downtime, travel time (e.g., shops, mechanics, pharmacy, clinic, ambulance)
- Increased number of different markets for buying, selling
- Changes in occupational pattern
- Employment via telecenter

*Wealth, property accumulation*
- Growth in number, size of community businesses
- Percentage of households with new computer

*Information search*
- Time to obtain information, communications
- Monetary cost to obtain information, communications
Social Impacts

For measuring social impacts of telecenter on four communities, five main domains of impacts were selected as below:

Social structure, status
- Percentage of professional workers residing in the community
- Ratio of employed to unemployed adults, youth

Health
- Improvement Hygiene Information
- Medical Care Improvement

Education
- Participation in distance-learning courses
- Competence in English, as second language
- Competence in skills related to Telecenter use (word processing, spreadsheets, simulation games)

Behavior
- Use of Telecenter (purpose, frequency, success rate)
- Access to information
- Regular readers of newspapers, news sources online

Knowledge, values, attitudes
- Awareness of events in the country, the world
- Attitudes toward traditional culture, modernization
Gharnabad Telecenter

The first telecenter in Iran was launched in Gharnabad village, near Gorgan city in Golestan province on June 27, 2004 with the aim of creating a good environment for learning, a place for research and a platform for job opportunities.

Gharnabad village is located 20 kilometers from Gorgan city in the northern Golestan province. Administratively, it is annexed to Gorgan. The village is at 270 meters of altitude. Climatic conditions are mild and humid depend on the seasons of the year. Due to its location next to forests, the village has high humidity and 625 millimeters of rainfall every year.

Not much information is available about the history of the village, but old villagers believe that it derives its name from “qarn” (meaning century) due to ancient monuments there. The majority of residents in Gharnabad have migrated from Shahkooh, the first Iranian village equipped with Internet.

Gharnabad has a population of 2,109 in 508 families. Seventy three percent of the villagers are literate, including 763 women and 30 women have BA degrees. Residents of Gharnabad are either self-employed or working in industries. Cotton, wheat, rice, potato and barley are grown by the villagers.
4.1. Gharnabad telecenter
Villagers in Gharnabad are provided with virtual educations, virtual library, e-commerce, e-banking, distance working and similar services, thanks to the telecenter project. The telecenter project is mainly aimed at improving economy in the village.

Origin, ownership, and management
People in Gharnabad have helped in the construction of the center and its equipment with the necessary facilities. The Telecommunications Company of Golestan province is considered the official owner of the center.

Facilities and equipment
The center is located in a two-storey building. The first floor houses an amphitheater, classrooms for learning and cybercafés and the second floor is dedicated to research and contains branches of the post office, post bank and the Ministry of Communications and Information Technology.

Services
This center meets the villagers’ needs for information about teaching as well as cultural, economic, social, governmental services in the village. Non-governmental organizations (NGOs) are also active there.
Communications: Communications necessities like telephone or fax are available. The Golestan Telecommunication Company is responsible for these services.

Posting: Villager can mail everything to domestic or foreign destinations. These services are provided by the Golestan Post Company.

Post bank: Villagers bank requirements for all services which include depositing, withdrawals, loans, savings accounts, payment of installments, rural credit card and other related services are provided in this section. The post bank of the state is responsible for the affairs.

Coffee net: This unit provides access to the internet. The connection speed is very good and much faster than the speed available at homes. In addition, there are training courses for students several times throughout the day.

Government desk: E-government is developing in Iran and will service the people of Gharnabad via the government desk soon. In this unit services which normally took villagers to the city are available. Services like passport renewal, voting, ID cards, and other governmental services are available here.

E-learning: All of the virtual learning services, access to e-books and generally all services which are available online are also available in this center.

Leasing virtual offices: Government organizations in contact with rural areas previously had their own offices in villages that had maintenance problems, or could not service rural people because of the lack of rural offices. In this center, organizations can rent virtual offices that can be small or big depending on their requirements. Organizations can service villagers with the help of these virtual offices.
Teleworking: The Information technology growth center in the village can have an important role in providing rural IT specialists with their requirements. It can also provide employment backgrounds utilizing teleworking.

Hall and amphitheatre rentals: The hall and amphitheatre of the center can be used for educational and entertainment programs or as agricultural propagation, women’s training and other purpose classes. This hall can service different organizations that would like to rent it.

4.2. Gharnabad Telecenter Impact indicators
Opinion polls were conducted in the northern village of Gharnabad. Like other Iranian villagers, the residents of this village have experienced poverty and deprivation, but the Telecenter granted them an international reputation as well as access to better services.

Questionnaires were distributed among the villagers on the impact of Telecenter project there. The respondents were selected of different groups of age and of different points of view in a bid to have the most reasonable result. Social and economic criteria were also set for analyzing the data. The factor of economy involves mainly living affairs and incomes while the social criterion is related to culture, religion and traditions. The interviewees were divided into three groups: the whole of the society, women and youths. Women account for a large segment of the village population and they have long been subject...
to oppression. Moreover, Iran is a young country and the demands of the younger generation are interesting to hear.
In general, samples have been taken up from Gharnabad for a correct evaluation of the impacts of the telecenter.

4.1. Participants in Survey on Gharnabad Telecenter
Some 165 questionnaires were doled out among the residents of Gharnabad and respondents were picked from three points of view: gender, marital status and education.

4.1.1. Gender
Women constituted 51 percent of the respondents in the survey. When it comes to the younger generation, the percentage changed with 53 percent being men.

![Figure 4-1 Factor of Gender](image)

4.1.2. Marital Status
Among the respondents in Gharnabad, 77 percent were single and the rest were married. As far as women are concerned, 29 percent were married. For the youths, 92 percent were single.
4.1.3. Education
The number of educated people in any society indicates the level of development there. Relying on figure 4-3 and based on statistical data, high school graduates constituted the majority of the interviewees in the survey (45 percent). They were followed by holders of bachelor’s (23 percent) and high schoolchildren (20 percent). As for women, around 30 percent of them are educated. Around 49 percent of young interviewees were high school graduates.
4.1.4. Unemployment
Nearly 4 percent of the respondents are jobless, with 6 percent of women identifying themselves as unemployed.

