# ANALYSIS OF CONSTRAINTS IN RESEARCH - INDUSTRY (R-I) LINKAGE WITH REFERENCE IN DAIRY AND POULTRY SECTORS OF ANDHRA PRADESH-A STAKEHOLDERS' PERSPECTIVE

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**Abstract:** University collaborations and industry partnerships are rapidly becoming a common practice the world over. Consequently, collaborations and partnerships are becoming a feature of lifelong learning in universities. As yet the existing Research-Industry linkages/collaborations have not been effective in many parts of the developing world including India due to lack of close working and communication relationship between livestock research. There are many constraints for effective working and communication linkages between research and industry. Hence this paper seeks to unpack the constraints in University Research-Industry (UR-I) linkage (communication and working linkage) and explores the suggestions from researchers of SVVU and industry personnel from dairy, poultry and pharmaceutical sectors of AP to strengthen the linkages. This literature also offers little explanation of ways to reduce the constraints in research collaboration between university and industries.

**Keywords:** Constraints, suggestions, stakeholder, Linkage, university, research, industry.

## Introduction

University research-Industry (UR-I) linkages are regarded as widely used alternative funding avenues for university researchers to improve their standards of research, they are powerful tools for creating congenial environment for technological innovations and enhancing global competitiveness, ultimately promoting the interests of the firms and academia across the world. Though it remains necessary for industries to build own internal Research and Development (R&D) capacity, the external sources of technologies have become more and more important (Fusfeld & Haklisch, 1987; Sen & Rubenstein, 1989).  Development of technologies externally rather than in their own R&D can be seen in several ways including Inter-Firm Cooperation and University-Industry Cooperation. Among them, the University-Industry Research Co-operation (UIRC) has been considered a top issue by many scholars regarding the national competitiveness (Rahn and Berman Evan M, 1990).

The linkages are supposed to serve as communication avenues through which the university research and industry personnel become the main communicators. Lack of strong linkage causes disruption in technology flow and low adoption rates, increased time lags between development and adoption of new technology, reduced efficiency in the use of resources, unnecessary competition and duplication of efforts, and increased cost of agricultural research and extension activities (Ashraf et al., 2007). Hence this paper attempts to elicits constraints in UR-I linkages from both the university researchers and industry personnel and also explores the suggestions to strengthen the university - industry research collaborations for mutual benefits.

**Data and Methodology**

In Andhra Pradesh state, Sri Venkateswara Veterinary Universality (SVVU) was selected as technology generating unit. Livestock industry with its three main sectors i.e., dairy, poultry and pharmaceuticals existing in the same state was selected as technology utilizing unit. Availability sampling procedure was followed to select 60 scientific staff from the university (academic institutions and research stations), whereas, purposive sampling procedure was followed to select 40 industry personnel from the three industrial units. The respondents from both the university and industry were personally contacted by the investigator and interviewed with the help of the schedules constructed for the purpose. The data thus collected from the respondents were coded, tabulated and analyzed based on percentage and frequency.

**Results and Discussion**

**Constraints of Researchers**

Constraints of researchers with regard to communication and working linkages is presented here under

**Constraints related to communication linkages:**

Findings (table 1) reveal that Majority (61.67%) of the researchers expressed that "lack of funds for conducting linkage activities" is one of the most important constraints while participating in R-I linkages, University might not be focusing on allocation of sufficient funds for conducting linkage activities with industries, so there is need to focus on highlighting the importance of having linkage and allocation of appropriate budget for strengthening of linkage.

**Table 1: Constraints related to communication linkages**

| S.No | Constraint | Yes | | No | | Rank |
|---|---|---|---|---|---|---|
| | | F | % | F | % | |
| 1. | Lack of knowledge and awareness on communication channels/methods | 16 | 26.67 | 44 | 73.33 | VI |
| 2. | Lack of communication skills | 07 | 11.67 | 53 | 88.33 | VII |
| 3. | Lack of time to participate in communication linkages with industry | 19 | 31.67 | 41 | 68.33 | V |
| 4. | Lack of funds for conducting linkage activities | 37 | 61.67 | 23 | 38.33 | I |
| 5. | Non-conducive organizational climate | 31 | 51.67 | 29 | 48.33 | III |
| 6. | Lack of time due to other responsibilities delegated | 35 | 58.33 | 25 | 41.67 | II |
| 7. | Lack of communication link with the Extension personnel | 22 | 36.67 | 38 | 63.33 | IV |

More than half (58.33%) of the researchers encountered a constraint "lack of time due to other responsibilities delegated". This can be attributed to the fact that the researchers selected for the study were mostly from the academic institutes of the university who were with the role mandate of teaching, research and extension. Jaider Vega-Jurado *et al.* (2008), also revealed that lack of time due to teaching as a constraint for researchers to participate in University – Industry (U-I) linkages.

