

## **The Iranians' efforts to design and accredit the first long-term educational program for library and information professionals in agriculture**

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### **Abstract:**

*Cooperation of LIS experts in agriculture sector of Iran has not been a steady state movement during the past decades. There has been some excellent works like Mrs. Emad's Agriculture Bibliography and the period of times like the rise and fall of Jihad-e-Sazandeg Information Center. While the efforts were patchy and unorganized, a generation of educated LIS experts with experience in agriculture sector, while not consistent, came out. For the first time a group of three experts consisting of one of the authors started to propose a blueprint of a course in LIS in Agriculture in 2006. After more than 200 hours of the meetings and personal study the final document sent to the upper committee for accreditation. The majority of the members of the committee were agriculture experts and the main activity of it also was accrediting the agriculture courses. The unfamiliar course called LIS in Agriculture, has not any chance for success. One of the reasons for rejecting the course was its name: library. Now we have started another attempt to prepare a new proposal for a course called Agricultural Information management (AIM) in postgraduate level. The prospect of the course is clearer than before because of the lessons learnt from past experiences and a changing world. This paper seeks answer to the questions like: Is there any job or career called agricultural information manager in Iran? Is there any in the world? What is the nature and features of the career?*

*Does it need any formal and /or long-term education? What are the other jobs related to agricultural information management? What are the abilities for the agricultural information manager? What is the suitable host for the course: is it LIS School or Agriculture school? I used library study in my investigation for answering the above questions and in the end I proposed a conceptual framework for designing other long and short-term courses like digital libraries in agriculture, bioinformatics, LIS in agriculture etc.*

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## **Introduction**

Agriculture is an important component of Iran's economy. Between 21 to 25 percent<sup>1</sup> of active labor force are occupied in agriculture and the sector has a share of about 11percent in GDP of the country. In respect to production, Iran has unique potentials in some crops like pistachio and saffron. There are different climates that make the production of a variety of crops possible. However, in the 21<sup>st</sup> century, all of these potentials without knowledge and information is not enough to succeed in a global competitive market. Historically the earliest attempts to deal with modern agricultural education in Iran, probably goes back to the establishment of the first agriculture school in 1899 called "Fallahat Mozaffari". In recent years, however, there has been a sharp increase in enrolment in agriculture courses (fig.1). Also in alignment with the global movement toward information society, investment in ICT infrastructure for rural areas increased significantly (fig.4). These events, obviously, increase the need for information production, gathering, organization, dissemination and publication, which itself needs an institution (library and information centers) and an expertise (library and information science). The librarians generally are graduates of courses that are in humanity and social science paradigm. The graduates, thus, have not enough familiarity with agriculture environment, system, audience, tools, learning styles etc. So, despite the increase in the number of researchers, students, newly-literate people, knowledge-based companies etc., the LIS experts and libraries have the least familiarity with the needs of their audiences and the knowledge, tools and techniques to satisfy them. During past 20 years and with the advent of technical and vocational education in tertiary education of Iran, some opportunities produced to compensate for some of the deficiencies in human resources. As such, the opportunity is open to LIS in agriculture too. At the present, many universities and colleges have agriculture courses and naturally the related library and information centers. As it is obvious in the figure1, the rate of increase in the number of students in agriculture has a sharp slope during the recent years. Obviously the students, lecturers and professors need information resources and library and the library itself works based on human resources.

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<sup>1</sup> The difference between the values is due to varied sources of statistics.