![Figure 4.4 Jobless Rate](image)

4.2. Economic Impacts
Indicators of the economic impacts of the telecenter included changes in agricultural revenues, computer purchase power and direct and indirect job creation.

4.2.1. Income
An increase in the level of incomes represents a major factor in public satisfaction. Information Technology (IT) offers a solution for increasing the level of public incomes. Virtual systems, computer-based jobs for homemakers and extra income for youths are the significant achievements of IT. That is why the governments are paying due attention to IT, which can reduce the jobless rate, increase the gross national product and yield hard currency. Villagers do not have the same access as urban people have to technology. IT can of help to minimize costs and add to public revenues.
According to the figure 4-4, the telecenter in Gharnabad has managed to raise the income of six percent of the respondents. One percent is of the view that their incomes have dropped due to IT. Specifically for youths, five percent admit their incomes have increased, and for women, 20 percent acknowledge that their incomes have jumped.

4.2.2. Agricultural Revenues

Villagers mainly rely on agriculture to make a living. Any development in the agricultural sector can improve living conditions in the villages.

With the entry of the Information Technology, the agricultural sector has developed significantly and more markets have been localized for agricultural
produce. The telecenter project helps equip farmlands with modern technology while new markets are found for electronic selling of products. As the above figure shows, 43 percent of the respondents believe that the telecenter has influenced their sales, but the rest reject any connection.

4.2.3. Computer Purchase
Computers are more of an economic tool for increasing revenues than a recreational toy. They can create service-related jobs for homemakers and the rate of computer purchase is an important factor in information development in any society.

![Figure 4-6 Tendencies for Computer Purchase Due to Telecenter](image)

After the telecenter entered the village, only 13 percent managed to buy computers. Only ten percent of women have been able to purchase a computer in the light of the telecenter project.

4.2.4. Employment
Finding chances for job-seekers has become a major source of income. Special centers have taken shape with regular connection to different organizations and industries that may employ human resources. Information Technology has facilitated and the telecenter in Gharnabad is doing a similar job for the villagers.
The telecenter has managed to find job opportunities for 36 percent of the respondents. The figure falls to 33 percent for women and to 34 percent for youths.

4.2.5. Telecenter Jobs
All governments are preoccupied with employment for their people. Employment is making a big contribution to development in any society. Modern technologies, notably the Information Technology, play a major role to that effect by offering virtual job opportunities. The respondents in Gharnabad have been asked to say how the telecenter has managed to offer them job opportunities.
The telecenter has provided 15 percent of the interviewees with jobs. The figure reaches 20 percent for women who were involved in the survey. The center has created jobs for only nine percent of young respondents.

4.3. Social Impacts
Since social impacts are vast, we have based our research methodology on considering social and cultural aspects in the same category. Therefore, health and living skills, foreign language and computer skills as well as cultural values like the impact of telecenters on morality and religion.

4.3.1. Health
The factor of health guarantees the survival of all societies and healthcare services represent a significant issue wherever in the world. But the existence of healthcare services in sparsely-populated villages is not cost-effective, encountering governments with a challenge when it comes to service-providing to villages. The residents of Gharnabad were asked about the health issue in the survey.

Fifty-nine percent of the respondents have enjoyed healthcare services provided by the telecenter with women and children constituting the least number of those seeking medical consultations. Nearly 59 percent of the young respondents have enjoyed these services. A parallel survey was conducted about the variety of services provided by the telecenter. These services were categorized as a health databank, rural health services and medical services.
As the figure shows, 47 percent of the respondents have taken advantage of the databank offering healthcare information. Women have been reluctant to use these banks while the youths have been fond of them. But women have been inclined towards rural health services, suggesting a solution for development of these services in the future.

4.3.2. Basic Computer Skills

It is vital for people to learn computer skills even at low levels. In Gharnabad, 84 percent of the interviewees have moved to learn computer skills with youths account for 89 percent – a significant percentage.
The telecenter taught the following skills: Operating System, Excel, Power Point, MS Word, Email and Search. Searching had attracted the majority of the respondents, followed by email and MS Word for typing. Regarding women, power point comes third.

4.3.3. Learning Foreign Languages
Any communication with the world requires learning a foreign language. Internet and modern technologies provide solutions for learning languages. The telecenter in Gharnabad has been involved in teaching foreign languages.
Around 64 percent of the respondents, and 71 percent of the women, agree that the telecenter has helped improve language teaching.

4.3.4. Telecenter Education Courses
Governments throughout the world focus on education as a factor for improving the level of public knowledge. But education costs too much because it requires a place, equipment and teachers. A fair distribution of educational facilities is another challenge to face. Today, technological developments have resolved this problem to some extent and distance teaching has responded to numerous educational needs. This sort of services is offered by Gharnabad telecenter.

![Figure 4-14 Participation in Telecenter Distance Courses](image)

Sixty five percent of the respondents in Gharnabad have not used these courses and only 35 percent have enjoyed these services. The figure becomes more hopeful among women and youths, reaching 43 percent in terms of using these services.

4.3.5. Referring to Telecenter
Information Technology is getting a bigger and bigger place in different aspects of humanity’s life. In view of IT developments, its tools are being used further. Every year, many Internet Service Providers start work, websites are launched and users are rising.
In Gharnabad, people refer to the telecenter on a weekly basis, in general. Thirty three percent refer every day and 15 percent go there once a month. Thirty one percent of women refer to the telecenter weekly and 26 percent frequent there monthly.

![Figure 4-15 Referrals to Telecenter](image)

**4.3.6. Motives for Referring to Telecenter**

The residents of Gharnabad refer to the telecenter for different reasons, but mainly (37 percent) for banking followed by entertainment and education. For women, the order changes as they prefer education to entertainment. Few people refer to the telecenter for finding job or carry out their business through Internet, requiring serious measures.

