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Mark A. Wilson

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George H. Axinn
Major professor

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# INTER-ORGANIZATIONAL COLLABORATION AND LINKAGE IN BOLIVIAN AGRICULTURAL RESEARCH AND EXTENSION

By

Mark A. Wilson

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# ABSTRACT


INTER-ORGANIZATIONAL COLLABORATION AND LINKAGE IN BOLIVIAN AGRICULTURAL RESEARCH AND EXTENSION

By

Mark A. Wilson

While inter-organizational relationships (IORs) are fast becoming an important aspect of international agricultural research and extension, relatively little systematic study has been done concerning their nature and circumstances. The present study addresses this deficiency by studying IORs formed between Bolivian governmental organizations (GOs) engaged in research and non-governmental organizations (NGOs) engaged in extension activities.

Analysis of the qualitative data showed that respondents most frequently identified factors dealing with the "Convergence of Interests" and "Finances" as having an impact IOR effectiveness. Further, "Financial Capacity" was found to be especially important to GO respondents, while NGO respondents most often cited "Political Interests" as important to IOR effectiveness. Analysis of the quantitative data indicated that no statistical relationships existed between IOR effectiveness and the independent variables at the $p < 0.05$ level of significance. Common problem domain identification (PDI) was found to be, however, significant at the $p < 0.1$ level.

# DEDICATION

Not every small farmer around the world faces a daily struggle for survival. Nor does every development worker give up their own comfort and safety to put themselves on the line with the poor.

But in our world today, over a billion people go hungry or die of starvation, and a few selfless individuals join in their struggle, some even die along the way. It is to these groups of people that I dedicated this work.

# ACKNOWLEDGMENTS

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| | |
|---|---|
| CIAT | Tropical Agriculture Research Center |
| DCONG | Dirección de Coordinación con ONGs (Office for NGO Coordination) |
| GO | Governmental Organization |
| GoB | Government of Bolivia |
| IBTA | Bolivian Institute for Agricultural Technologies |
| IOR | Inter-organizational Relationship |
| NGO | Nongovernmental Organization |
| OI | Organizational Interests |
| OID | Organizational Interdependence |
| PDI | Problem Domain Identification |
| PROINPA | Potato Research Project |
| PROSEMPA | Potato Seed Program |
| RC | Resource Commitment |
| UNDP | United Nations Development Program |

# Chapter One
# INTRODUCTION

## Background

The United Nations Development Programme (UNDP) estimates that more than one billion people live in absolute poverty worldwide (UNDP, 1993). Further, the livelihood of most of these people is based on forms of agriculture that have been described as complex and risky. Over the past several decades, millions of dollars have been spent in an effort to alleviate, if not to eliminate such conditions.

One result of this effort has been an increase in total world food production through advances in agricultural technologies. Between 1950 and 1980, world food production experienced a period of rapid growth (Brown, et al., 1993). During this time, production of cereal grains increased at 3 percent per year, and soybeans, the world's leading protein crop, had an average increase of 5 percent per year from 1950 to 1986 (ibid.). Such gains were made possible largely due to increases in the use of irrigation, agrochemicals, and "improved" crop varieties. However, while global food production rose substantially, not all farmers benefited equally, and the high environmental and societal costs of these increases are now being realized.

According to Kaimowitz (1993), certain crops, regions, and farmers have benefited from technological advances in agriculture, while others gained little or were adversely affected. Further, Wellard, et al. (1990) point out that while most public research institutions have a mandate to carry out research activities to meet the needs of both large and small farmers, they have been limited in their ability to respond to the needs of resource-poor small farmers. This has been due, in part, to cut backs in government expenditures on agricultural research and extension, and has affected the ability of most governmental organizations (GOs) to reach isolated areas where small farmers are more likely to be located.