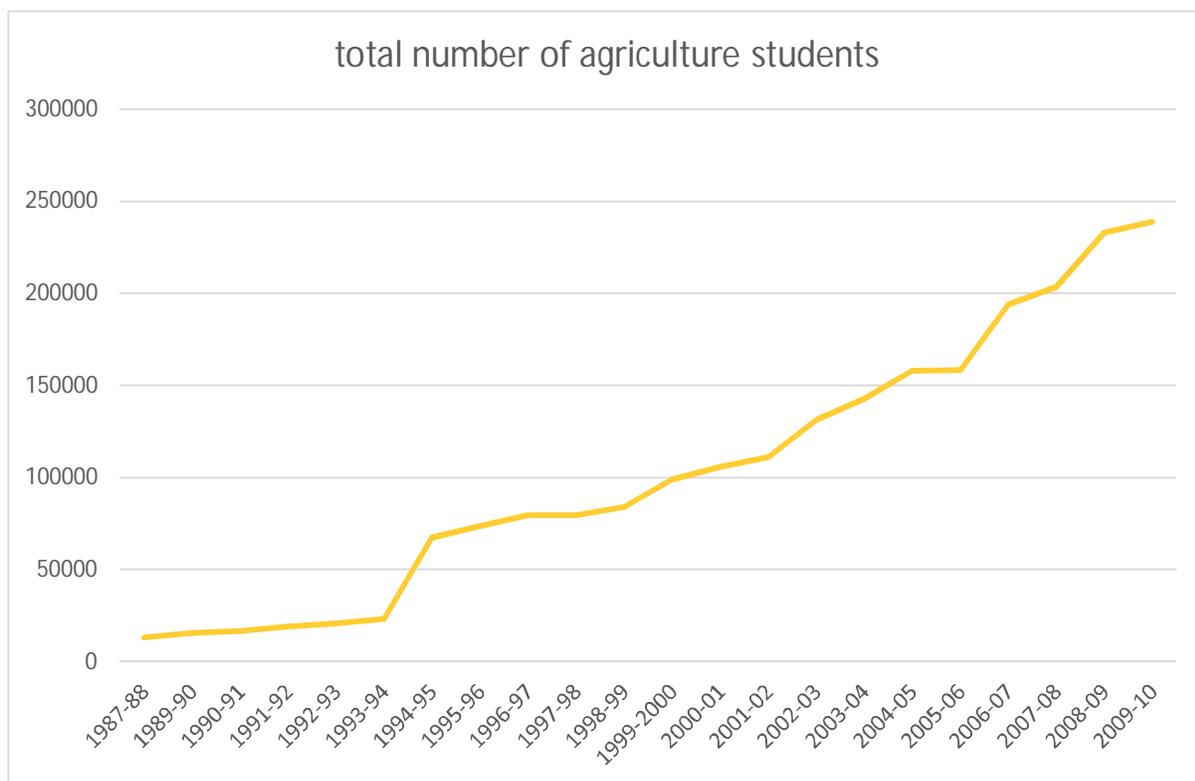


Figure 1 the steep slope of increase in students studying in agricultural courses in Iranian universities and colleges(S. C. o. Iran, 2013)

### Challenges and opportunities of Information and Knowledge in Agriculture

While there are many hurdles in front of LIS experts in agriculture to start the new disciplines, certainly there are much potential in agriculture sector to act as a host to LIS. Factors that should be considered in designing curriculums for disciplines like “agricultural information management” and “ICT in agriculture” are discussed below:

1. **Laws and regulations;** parliament acts and policies made by ministry of agriculture have supported the plans prepared for action in lower levels of administration. The 22<sup>nd</sup> article of the Iranian parliament Act for increasing the productivity of agriculture and natural resources sector says:

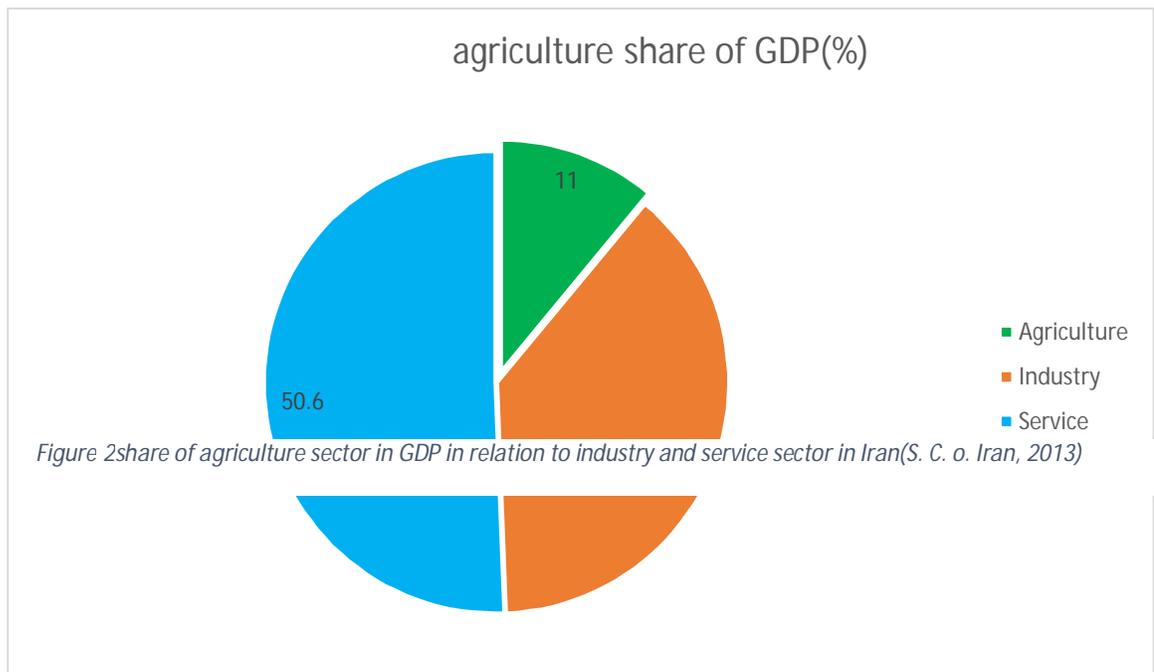
The Ministry of Agriculture must do the below mentioned, utmost after two years and make them accessible to all:

- a. Develop a database for producers of agriculture sector and encourage them to register information of their production activities;
- b. Develop an IT-based comprehensive agricultural information database;

c. develop an agricultural information and knowledge network for providing scientific, educational, technical, extension etc., services and other needed information("act of increase in productivity of agriculture and natural resources sector," 2009).

Completing each article of the act requires information specialists to engage in activities like developing a database, entering data in the databases, maintenance, encouraging and so on. In article c, AREO<sup>2</sup> produced a scientific map that is in the final phase. Implementing the map needs many hours of work by information specialists that are familiar with agriculture.

**2. Share of agriculture sector in GDP;** agriculture sector is one of the most important sources of revenue and occupation for developing countries. Reddy(2012) also believes that agriculture is the largest sector in economic activities of developing countries that not only provides food and raw materials, but also has a great contribution in labor forces. While the direct share of agriculture in GDP of Iran is about 11% (fig.2), it has indirect effects on other sectors i.e. industry and service. For instance food industry that comprise from big factories and has a good share of GDP is reckoned as industry, while take most of its input from agriculture. Also the services in food market is believed to be in service sector but actually is engaged in agriculture sector.



<sup>2</sup> Agriculture Research, Education (and Extension) Organization

**3. Share of agriculture in labor force composition;** about 25% of the active work force in Iran are occupied in agriculture sector, which is lower than the two other sectors, industry and service (fig.3), but comparing to the rates in developed countries (fig.5), the rate is much lower. While this demographic characteristic is not a valuable symptom because shows the lower rate of using machinery and knowledge in agricultural households and the traditional structure of Iranian agriculture, but provides opportunities for growing of education industry. On the other hand the rate of illiteracy among most of the active people in agriculture is high. So the need for educating them and keeping them literate is high. One of the potential tasks of public library staff in rural areas is to provide the newly-literate people with appropriate reading materials. Reddy(2012) give evidences of the role of educating farmers on increasing agricultural production in parts like northern Nigeria, effect of primary education on crop production in Uganda and effects of educational policy in 30-year period on agriculture in Kenya. One of the most important problems in educating illiterate farmers occurs after the end of education when the contact with educational system breaks. In this period cooperation between extension officer and librarian can lead to development of a range of reading materials adapted to the local and traditional condition.

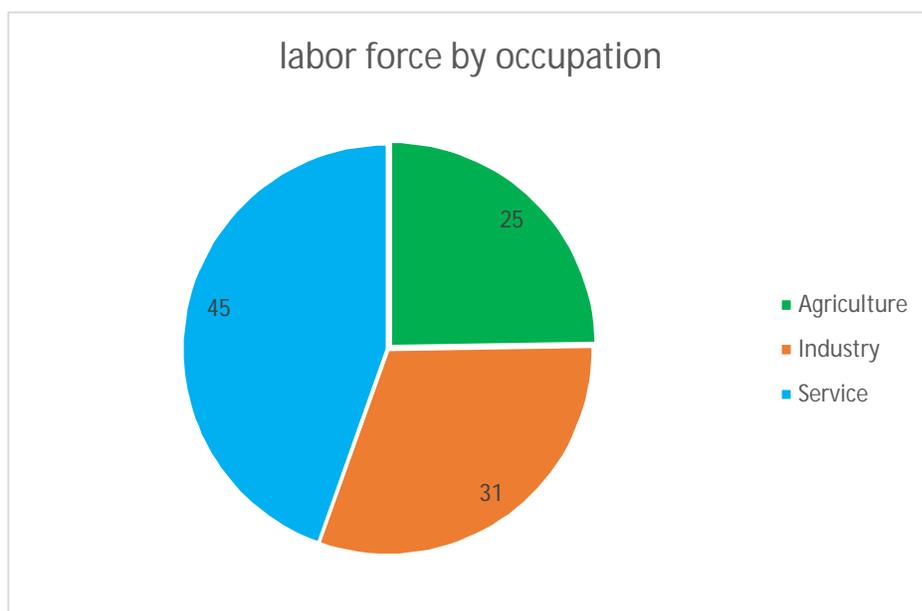


Figure 3 the share of agriculture in labor force of Iran in comparison to industry and service sector (S. C. o. Iran, 2013)