![Figure 4-16 Motives for Referrals to Telecenter](image)
4.3.7. Reasons for Referral to Telecenter

We leave our domiciles every day for different purposes. Some of us go shopping, some others go to work and some others may go to meet their friends and chat. Finding the reasons for which people leave home can improve the quality of service-providing to them. Education is cited as the most important reason for the people to leave home. Behind education come cybercafés and banking operations.

![Figure 4-17 Reasons of Referral](image)

<table>
<thead>
<tr>
<th>Daily Affairs</th>
<th>Banking</th>
<th>Cybercafe</th>
<th>Learning</th>
<th>Information enquiry</th>
<th>Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>22</td>
<td>16</td>
<td>21</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>16</td>
<td>27</td>
<td>30</td>
<td>17</td>
</tr>
<tr>
<td>7</td>
<td>18</td>
<td>11</td>
<td>31</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

4.3.8. Information Tools

People read newspapers, magazines and books to improve their knowledge of what is happening in the society. The people of Gharnabad click into news websites followed by books and written newspapers. Women click into news websites more than others, but they are less interested in books. Youths love books more than women, but they refer less than women to news websites.

![Figure 4-17 Reasons of Referral](image)

<table>
<thead>
<tr>
<th>Book</th>
<th>Electronic newspapers</th>
<th>Newspapers</th>
<th>News Websites</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>18</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>12</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>17</td>
<td>11</td>
<td>13</td>
</tr>
</tbody>
</table>
4.3.9. Learning about National and International Events

Our opinion poll asked how the residents of Gharnabad get informed about the country and the world. As the figure 4-19 suggests, the Gharnabadis focus on economy more than anything else followed by science and sports. Political affairs come at the bottom of their interest. Women choose culture after economy and science and youths behave similarly.

4.3.10. Familial and Local Values

As the figure 4-20 shows, 69 percent of the respondents confirm the positive impact of the telecenter with three percent opposing it. The rest does not accept any connection between the telecenter and eclipsed familial relations. Thirty nine percent of the women reject any link between the telecenter and their family relationships.
4.3.11. Traditional and Modern Cultures

The world is getting smaller and cultures become more vulnerable to changes. In Gharnabad, 62 percent of the people believe that this impact has been positive while seven percent highlight the negative impact of telecenter on their culture. The rest does not link telecenter to culture. Women think more positively while youths think more negatively.

![Figure 4-21 Impact of Telecenter on Traditional Culture]

4.3.12. Impacts on Morality and Religion

The world has become a village where news spread in a matter of seconds and people are naturally exposed to the invasion of cultures. Sixty two percent of the respondents in this village say the telecenter has positively influenced their moralities and Islamic beliefs. Thirteen percent say it has had negative impacts and the rest have observed no influence. Sixty one percent of women and sixty two percent of youths have given a positive assessment. Each response has similar reactions from the three groups of interviewees.
4.3.14. Impacts on Social Freedoms
Freedom is a preoccupation of mankind and any new technology hopes to expand the domain of liberty. In Gharnabad, 68 percent of the respondents believe that the telecenter has positively influenced social freedoms while 14 percent describe the impacts as negative. The remaining 18 percent have seen no impact. These percentages can apply to women, but 57 percent of youths believe that the telecenter has served their freedoms.
Livan-e Sharqi Telecenter

The second telecenter was launched in Livan-e Sharqi village, in Golestan province, with the aim of creating a good environment for learning, a place for research and a platform for job opportunities. Livan-e Sharqi’s population is growing so fast that it can be considered a town and not a village. Livan is restricted by the Caspian Sea in the north, the Alborz Mountains in the south, Nokandi city in the east and by Hashtikeh village in the west. The village occupies 3,000 hectares of land. The climate is mild and humid with 1300-1500 millimeters of rainfall every year. The village has changed names on different occasions. It was referred to as the Argoon River under the Safavid Dynasty, Laivan under the Qajars and Livan under Pahlavis.

The village houses 8,000 residents in 1,200 families. Livan has one kindergarten, five elementary schools, three junior high schools and two high schools. In addition, 400 villagers hold BAs, 70 have MAs and 25 have PhDs in different fields of management, history, medicine, electronics, maths, accounting and computers. Most of the Livan residents are familiar with computer while the dominant profession is agriculture and animal husbandry. Wheat, barley, cotton, vegetables and fruits are produced there.
5.1.2. Livan telecenter
Villagers in Livan-e Sharqi are provided with virtual education, virtual library, e-commerce, e-banking, distance working and similar services, thanks to the telecenter.

Origin, ownership, and management
People in Livan-e Sharqi helped in the construction and equipping of the center. The Telecommunications Company of Golestan province is considered the official owner of the center.

Facilities and equipment
The center is located in a two-storey building. The first floor houses an amphitheater, classrooms for learning and cybercafés. The second floor of the building is dedicated to research. Post office, post bank and the representative department of the Ministry of Communications and Information Technology are also located on the second floor of the building.

Services
This center meets the villagers’ needs for information about teaching as well as cultural, economic, social, governmental services in the village. Non-governmental organizations (NGOs) are also active there.

*Communications:* Communications necessities like telephone or fax are available. The Golestan Telecommunication Company is responsible for these services.
Posting: Both domestic and foreign postal services provided under the authority of the Golestan Post Company.

Post bank: Banking services include deposits, withdrawals, loans, savings accounts, payment of installments, rural credit card and other related services are provided in this section. The post bank of the state is responsible for the affairs.

Coffee net: This unit provides access to the internet. Connectivity is very good and there are training courses for students several times throughout the day.

Government desk: E-government is developing in Iran and in this unit services which normally took villagers to the city are available such as passport renewal, voting and ID cards.

E-learning: All of the virtual learning services - access to e-books and generally all online services are available in this center.

Leasing virtual offices: Government organizations for rural areas previously had their own offices that were expensive to maintain or could not service rural people because of the lack of rural offices. In
this center, agencies from organizations can rent virtual offices in this center and to provide services to villagers.

- **Teleworking**: Information technology in the village can provide employment as well as access to information and education.