"Non-conducive organizational climate" is also one of the important problems faced by half (51.67%) of the researchers, the reason is researchers might be lacking focused guidance & supervision, facilities & resources and also lack of support from team mates coupled with poor healthy inter-personal and inter-departmental relations. The findings was in line with the findings of Jaider Vega-Jurado *et al.* (2008), who reported that unfavorable internal atmosphere was a barrier for U-I linkages.

It is interesting to note that some (36.67%) of the researchers expressed that "Lack of communication link with the Extension personnel" as a constraint which might be due to insufficient communication linkages of the researchers with extension wing of university. Other constraints faced by few researchers were lack of time to participate in communication linkages with industry, lack of knowledge and awareness on communication channels/methods and lack of communication skills.

**Constraints related to working linkages:**

Results (table 2) revealed that More than three fourths (78.33%) of the researchers felt that there was "less access to know the industry needs", which might be due to the university

researchers' assumption that it is difficult to know the problems and needs of industries unless there is any demand from the industries.

Equal per cent (76.67%) of researchers expressed constraints like "lack of demand from industry" and "guidelines and regulations of university in conducting research" which might be due to lack of interest by the industry personnel and awareness on expertise and capabilities in the university and also sometimes the rules and regulations of the university might be hampering the participation with industries in UR-I linkages.

**Table 2: Constraints related to working linkages**

| S.No | Constraint | Yes | | No | | Rank |
|---|---|---|---|---|---|---|
| | | F | % | F | % | |
| 1. | Lack of time for the generation of participatory technology for industry | 21 | 35.00 | 39 | 65.00 | IX |
| 2. | Time is not sufficient for full pledged research | 35 | 58.33 | 25 | 41.67 | VI |
| 3. | Less access to external funding/sponsorships | 43 | 71.67 | 17 | 28.33 | IV |
| 4. | Less access to know the industry needs. | 47 | 78.33 | 13 | 21.67 | I |
| 5. | Focused attention on small scale farmers. | 38 | 68.33 | 22 | 36.67 | V |
| 6. | Lack of demand from industry | 46 | 76.67 | 14 | 23.33 | II |
| 7. | Lack of good laboratory practices (GLP) and good clinical practices (GCP) | 45 | 75.00 | 15 | 25.00 | III |
| 8. | The existing incentives and promotion system in university disregards the participation in linkages with industry. | 20 | 33.33 | 40 | 66.67 | X |
| 9. | Guidelines and regulations of university in conducting research | 46 | 76.67 | 14 | 23.33 | II |
| 10. | Lack of enough HR in university research and extension | 33 | 55.00 | 27 | 45.00 | VII |
| 11. | Conflicts of interest and commitment | 32 | 53.33 | 28 | 46.67 | VIII |

Three fourths (75%) of the university researchers were facing the constraint "lack of good laboratory practices (GLP) and good clinical practices (GCP)". This might be due to lack of laboratory and clinical equipments in the university for conducting research on identified problems and for the generation of innovative technologies.

Majority (71.67%) of the researchers felt that "less access to external funding/ sponsorships" is one of the constraints. University should bring wider awareness among the scientific staff of the university about various national and international research funding agencies, as university funding resources are limited. However, university should also focus on research funding avenues from the industries and can have appropriate linkages to tap the funding resources on mutual benefit basis.

Majority (68.33%) of the researchers had opinion that "focused attention on small scale farmers" is a constraint. Majority of farming community is small and marginal farmers in India so university need to focus on this group. However, keeping in view of emerging large scale industries, producer companies and co-operative sectors, university should focus on technology generation and dissemination for which strong UR-I linkages may be quite useful.

"Time is not sufficient for full pledged research" is a constraint faced by more than half (58.33%) of the researchers, the reason that can be attributed to fact might be most of the university researchers handling research, teaching and extension simultaneously.

"Lack of sufficient HR in university research and extension" is also one of the important constraints faced by more than half (55%) of researchers. University should focus on regular uptake of technical manpower in the concerned areas for effective technology generation and dissemination.