**4. Wealth of indigenous knowledge;**

many sources evident that agriculture originated from Middle East and Iran (Mokhtari, Arastoo, & Jahanshahi, 2005).

Elderly knowledgeable people in countries like Iran that have a long tradition of farming and animal husbandry

and relate d arts and crafts are gifted with splendid sources of indigenous knowledge. This wealth of knowledge has been ignored until recently that World Bank and United Nations called

them “the knowledge that are being extinct”. With death of every so called people, a part of human’s knowledge will vanish permanently. Documentation of indigenous knowledge that in most cases tacit, has not been defined in LIS coursed and is a gap for LIS education in developing countries.

- 5. Rural population;** Despite the fact that urbanization in Iran like many other countries is in full fling; more than 30% of the population lives in rural areas. Most of these people need information services from internet access to public library. As it is obvious in fig.4, the rate of establishing new ICT offices in rural areas has been increasing sharply. During a period of 3 years more 8000 new offices started to work in rural areas of Iran.

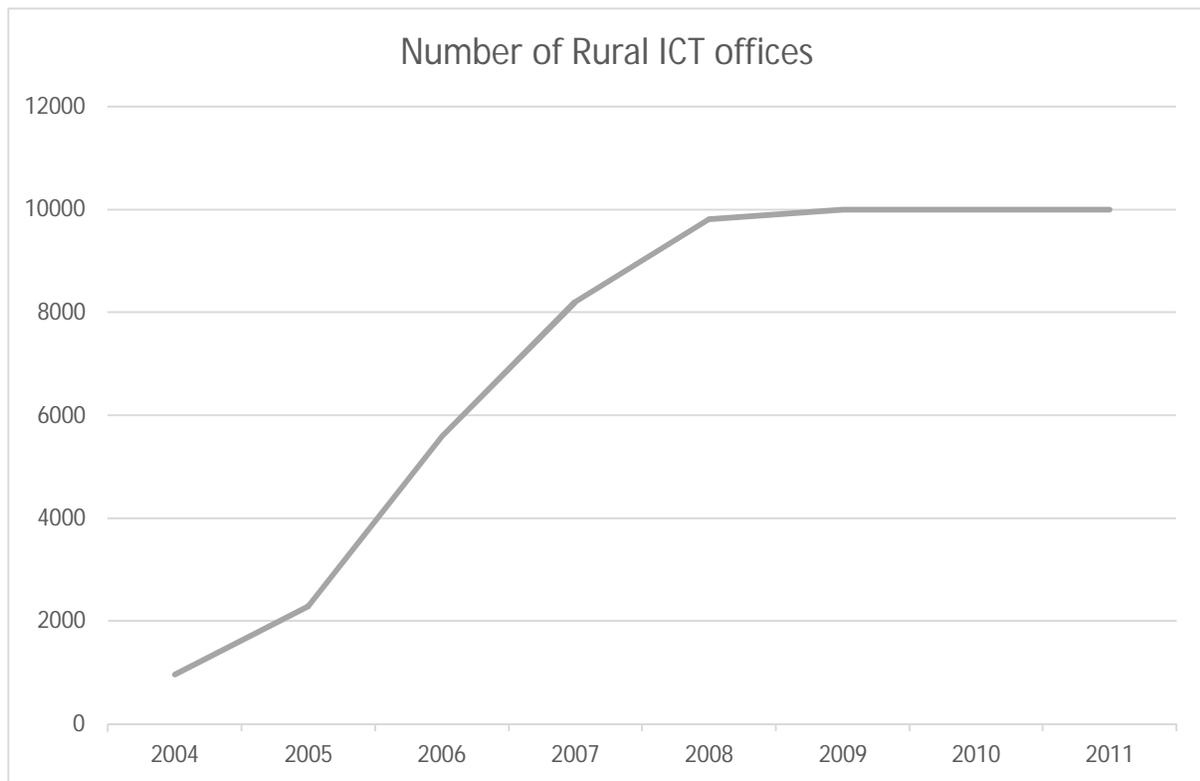


Figure 4the increase in the number of rural ICT centers in Iran(T. c. o. Iran, 2011)