- **Hall and amphitheatre rentals**: The hall and amphitheatre of the center can be used for educational and entertainment programs or agricultural extension, women’s training or youth groups.

### 5.2. Livan Telecenter Impact indicators

Livan-e Sharqi, a village in the northern Golestan province, was the second target for implementation of telecenter project. Relying on its young and talented population, this village is administrating this center. Since its establishment, the telecenter has offered a great deal of services in different fields to the residents of Livan-e Sharqi. One can easily realize that the people in this village have been influenced by the telecenter project. To that effect, a survey was conducted there. Livan-e Sharqi is more populated than Gharnabad and sample-taking had to be carried out on a larger scale. Questionnaires were distributed among the 7,000 villagers to give the most precise and the most accurate result.

### 5.1. Participants in Survey on Livan-e Sharqi Telecenter

Some 283 questionnaires were doled out among the residents of Livan-e Sharqi to express their views on the project. To have a more accurate income, the respondents were picked from three points of view: gender, marital status and education. The average age group is 25.31.

#### 5.1.1. Gender

According to the survey, women accounted for 52 percent of the respondents. As far as the younger generation is concerned, the percentage changed with 60 percent being women.
5.1.2. Marital Status
Among the respondents in Livan-e Sharqi, 68 percent were single and the rest were married. When it comes to women, 76 percent were unmarried and 91 percent of young people.

5.1.3. Education
Relying on figure 5-3 and based on statistical data, high school graduates and high school dropouts account for 30 percent each in the survey. They were followed by university graduates (22 percent). Moreover, 36 percent of the female respondents had continued their studies until high school. This percentage stood at 40 percent for the young interviewees. The interesting
point is the shortage of MAs degree among the youths (11 percent of the respondents).

![Figure 5.3 Education](image)

5.1.4. Unemployment
According to the result of the survey in the village, nearly 12 percent of the respondents are jobless. The percentage is identical for the women and the youths in Livan-e Sharqi.

![Figure 5.4 Jobless Rate](image)

5.2. Economic Impacts
In order for making an assessment of the economic impacts of telecenter establishment in the villages, certain indicators have been included in the questionnaire. These indicators include agricultural revenues, computer purchasing power and direct and indirect job creation. Women and youths were picked in Livan-e Sharqi to undergo the survey.
5.2.1. Income

Only four percent of respondents believe their revenues increased after the entry of the telecenter into their village and two percent say their incomes have declined. For women, two percent say their revenues have dropped and one percent that incomes have increased. Three percent of the young respondents report an increase in their incomes. Twenty percent of those who are directly working with the telecenter say their revenues have increased with four percent saying the contrary.

Figure 5.5 Income Fluctuations

5.2.2. Agricultural Revenues

In Livan-e Sharqi, only 34 percent of the respondents in the survey believe that the telecenter has helped their agricultural revenues go up. The percentage falls to 32 percent for the youths and to 26 percent for women.
5.2.3. Computer Purchasing Power

The number of personal computer (PC) buyers can serve as an indicator of the influence of Information Technology. In Livan-e Sharqi, 29 percent of the respondents bought PCs after the telecenter was launched. This percentage is 27 percent for women and 26 percent for youths.

5.2.4. Employment

Employment serves as a factor for analyzing economic dynamism in any society. Information Technology has facilitated job seeking. The telecenter in Livan-e Sharqi is doing a similar job for the villagers.
The telecenter facilitated employment for 27 percent of respondents; the figure falls to 33 percent for women and youths.

5.2.5. Telecenter Jobs
Telecenter can provide certain individuals with the careers they can afford. In Livan-e Sharqi, volunteers ran for vacancies to get employed.

As the figure 5-9 indicates, the telecenter has provided nine percent of interviewees with jobs. The figure reaches 10 percent for women who were involved in the survey. The center has created jobs for only six percent of young respondents.

5.3. Social Impacts
Since social impacts are vast, we have based our research methodology on considering social and cultural aspects in the same category. Therefore, health and living skills, foreign language and computer skills as well as cultural values like the impact of Telecenters on morality and religion.

5.3.1. Health
Healthcare services in sparsely-populated villages are not cost-effective, but IT can offer distance medical services and provide information. Forty-eight percent of the respondents in Livan-e Sharqi confirm the positive impact of the telecenter on healthcare services. Such optimism is shared by 43 percent of the women and 38 percent of the youths interviewed in the survey.
As the figure 5-10 shows, 45 percent of the respondents have taken advantage of the databank offering healthcare information. Women and youths prefer rural health services to others.

5.3.2. Basic Computer Skills
The supply of software on the market has introduced changes into different professions. They have facilitated many jobs and have even created opportunities for employment. As a result, it is necessary for any society to teach such software.
As the figure 5-12 indicates, 88 percent of the interviewees have learned computer skills with youths account for 89 percent – a significant percentage. Another field of interest in this chapter is related to the packages the learners have been involved in. The telecenter taught the following skills: Operating System, Excel, Power Point, MS Word, Email and Search. According to the figure 5-13, Internet and searching has attracted the majority of the respondents, followed by power point. They have shown little interest in learning Excel, which can be of great help.
5.3.3. Learning Foreign Languages
Learning Latin languages, specifically English, is a necessity for anyone in the world. The telecenter in Livan-e Sharqi has offered sources for teaching English in different groups of age. Around 70 percent of respondents agreed that the telecenter has helped improve language teaching with 68 percent of the women giving a positive assessment of the telecenter to that effect.

![Figure 5.14 Improvement of Language Teaching](image)

5.3.4. Telecenter Education Courses
Education has changed in its forms with distance teaching becoming a popular method in the world. The telecenter in Livan-e Sharqi has offered this and the survey evaluates the interest of villagers in these courses.

![Figure 5.15 Participants in Telecenter Distance Courses](image)
As figure 5-15 suggests, less than half of the respondents (44 percent) have not taken these courses, 42 percent for women and at 40 percent for youths.