Other constraints faced by the university researchers while participating in working linkages with the industries were conflicts of interest and commitment, lack of time for the generation of participatory technology for industry and sometimes the existing incentives and promotion system in the university disregards the participation in linkages with industry.

**Suggestions from the Researchers to strengthen the UR-I linkage**

**Table 3: Suggestions from the researchers**

| S. No | Suggestion |
|-------|------------|
| 1. | Popularization of technologies generated by the university. |
| 2. | Commercialization of the technologies generated by the university. |
| 3. | Timely approaches by Industries with university for the technical solutions. |
| 4. | Funding from Industries for the research projects to be carried out by the university scientists. |
| 5. | Separate fund allocation by the university for research and conduct linkage activities. |
| 6. | Establishment of MOU between UR and I to conduct research projects. |
| 7. | Exposure visits at regular intervals to livestock industry sectors. |
| 8. | Encouragement of Public Private Partnership (PPP) in livestock research. |
| 9. | Establishment of regional and separate livestock research wings. |
| 10. | Establishment of University Research-Industry-Advisory-Council (URIAC) |

| | |
|---|---|
| | and Research-Extension-Industry Council (REIC). |
| 11. | Strengthening of research institutes in terms of technical, financial and human resources. |
| 12. | Incentives for development and standardization of GLPs, GCPs and GMPs by the scientific staff. |

University researchers suggested that there should be repository of the technologies generated in the university which need to be popularized and commercialized among the stakeholders as and when required. Researchers felt that the industries should approach the university periodically to have timely solutions through sponsoring research activities whenever necessary. It was also suggested by the university researchers that the university should allocate sufficient funding for the research activities and to conduct various UR-I linkage activities in order to get fruitful results.

Scientists from the university also opined that there should be MOU between UR and Industry in conducting the research activities for mutual benefits. There is need of frequent exposure visits to livestock industries by researchers to have first hand scientific information about the problems, needs and technologies being utilized. University should also think of having research partnerships with the corporate research institutes and industries for mutual benefits (PPP).

Researchers suggested that there is need to establish University Research-Industry-Advisory-Council (URIAC) and Research-Extension-Industry Council (REIC) to conduct high quality research and enhancing the capability of industry to compete globally. Jaider Vega-Jurado*et al.* (2008), also mentioned that creation of a body of coordination between universities and business helps in promotion of University Industry Relation (UIR).

There is a need to create more regional and separate livestock research wings to have focused research in order to develop region specific and species specific technologies for the benefit of stakeholders. Researchers recommended the university to upgrade the research institutes and academia in terms of technical (GLPs and GCPs), financial and human resources in order to address some of the financial challenges by attracting the productive sectors, the same also mentioned by Makulilo (2012).

**Constraints of industry personnel**

Constraints of industry personnel with regard to communication and working linkages is presented here under

**Constraints related to communication linkages:**

Results (table 4) disclosed that most (62.50%) of the industry personnel expressed "Lack of extension wing in industry" as a constraint in participation of communication linkages with the university researchers. "Lack of time to participate in communication linkage with research" is one of the constraints felt by 27.50 percent of industry personnel. Some (15%) of industry personnel expressed "Lack of interest and desire to participate in communication linkages with research as a constraint. Other constraints faced by industry personnel while participating in UR-I communication linkages were lack of awareness and knowledge on communication media/methods and lack of communication skills. Realizing the importance of linkages, bringing its awareness widely among the industry personnel and making participation as one of its employee job activities may solve the problem.

**Table 4: Constraints related to communication linkages**

| S.No | Constraint | Yes | | No | | Rank |
|------|-----------|-----|-----|-----|-----|------|
| | | F | % | F | % | |
| 1. | Lack of awareness and knowledge on communication media/methods. | 05 | 12.50 | 35 | 87.50 | IV |
| 2. | Lack of interest and desire to participate in communication linkages with research. | 06 | 15.00 | 34 | 85.00 | III |
| 3. | Lack of communication skills. | 03 | 07.50 | 37 | 92.50 | V |
| 4. | Lack of time to participate in communication linkage with research. | 11 | 27.50 | 29 | 72.00 | II |
| 5. | Lack of extension wing in industry | 25 | 62.50 | 15 | 37.50 | I |