- 6. Specific needs of agricultural audience;** Data and evidences show that unlike developed countries the economic and demographic weight of agriculture in developing countries is pervasive in comparison to other sectors. While this may change during time, the investment in agriculture sector seems to be lucrative for now and near future. Gaining and maintaining a market share in a competitive global economy needs information and knowledge systems that have been planned beforehand in Iran. A major part of the so called systems is expert work force in information systems that consist of information managers, librarians, database developers, and website designers and so on. Reddy(2012) point to the needs of subsistence farmers in India to special kinds of cell

phones that have specific features like long-life batteries, resistant to water and dust and high sensitivity to weak signals. Turban also states “simputer” or simple computer that invented for illiterate farmers of India.

- 7. International trends;** there are many databases, websites, portals etc. in the internet and their producers be international organizations, NGOs or government sectors that offer information and knowledge of agricultural research, education and extension. Reddy (2012) introduced databases like Agris, Agricola and CAB that cover a significant part of agricultural information in a chapter of his book. Mokhtari et al. (2005) proposes a holistic model for linking information and knowledge in three local, national and international levels. He believes that there are a plenty of information resources in developing countries that due to communication problems are unknown to the world. The role of LIS experts here is to gather, organize, disseminate and publish the information and knowledge.

### **Agricultural information in Iran: a brief history and overview**

The agricultural library and information services in Iran developed in two branches. The first one in ex-ministry of agriculture and the latter, scientific information and services Center, in the ex-ministry of Jahad\_e\_sazandegi. Later the two branches merged to form the present Agricultural Scientific Information and Archive Center.

The Library of Agricultural Scientific Information and Archive preceded the failed project of Agricultural Scientific Documents and Archive Centre in 1981. The library designed and established according to the scientific and technical principles of library and information science. The latest scientific and research information published in the form of “agriculture awareness” bulletin at first four issues and then, due to the lack of budget, two issues in a year. The prominent achievement of the library was contacting the experts and introducing the current bibliographies like Agrindex to them. The next attempt was to introduce SDI. For each volunteer a profile was produced and their needed documents provided through FAO in Rome. Relationship with agricultural research institutes in the country caused the idea of the “country’s agricultural information network design” come to mind (EmadKhorasani, 1990).

The Scientific Information and services Center, established in 1991 with a human resource composition of 73% librarian and 27% computer experts. The advent of the center at that time was like thunderstorm but its life was not so long. During about ten years of its rise and fall, the center achieved many precious goals thank to its human resources investment by top managers and the condition of the country. Among the achievements are improving the culture of information seeking, librarianship among top managers, using information resources in managerial decisions, workshops for managers and clerks in all ranks in all over the country, publishing “information awareness” bulletin, international awards for providing information in middle east etc.(Taghavi et al., 1990).

The founder of The Library of Agricultural Scientific Information and Archive, Mrs Emad, won the 12<sup>th</sup> book of the year prize of the I.R. Iran, in 1993 for developing a six-volume collection of Agricultural Bibliography of Iran. The bibliography has 21300 entries of printed and non-printed works in and outside Iran from 1989 until the year of its production. It has been regarded as a monumental masterpiece in the history of agricultural library and information science in Iran. Although the author hoped to continue its production in a computerized database system, with the changes in organizational structure and her retirement the project came to a halt (EmadKhorasani, 2007).

### **The need for interdisciplinary courses: LIS in agriculture**

During the relatively long period of bachelor degree education, the professional and scientific personality of the mostly young students shape. Students study basic courses of their beloved or to-be-loved disciplines and find themselves attracted to a collection of thoughts and practices that Kuhn (1962) calls it a “paradigm”. As Kuhn puts it, paradigm is “universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners”(Kuhn, 1962). Interdisciplinary courses like agricultural information management and Agricultural LIS should have a core discipline that consists of their main paradigm. In the case of agricultural information management, the discipline consists of three different branches i.e. Agriculture, management, and information science. Broadly speaking, two different paradigms of natural sciences and humanity cover the three disciplines (fig.6). We believe that the prevailing paradigm in this case is agriculture because the working environment that the graduates of the discipline will choose for a career in most cases is an agriculture-related enterprise. Thus they should offer their services to people who work in agriculture sector being farmers, researchers, educators, students, practitioners etc. interacting with people in agriculture sector requires the information specialists to have specific kinds of expertise and mode of thinking like Paradigm, language, communication and environment.