5.3.5. Referring to Telecenter
It is important to know how often villages refer to the telecenter. In Livan-e Sharqi, most people refer to the telecenter on a weekly basis. Fifty eight percent of the women frequent the center once a week and 29 percent of the respondents refer to it every day, including 32 percent of the youths.

Figure 5.16 Referrals to Telecenter

5.3.6. Reasons for Referral to Telecenter

Figure 5.17 Reasons for Referral
According to the figure 5-17, the residents of Livan-e Sharqi use the telecenter mostly for education, followed by banking. For women, education and banking stand at the same level while 32 percent of youths refer to the center for information and 20 percent for banking.

5.3.7. Motives for Referring to Telecenter
The figure 5-18 indicates that the villages in Livan-e Sharqi have used the telecenter mainly for their postal affairs (26 percent). It is followed by entertainment for both women and youths. Women account for 30 percent and the youths for 31 percent when it comes to entertainment in telecenter.

5.3.8. Information Tools
In Livan-e Sharqi, 50 percent of the respondents refer to the telecenter for news, followed by books and electronic newspapers. Women pay due attention to books (26 percent) while youths prefer news websites.
5.3.9. Learning of National and International Events
Our survey indicates that the telecenter has been mainly used by the villagers in Livan-e Sharqi to know about economic affairs. Science comes behind economy in the survey. Forty four percent of the female respondents have highlighted the factor of economy before science and sports. Young interviewees are not much different from the women.

5.3.10. Familial and Local Values
The phenomenon of globalization has mainly targeted cultures in different societies. Societies have to take advantage of modern technology for promoting their status in the world and strike a balance between technology and tradition. The elecenter has brought new ideas into Livan-e Sharqi.

As the figure 5-21 shows, 77 percent of the respondents in Livan-e Sharqi confirm the positive impact of the telecenter with six percent opposing it. The
rest does not accept any connection between the telecenter and eclipsed familial relations. Seventy two percent of the women and 75 percent of the youths believe that the telecenter has left positive impacts on their culture. Only two percent of the youths give a negative assessment.

5.3.11. Traditional and Modern Cultures
Modern technologies have infiltrated humanity’s life to pit traditionalism against modernism in terms of culture. Villages have been safer than cities in this regard, but the telecenter is changing the order.

![Figure 5.22 Impact of Telecenter on Traditional Culture](image)

In Livan-e Sharqi, 79 percent of the people believe that the impact has been positive, nine percent negative and the rest does not link telecenter to culture. Women and youths share views in this regard.

5.3.12. Impacts on Morality and Religion
Iranians have always been fond of their religious beliefs and followed Islamic teachings. Sixty six percent of the respondents in this village say the telecenter has positively influenced their morality and Islamic beliefs. Fourteen percent say it has had negative impacts and the rest have observed no influence. Women and youths approximately confirm the same trend.
4.3.14. Impact on Social Freedoms

In Livan-e Sharqi, 54 percent of the respondents in the survey believe that the telecenter has positively influenced social freedoms while 15 percent describe the impacts as negative. The remaining 31 percent have seen no impact. These percentages can apply to women. However, 40 percent of the women connect the telecenter with social freedoms.
6

Economic and Social Impact of Telecenters on Iran’s Villages

Iranian villages are getting to know centers providing information technology (IT) and communications services. These centers are fledgling but have managed to target the hearts of the villages. The objective behind these centers is to expand the use of IT and public services. Youths and women in villages have been interviewed to set the stage for analyzing economic and social impacts of telecenters.

6.1 Index Definition
Economic and social indices defined for Gharnabad and Livan Sharqi villages are based on the surveys conducted in other countries. These are categorized as social and economic ones with information gathered through questionnaires. In view of UNESCO’s insistence on youths and women, our sample spaces have been picked from female and young villagers in Gharnabad and Livan-e Sharqi.

6.1.1 Economic Index
This index involves two criteria: income and employment. The former is related to changes in general incomes of the villagers and agricultural revenues due to telecenters and the latter studies creation of jobs in the telecenters or other places.

6.1.2 Social Index
Different criteria include education and information and culture and health. Education and dissemination of information are mainly based on teaching computer, foreign languages as well as distance teaching. Culture deals with familial and moral affairs and social freedoms. Social relations represent another factor.
6.2 Sample Space
Villagers living in Gharnabad and Livan were selected for gathering the necessary information to serve the research. The general characteristics of those picked for the survey are as follows:

6.2.1 Gharnabad
A total of 165 people answered the questions with men representing 51 percent. Seventy seven percent of them were single. The Figure 6.1 shows the educational level of the interviewees.

[Figure 6.1 Education Levels of Respondents in Gharnabad]

Women constitute around 49 percent of the respondents in Gharnabad. Among them, only 29 percent were married. The level of their education is seen in Figure 6.3.

[Figure 6.3 Education Levels of Female Respondents in Gharnabad]

Youths of Gharnabad, selected for the survey, are aged below 25 – representing 61 percent of the whole of respondents. Ninety two percent of these young respondents are single with their education level shows in figure 6.4.
6.2.2 Livan Sharqi

A total of 283 people answered the questions with men representing 48 percent. Sixty eight percent of them were single and Figure 6.2 shows the educational level of the interviewees.

To review telecenters in Gharnabad and Livan-e Sharqi, four sample spaces were taken up. Women constitute 52 percent of the respondents. Among them 24 percent were married. The level of their education shows in figure 6.5
Youths of Livan-e Sharqi, selected for the survey, are aged below 25 representing 58 percent of respondents. Ninety one percent of these young respondents are single. Their education level shows in figure 6.6.

![Figure 6.6 Education Levels of Young Respondents in Livan](image-url)
Figure 6.7 Hierarchies of Criteria and Sub-Criteria in Evaluating Telecenters Impacts on Villages in Iran
6.3 Statistical Analysis
The following steps have to be taken for analyzing the aforementioned criteria and indices.

1. Normalizing the figures obtained from each society
2. Calculating a value for each criterion
3. Comparison of calculations

6.3.1 Economic Impact
Economic indicators entail changes in agricultural revenues, computer purchase power as well as direct and indirect job creation. Women and youths were picked in Livan-e Sharqi and Gharnabad.