**Constraints related to working linkages:**

**Table 5: Constraints related to working linkages**

| 1. | Lack of reliability on research other than their own industry research. | 22 | 55.00 | 18 | 45.00 | VI |
|----|-----------------------------------------|----|-------|----|-------|------|
| 2. | Poor access to research from outside the industry | 23 | 57.50 | 17 | 42.50 | V |
| 3. | More attention paid towards own research rather than research from outside | 16 | 40.00 | 24 | 60.00 | VII |
| 4. | Industry wants to maintain confidentiality in technological issues. | 24 | 60.00 | 16 | 40.00 | IV |
| 5. | Industry demands only human resource, but not technological inputs from outside | 03 | 07.50 | 37 | 92.50 | VIII |
| 6. | Conflicts of interest and commitment | 26 | 65.00 | 14 | 35.00 | III |
| 7. | Lack of information about the expertise and capabilities within the university | 34 | 85.00 | 06 | 15.00 | I |
| 8. | Lack of good laboratory practices (GLPs) | 31 | 77.50 | 09 | 22.50 | II |

| | | | | | |
|---|---|---|---|---|---|
| | and good clinical practices (GCPs) in university. | | | | |
| 9. | Instructions/guidelines to consider their own research findings | 31 | 77.50 | 09 | 22.50 | II |

Most (85%) of the industry personnel felt that "lack of information about the expertise and capabilities in the university" is one of the major constraints which might be due to lack of regular rapport with university researchers. Lack of good laboratory practices (GLPs) and good clinical practices (GCPs) in the university and Instructions/guidelines to consider their own research findings (both are ranked second) are two important constraints faced by many (77.50%) of the industry personnel. This might be the industry personnel's assumption that university might not be having GLPs and GCPs instructions and guidelines of industry may act as hurdles to participate in UR-I linkages. Majority (65%) of industry personnel encountered constraint "Conflicts of interest and commitment" which might be due to the difference in commitments and interests of industry personnel and university researchers.

Other constraints faced by the industry personnel while participating in UR-I working linkages were; maintaining confidentiality in technological issues, poor access to research from outside the industry, lack of reliability on research other than their own industry research.

**Suggestions from the industry personnel to strengthen the UR-I linkage**

**Table 6: Suggestions from the industry personnel**

| S. No | Suggestion |
|---|---|
| 1. | Establishment of separate extension wing in industry. |
| 2. | Livestock Technology Information Centre (LTIC) at university. |
| 3. | Interactive sessions with university scientific staff at regular intervals i.e., through conducting of workshops, conferences, official meetings etc. |
| 4. | Authorization of available good laboratory practices (GLPs) and good clinical practices (GCPs) by the university. |
| 5. | Availability of authenticated research findings from UR. |
| 6. | Timely availability of need based solutions. |
| 7. | Establishment of Research Incubation Centers (RICs) by both the partners. |
| 8. | Encouraging for Participatory Technology Development (PTD) by both the partners. |
| 9. | University research should focus on practical solutions rather than theoretical research. |

Industry personnel felt that there should be an extension wing in the industry to have liaison between university and industry and also to conduct regular linkage activities. Industry personnel suggested that the university can initiate Livestock Technology Information Centre

(LTIC) at the university level through which the industry can interact with specific researchers for its research needs and solutions of their problems. Industry personnel opined that there is need of interactive sessions with the university scientific staff at regular intervals for mutual sharing of information through conducting of workshops, conferences, official meetings etc.

Industries suggested the university to focus on GLPs and GCPs so that the industries can make use of labs for result verification trials. Industries want university to have more focus on authentication of research in terms of standards and patents so that industries can make use of technologies developed by the university research.Industries suggested that the university research should provide timely solutions as early as possible.

Some of the industry personnel opined that both the university and industry should create Research Incubation Centers (RICs), where the development of participatory technologies wills takeplace. Industry personnel suggested that the university researchers carry out the research on practical solutions rather than theory based.

**Conclusion**

From the foregoing, it is clear that there are many constraints from both the researchers of university and industry personnel to extend their hands in participation of University-Industry research linkages (communication and working linkages). Because of these constraints the communication and working linkages between university and livestock industry are not at desirable level and ultimately causes disruption in technology flow and low adoption rates, increased time lags between development and adoption of new technology, reduced efficiency in the use of resources, unnecessary competition and duplication of efforts, and increased cost of agricultural research and extension activities. It is imperative for universities to collaborate with industry for creating alternative funding avenues for research activities. Finally we can argue that the transformation of academia and commercialization of university research results would be possible by implementing the suggestions and recommendations given by the researchers and industry personnel.

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