- a. **Paradigm:** researchers and practitioners in every discipline have “certain assumptions about how they will learn and what they will learn during their inquiry” and learn in accordance with their paradigm. Creswell (2003) names four of them as “post positivism, constructivism, advocacy/participatory and pragmatism”(Creswell, 2003). Agriculture experts learn to think in post positivism paradigm while their humanity colleagues prefer to think and learn in advocacy/participatory paradigm. Dialect between the two paradigms is difficult and cause challenges, if not impossible.
- b. **Language:** searching for papers and helping agriculture specialists for finding clues to explain their research questions in library or on the internet requires the librarian to have a good knowledge of specific terms in different agriculture branches. On the other hand having the thesauri available is more important and the activity of developing a thesaurus is a complicated product of cooperation between information and subject specialists, in this case agriculture experts. Agriculture uses many different disciplines like zoology, plant systematic, machinery and chemistry. The vocabulary that an agriculture scientist or

practitioner learn during the education and then supposed to use through the career is huge. From the scientific names of the plants and animals to chemical names of the insecticides and pesticides to the names of modern machinery. The broad domain of the specific terms could be a big challenge for graduates of humanity.

- c. **Communication:** there is a must for any LIS expert and it is reference interview. The interview is an art of communication rather than a technique. Communication means “share of meaning”. In other words, the librarian and the patron should have a common grasp of meaning from objects and terms.
- d. **Environment:** The close relationship with nature needs a special kind of people who love and respect nature and people who work in a natural environment. Working with soil and plants and respecting nature is a prerequisite for agricultural information management specialists.

Therefore, the need to a new generation of LIS experts who can work in agriculture environment with specific skills and behavior seems to be urgent.

### **Agricultural information education: Iranians’ efforts**

The first formal attempt to engage agriculture in LIS education goes back to 1989 when the expert committee for library and information science affiliated to humanity department of the supreme council of planning in the ministry of Science issued a notice according to which, six branches and independent options i.e. humanity, art, medical, engineering, science and agriculture, should be established in LIS. Out of the so called options, the “medical library and information science” grew rapidly and with the detachment of the medical higher education system from the ministry of science, it has become a strong discipline with an independent scientific society. Comparing medical LIS, shows that it was more successful than its counterparts in agriculture, engineering, art, etc.

In 2000 one of the authors(MokhtariAski, EmadKhorasani, & Radnia, 2006), understanding the need for educated LIS experts in agriculture sector invited two other experts, one from agriculture and the other from LIS, to form a curriculum development committee to design the first course of LIS in agriculture in BS degree. The first phase of curriculum planning according to the procedure is to justify the need. The justification report defined the discipline as: “LIS in agriculture is the product of mixing some courses in agriculture and LIS”. The occupation places consist of library and information centers of research centers and stations, agriculture education centers, agriculture high schools, agriculture counseling bodies, academy of science, agriculture publishers etc. Some of the specific knowledge skills that educators of the discipline will acquire after the end of the course are:

- Familiarity with agriculture research
- Working with agriculture databases like FAO’s
- Familiarity with agriculture statistical systems and datasets

- General knowledge of agriculture
- Knowledge and respect for nature and its products
- Working with agriculture -specific terms and concepts
- Good command of English for specific purpose in agriculture

In 2003 the justification report was finalized and referred to Agriculture Committee that was supposed to discuss and decide about the discipline. The committee's members were all agriculture experts and the 30 min. discussion lead to rejection of the justification report. The questions and answers during the meeting was analyzed by one of the researchers and the reasons for rejection found out to be:

- ✓ negative perception about librarians in agriculture sector;
- ✓ the present experts can do the job(even if it is not efficient);
- ✓ the name: "library" is not proper;

### **Agricultural information management course: a leap frog**

Learning lessons from the failed attempt, we started to study the feasibility of other alternatives within LIS with different names. Information management is a new discipline in Iran that has a bunch of best practices in top universities of the world. Before any formal action in curriculum planning or training, we must take "context" into consideration. As for ICT, USAID puts it:

"The transformation of agriculture in developed countries has taken place in a context of high literacy rates, well-functioning telecommunication systems, readily available electricity, an established and regulated credit and banking system, well-developed transportation networks, high labor costs relative to the cost of computing equipment, and reasonably easy access to ICTs"(Rusten & Ramirez, 2003).