6.3.1.1 Income Criterion
The table 6.1 provides the numbers coming from general and agricultural incomes in the sample societies.

<table>
<thead>
<tr>
<th>Communities</th>
<th>Youths in</th>
<th>Women in</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Incomes</td>
<td>Growth</td>
<td>3%</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Lack of Growth</td>
<td>1%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Agricultural</td>
<td>Yes</td>
<td>32%</td>
<td>24%</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>68%</td>
<td>76%</td>
<td>54%</td>
</tr>
</tbody>
</table>

Table 6.1 Calculating Values for Income Criteria

The figures in the table 6.1 are far from one another and they cannot provide a good result in a collective estimation. Therefore, the figures have to be normalized before any comparison.

1. Normalizing the Data
   a. General Incomes: The following formula helps us normalize our data.

   \[
   \text{Value} = \frac{\text{Growth}}{\text{Lack of Growth} + \text{Growth}}
   \]
b. Agricultural Incomes: These figures are automatically normalized and the percentages complement one another. It is not necessary to use the aforementioned formula.

<table>
<thead>
<tr>
<th>Communities</th>
<th>Incomes</th>
<th>Youths in Livan</th>
<th>Women in Livan</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Income Growth</td>
<td>75%</td>
<td>33%</td>
<td>83%</td>
<td>86%</td>
<td></td>
</tr>
<tr>
<td>Agricultural Income Growth</td>
<td>32%</td>
<td>24%</td>
<td>46%</td>
<td>41%</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.2 Normalized Figures for Income Criteria

2. To calculate the total amount for the income criterion, a mean has to be achieved between the normalized data and agricultural incomes.

<table>
<thead>
<tr>
<th>Communities</th>
<th>Incomes</th>
<th>Youths in</th>
<th>Women in</th>
<th>Youths in</th>
<th>Women in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth in Income Criterion</td>
<td>54%</td>
<td>29%</td>
<td>65%</td>
<td>63%</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.3 Finalized Figures for Income Criteria

This figure 6.8 shows that youths in Gharnabad constitute the majority of those believing in the point that the telecenter has changed their incomes. After them, 86 percent of women in Gharnabad are of such a view. But in Livan-e Sharqi, the majority of youths believe in the impact of telecenter on their incomes while only 29 percent of women hold such a standpoint. This big difference is due to that fact that more cultural activities have taken place in Gharnabad like conferences and workshops. Telecenter has become a source of income for the residents of Gharnabad.
6.3.1.2 Employment Criterion

The table 6.4 shows the figures calculated in the job seeking and employment section of telecenters in the four societies being studied.

<table>
<thead>
<tr>
<th>Communities</th>
<th>Employment</th>
<th>Youths in Livan Sharqi</th>
<th>Women in Livan Sharqi</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Seeking</td>
<td>Yes</td>
<td>24%</td>
<td>24%</td>
<td>34%</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>76%</td>
<td>76%</td>
<td>66%</td>
<td>67%</td>
</tr>
<tr>
<td>Employment in Telecenters</td>
<td>Yes</td>
<td>6%</td>
<td>10%</td>
<td>9%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>94%</td>
<td>90%</td>
<td>91%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Table 6.4 Employment Data

<table>
<thead>
<tr>
<th>Communities</th>
<th>Employment</th>
<th>Youths in Livan Sharqi</th>
<th>Women in Livan Sharqi</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth in Jobs Found for locals</td>
<td>24%</td>
<td>24%</td>
<td>34%</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>Telecenters Recruits</td>
<td>6%</td>
<td>10%</td>
<td>9%</td>
<td>20%</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.5 Comparing Employment Data

<table>
<thead>
<tr>
<th>Communities</th>
<th>Employment</th>
<th>Youths in Livan Sharqi</th>
<th>Women in Livan Sharqi</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth in Employment Criterion</td>
<td>15%</td>
<td>17%</td>
<td>22%</td>
<td>27%</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.6 Finalized Data for Employment Criterion
Relying on the figure 6.9, one can easily conclude that women in Gharnabad have used the telecenter the most to seek jobs. Youths in this village represent 22 percent. As far as Livan Sharqi is concerned, percentages stand at 17 for women and 15 for youths. The following points can be deducted from this figure:

1. Gharnabad Telecenter has been successful in creating jobs and has managed to influence the residents. The villagers here now have a good understanding of information technology.
2. Women have been more successful in finding jobs through the telecenter.

6.3.2 Social Index
Since social impacts are vast, we have based our research methodology on considering social and cultural aspects in the same category - health and life skills, foreign language and computer skills as well as the impact of telecenters on morality and religion.

6.3.2.1 Education and Information
The table 6.7 indicates how women and youths rely on telecenters in learning computer skills, foreign languages, distance learning, information tools and international affairs.
<table>
<thead>
<tr>
<th>Communities</th>
<th>Youths in</th>
<th>Women in</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education &amp; Information</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td>Yes</td>
<td>89%</td>
<td>86%</td>
<td>89%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>11%</td>
<td>14%</td>
<td>11%</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>Yes</td>
<td>70%</td>
<td>68%</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>30%</td>
<td>32%</td>
<td>33%</td>
</tr>
<tr>
<td>Distance Teaching</td>
<td>Yes</td>
<td>40%</td>
<td>42%</td>
<td>43%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>60%</td>
<td>58%</td>
<td>57%</td>
</tr>
<tr>
<td>Information Tools</td>
<td>Use</td>
<td>97%</td>
<td>86%</td>
<td>81%</td>
</tr>
<tr>
<td></td>
<td>No-Use</td>
<td>3%</td>
<td>14%</td>
<td>19%</td>
</tr>
<tr>
<td>International Affairs</td>
<td>Boosting Knowledge</td>
<td>96%</td>
<td>88%</td>
<td>82%</td>
</tr>
<tr>
<td></td>
<td>Not Boosting Knowledge</td>
<td>4%</td>
<td>12%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Table 6.7 Education and Information Criteria Figures