So the story is different with developing countries where the literacy rate among farmers' household is low, telecommunication systems have just started to develop and so on. There should be a different viewpoint regarding development of agricultural information and knowledge systems and also a different approach for designing curriculums of courses in agricultural information management. While lessons learned by best practices are precious, curriculum planners in developing countries should resist the tempting tendency to "copy and paste" the experiences of others, especially developed countries. For many years we were waiting for ALA and other similar organizations in the United States to start courses on agricultural LIS, but to no avail.

One good example of founding the curriculum over a local context-based research is the case of a postgraduate course in Kenyan university of Nairobi:

"Postgraduate Diploma in Agricultural Information and Communication Management (AICM) is in response to the training gaps identified during the training needs

assessment that the Regional Agricultural Information Network and the Association for Strengthening Agricultural Research in East and Central Africa (RAIN/ASARECA) undertook in 2005”(Nairobi, 2013).

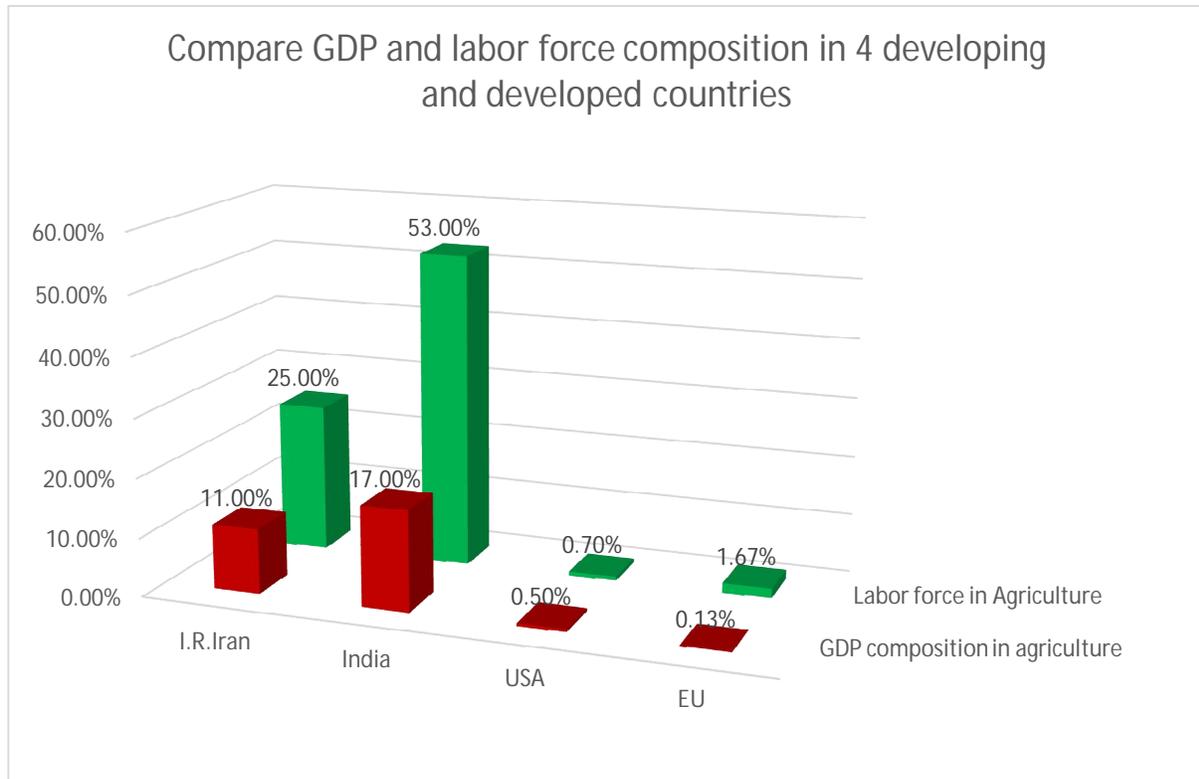


Figure 5 Compare GDP and labor force composition in 4 developing and developed countries(S. C. o. Iran, 2013)

For designing agricultural information management discipline we use the important factors that discussed above:

- major and minor paradigms;
- context;
- previous and best practices;
- needs assessment researches;

The relationship between the factors as summarized in fig.6 shows that previous and best practices in three disciplines management, agriculture and LIS in the context of Iran based on a good needs assessment with a major post positivism and a minor advocacy/participatory paradigm will lead us to a successful discipline in agricultural information management.