<table>
<thead>
<tr>
<th>Communities</th>
<th>Youths in</th>
<th>Women in</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education &amp; Information</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>89%</td>
<td>86%</td>
<td>89%</td>
<td>86%</td>
</tr>
<tr>
<td>Foreign Languages Skills Growth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>70%</td>
<td>68%</td>
<td>67%</td>
<td>71%</td>
</tr>
<tr>
<td>Distance Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40%</td>
<td>42%</td>
<td>43%</td>
<td>43%</td>
</tr>
<tr>
<td>Growth in Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>97%</td>
<td>86%</td>
<td>81%</td>
<td>84%</td>
</tr>
<tr>
<td>Growth in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>96%</td>
<td>88%</td>
<td>82%</td>
<td>86%</td>
</tr>
</tbody>
</table>

Table 6.8 Education and Information Criteria Normalized Figures
According to figure 6.10, youths in Livan have been very active in using education and information tools. Nearly 78 percent have used these tools since the telecenter was set up in their village. After the youths, women in both Gharnabad and Livan account for 74 percent while the youths in Gharnabad registered a 72 percent rate. In the light of the necessity of learning skills about information technology, users of these systems are on the increase. Livan has recently launched its telecenter, but education courses have been welcomed warmly.

6.3.2.2 Culture
The table 6.10 provides the figures coming from cultural criteria.
The figure 6.11 indicates that youths in Livan believe more than others that the telecenter has promoted their culture. But in Gharnabad, women and youths do not believe so much in the influence of telecenter on their culture.
In general, more than half of the respondents give a positive assessment of the cultural impacts of telecenters.

### 6.3.2.3 Acceptance

The table 6.13 summarized figures about the times of referral to telecenters in the four societies being studied.

<table>
<thead>
<tr>
<th>Communities</th>
<th>Acceptance</th>
<th>Youths in Livan Sharqi</th>
<th>Women in Livan Sharqi</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral To Telecenter</td>
<td>Yes</td>
<td>99%</td>
<td>98%</td>
<td>98%</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

**Table 6.13 Acceptance**

<table>
<thead>
<tr>
<th>Communities</th>
<th>Acceptance</th>
<th>Growth in Acceptance Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Youths in Livan Sharqi</td>
<td>Women in Livan Sharqi</td>
</tr>
<tr>
<td></td>
<td>68%</td>
<td>67%</td>
</tr>
</tbody>
</table>

**Table 6.14 Acceptance Criteria Finalized Figures**

**Figure 6.12 Acceptance Comparison**

The figures calculated for measuring the acceptability of telecenters in the villages are remarkable in Gharnabad and Livan Sharqi villages. Youths in Livan Sharqi have been in favor of these centers more than others and 99 percent of them have responded positively. Referral to these centers is on the rise and Livan Sharqi is leaving behind Gharnabad which welcomed the first telecenter.
6.3.2.4 Health

<table>
<thead>
<tr>
<th>Health</th>
<th>Communities</th>
<th>Youths in</th>
<th>Women in</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>38%</td>
<td>43%</td>
<td>67%</td>
<td>57%</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>62%</td>
<td>57%</td>
<td>33%</td>
<td>43%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Using Facilities</th>
<th>Communities</th>
<th>Youths in</th>
<th>Women in</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>66%</td>
<td>38%</td>
<td>58%</td>
<td>54%</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>34%</td>
<td>62%</td>
<td>42%</td>
<td>46%</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.15 Health Figures

<table>
<thead>
<tr>
<th>Communities</th>
<th>Youths in</th>
<th>Women in</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>38%</td>
<td>43%</td>
<td>67%</td>
<td>57%</td>
</tr>
<tr>
<td>Growth Health</td>
<td>66%</td>
<td>38%</td>
<td>58%</td>
<td>54%</td>
</tr>
</tbody>
</table>

Table 6.16 Health Normalized Figures

<table>
<thead>
<tr>
<th>Communities</th>
<th>Youths in</th>
<th>Women in</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>52%</td>
<td>41%</td>
<td>63%</td>
<td>56%</td>
</tr>
</tbody>
</table>

Table 6.17 Health Finalized Figures

Figure 6.13 Health Comparison
The figure 6.13 indicates that youths in Gharnabad deeply believe in the influence of telecenters on their health affairs. Women come second with 56 percent. But more than half of women in Livan dismiss such a connection. The reason may be the long-term impacts of the telecenter in Gharnabad; Livan has recently launched its telecenter and one should not expect too much from this village. Moreover, health acculturation in Gharnabad is another factor explaining such acceptability.

6.4 Comparing Indices
In this section, social and economic indices are being compared. The table 6.18 summarizes the comparison.

<table>
<thead>
<tr>
<th>Communities</th>
<th>Youths in Gharnabad</th>
<th>Women in Gharnabad</th>
<th>Youths in Livan Sharqi</th>
<th>Women in Livan Sharqi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Index</td>
<td>Income</td>
<td>65%</td>
<td>63%</td>
<td>54%</td>
</tr>
<tr>
<td></td>
<td>Employment</td>
<td>22%</td>
<td>27%</td>
<td>15%</td>
</tr>
<tr>
<td>Social Index</td>
<td>Education and Information</td>
<td>72%</td>
<td>74%</td>
<td>78%</td>
</tr>
<tr>
<td></td>
<td>Culture</td>
<td>62%</td>
<td>62%</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td>Acceptance</td>
<td>98%</td>
<td>98%</td>
<td>99%</td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td>63%</td>
<td>56%</td>
<td>52%</td>
</tr>
</tbody>
</table>

Table 6.18 Calculating Social and Economic Development Indices

<table>
<thead>
<tr>
<th>Communities</th>
<th>Youths in Gharnabad</th>
<th>Youths in Livan Sharqi</th>
<th>Women in Gharnabad</th>
<th>Women in Livan Sharqi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Development</td>
<td>44%</td>
<td>45%</td>
<td>35%</td>
<td>23%</td>
</tr>
<tr>
<td>Social Development</td>
<td>74%</td>
<td>73%</td>
<td>74%</td>
<td>70%</td>
</tr>
</tbody>
</table>