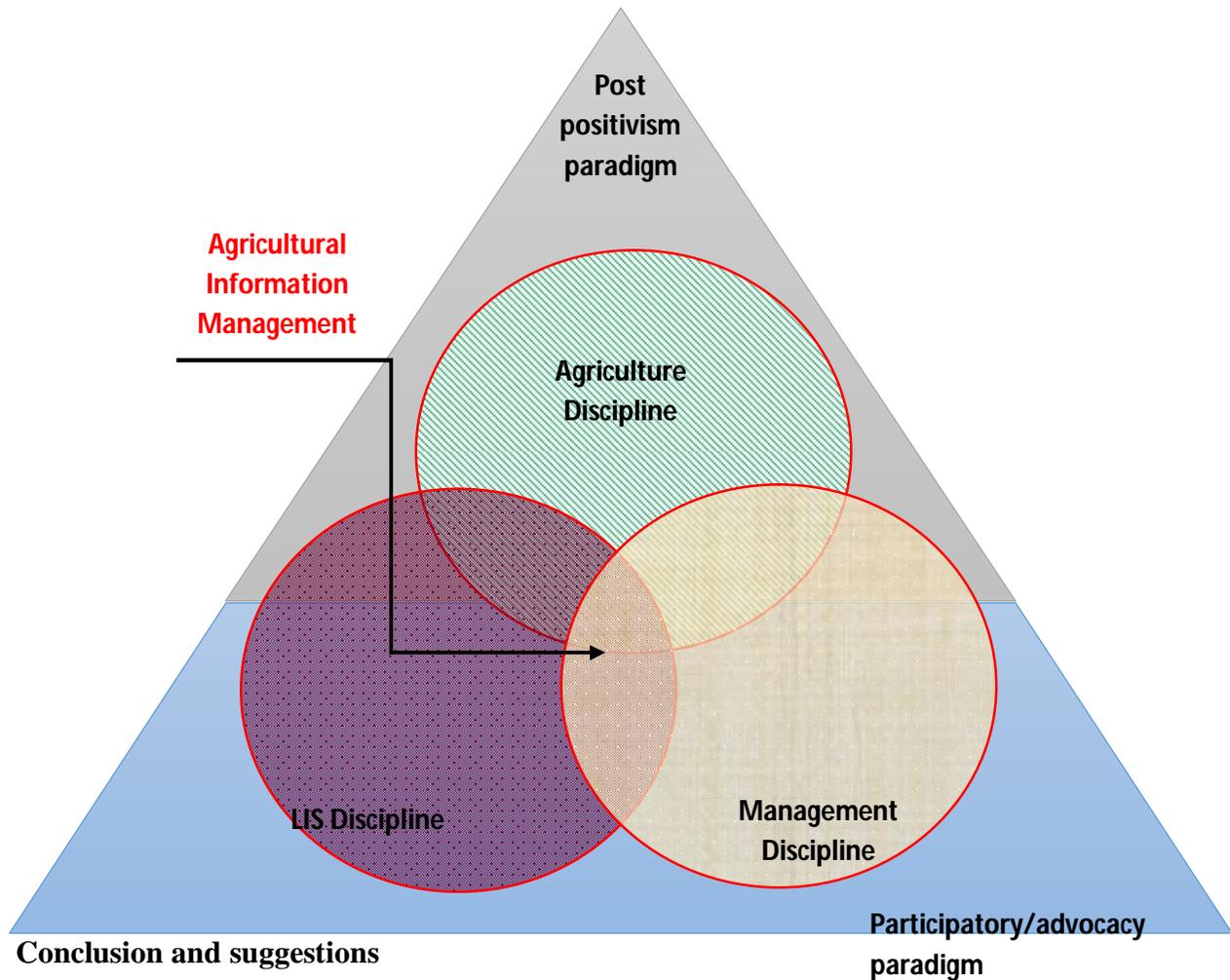


Figure 6 model of relationship between major and minor paradigms, and main disciplines in suggestion of agricultural information management as an interdisciplinary

Movement of developing countries toward knowledge-based agriculture needs harnessing the power of information and knowledge in the sector. Every developing country requires a separate local model for education of agriculture human resource for utilizing LIS. Success in justifying new interdisciplinary courses needs taking notice to some factors like:

1. defining human resource needs assessment researches for LIS in agriculture;
2. notice major audience in agriculture sector and base the agriculture colleges for the development of courses;
3. providing a momentum through NGOs in the sector is very important for the success;
4. negotiating with major stakeholders and lobbying ;
5. know the big picture of knowledge and information systems and placing the new discipline in them;

6. finding the place of indigenous knowledge in the curriculum and relating it to the courses

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