Table 6.19 Finalized Figures for Economic and Social Development Indices
According to our results, forty-five percent of female interviewees in Gharnabad have shown economic development, but the figure falls to 23 percent for women in Livan. The majority of women in Gharnabad are educated and they have had more chance of finding a job in the telecenter. The population of Gharnabad is young and they are fond of modern technologies and Gharnabad has a better economic index than Livan. From a social standpoint, youths in Gharnabad and Livan have been more successful than women. Youths are more willing to go to telecenters for social activities and to improve their skills.
Conclusion and Recommendations

International policies always call on undeveloped countries to create simple tools for local development. In Iran, information technology service-providing centers and centers for rural communications were established thanks to popular support and backing from state-run organizations. Several telecenters are currently active.

Under the aegis of UNESCO, this research was conducted for analyzing the impacts of telecenters on villages, notably youths and women. In both villages of Gharnabad and Livan, more than half of women and youths have been influenced by social impacts of telecenters in a positive manner. Social impacts result from indicators like education and information, culture, acceptability of the telecenter and the health factor. One can say for sure that these sub-indices have improved in the light of the telecenter.

Regarding economic impacts, the factors of income and job creation have been examined. They have shown clear differences in the two villages. In Gharnabad where the first telecenter was launched, the factor of economy has undergone positive changes. The same can take place in Livan in the long-term.

A significant point in this research is that the telecenter does not set any gender restrictions for rural women in social and economic domains. The telecenter has even created jobs for educated girls in Gharnabad and more than 40 of them are currently active in this center. They are mainly involved in distance research on different parts of the country.
In Livan Sharqi, educated girls are to begin work in the telecenter soon. Therefore, the economic impacts of telecenter in the village have mainly targeted women.

Villagers have boosted their general and specialized knowledge since the telecenters began work. In many villages, the people face restrictions in access to communications facilities, but the residents of Gharnabad and Livan are easily connecting to Internet, specifically for updating their news. Women and youths have referred to the telecenter for electronic learning courses. Four villagers from Gharnabad are becoming IT engineers to serve their place of birth. Livan Sharqi is also preparing for similar cases.

**Recommendations**

This research is hoped to call for the establishment of new telecenters in other villages. The executive team has listed the following recommendations destined at developing countries like Iran.

1. Preliminary acculturation before the establishment of telecenters in the villages is extremely significant.
2. Telecenters can succeed in remote villages more than the villages adjacent to the cities.
3. Since the very establishment of telecenters, the people, the private sector and the government have to be involved.
4. Strategic planning for telecenters has to be made.
5. Villagers should be invited for investment in telecenters in any way they can. Telecenters have to become self-reliant.
6. Youths should be encouraged.
7. Distance job seeking has to become known to everyone so that the villagers would have an economic motivation.
8. Villagers should know well the information technology and even its social traumas.
9. Annual studies should be conducted on the social and economic impacts of telecenters in the villages.
10. No gender, tribal and age discrimination has to be taken into account in these centers. Women and youths have to be warmly welcomed.

11. State organs have to offer facilities to telecenters to encourage the villagers.
References

13. Mchombu, K."Impact of Information on Rural Development: Background, Methodology and Progress". In McConnell, Paul (Ed.)

14. development of rural communities and low income urban settlements—Impact of Community


Appendix 1

Research Questionnaire

Sex
☐ Male
☐ Female

Marital Status
☐ Single
☐ Married
Number of children:

Occupation:

Educational Status
☐ Elementary
☐ High school
☐ Guidance school
☐ Diploma
☐ B.S.C

Before establishment of ICT center, mean monthly wage (in thousand Tomans):
☐ Less than 100
☐ Between 100 and 200
☐ Between 200 and 300
☐ More than 300

After establishment of ICT center, mean monthly wage (in thousand Tomans):
☐ Less than 100
☐ Between 100 and 200
☐ Between 200 and 300
☐ More than 300

Does ICT center have positive impacts on producing and selling your agricultural and animal husbandry products?
☐ Yes
☐ No

Does ICT center have positive impact on finding jobs for you?
☐ Yes
☐ No

Are you employed in ICT center?
☐ Yes
☐ No
Did you have job before being employed in ICT center?

☐ Yes  ☐ No

Have you bought computer system after establishment of ICT center?

☐ Yes  ☐ No

Before establishment of ICT center, Did you have computer literacy?

☐ Yes  ☐ No

After establishment of ICT center, have your language skills improved?

☐ Yes  ☐ No

After establishment of ICT center, have you used online course trainings?

☐ Yes  ☐ No

After establishment of ICT center, has your health and treatment situation changed?

☐ Yes  ☐ No

If yes, in which field

☐ Medical & Health Information  ☐ Rural health services

☐ Medical treatment

After establishment of ICT center, Are your skills about computers improved?

☐ Yes  ☐ No

If yes, in which field

☐ Using Operating Systems  ☐ Using e-mail

☐ Spread sheets with Excel  ☐ Typing by Ms Word

☐ Presentation by PowerPoint  ☐ Searching information

After establishment of ICT center, your access to which information tools have increased?

☐ Informational web sites  ☐ Newspapers

☐ Electronic newspapers  ☐ Book

For performing which task have you referred to ICT center?

☐ Daily matters  ☐ Learning
Banking Information enquiry

Using of Coffee net Contacting with others

Usually, How often do you refer to ICT center?

- Daily
- Weekly
- Monthly
- yearly

After establishment of ICT center, your knowledge about which subject have increased?

- Political
- International
- Cultural
- Economical
- Scientific
- Sport

ICT center on which social and cultural area of the village has impacts?

Social relations (familial/employment/local relations)

- Good
- Bad
- Without influence

Social liberties (Youth liberties)

- Good
- Bad
- Without influence

Local customs and traditions

- Good
- Bad
- Without influence

Ethics

- Good
- Bad
- Without influence