In response to these problems, interest in alternatives to *governmental* agricultural research and extension activities is increasing. One such vehicle for agricultural development services is the non-governmental organization (NGO). Since 1980, the role of NGOs in agricultural development world-wide has increased, and funding for them amounted to over $US 7.2 billion in 1990 (UNDP, 1993). However, while many have pointed out that the comparative strengths of NGOs may help them to bridge the gaps that exist between GOs and rural populations, some suggest that the rhetoric about them may exceed reality (Bebbington and Farrington, 1993).

In terms of agricultural research and extension, the most serious deficiency of NGOs may be their limited technical capacity. Kaimowitz (1993) points out that with the exception of a few larger organizations, most NGOs have little capacity for experimentation and few ties with institutions having that

capacity. Other NGOs have tended to go no further than informally testing new technologies. In fact, Kohl (1992) cites cases in which the promotion of greenhouse systems by Bolivian NGOs led to economic losses by some small farmers. Lastly, NGOs tend to depend on 'soft' funding sources, leading to short-term strategies, and making it difficult for them to make long-term commitments needed to work in agricultural research.

In resolving these problems in agricultural research and extension, many development scholars have promoted the concept of inter-organizational collaboration between governmental and non-governmental organizations (Carroll, 1992; Clark, 1991; Esman, 1991). Given that most NGOs are poorly suited to become centers of technical expertise, the idea of linking them with formal research institutions appears attractive. That is, if the NGOs' strength is their relative closeness to their clientele, and the research institutes' their technical capacity, perhaps bringing them together would allow each to complement the comparative advantage of the other (Kaimowitz, 1993).

However, collaboration between NGOs and GOs in agricultural research and extension has been limited to date, and several cases of discord and direct conflict have been cited (Ayers, 1992). Fewer still are the numbers of such collaborative efforts that have been documented. In short, there is a need to explore more thoroughly the concept of GO-NGO collaboration in agricultural research and extension, and to identify the conditions which promote effective inter-organizational relationships (IORs).

## Statement of the Problem

While inter-organizational relationships are fast becoming an important aspect of international agricultural research and extension, relatively little study has been done concerning the nature and circumstance of such interactions. More specifically, there is a gap in what is known about the factors leading to effective GO-NGO collaboration in agricultural research and extension. Therefore, the objectives of the present study are to: 1) address the deficiency in the literature by examining the extent to which selected factors have contributed to the effectiveness of Bolivian NGO-GO collaborative efforts, and 2) generate knowledge that can be brought to bear by governmental organizations (in particular Bolivian governmental organizations engaged in agricultural research) and non-governmental organizations in building stronger and more effective collaborations that benefit resource-poor small farmers.

## Research Hypotheses

In order to accomplish the study objectives, the present study examined the extent to which four factors impact upon the effectiveness of inter-organizational relationships. As seen in Figure 1, the analysis concentrated on those factors which are hypothesized by the researcher to be critical in the effectiveness of GO-NGO collaboration and linkage in addition to those deemed important by study respondents. The overall study hypothesis is that:

the effectiveness of GO-NGO collaboration and linkage in agricultural research and extension tends to be positively associated with: 1) convergence of organizational interests, 2) organizational inter-dependence, 3) convergence of the identification of the problem domain, and 4) the level of resource commitment.

Specifically, it is hypothesized that the effectiveness of GO-NGO inter-organizational relationships is associated with each of the variables as follows:

1. Effectiveness tends to be positively associated with the convergence of Organizational Interests (OI). The degree of perceived IOR effectiveness tends to increase as convergence of Organizational Interests increases.

2. Effectiveness tends to be positively associated with Organizational Interdependence (OID). As the degree of perceived dependence of each organization on the other increases, the degree of IOR effectiveness tends to increase.

3. Effectiveness tends to be positively associated with the degree of common Problem Domain Identification (PDI). As the conceptualization that each organization has of the problem which the IOR was formed converges, the degree of IOR effectiveness tends to increase.

4. Effectiveness tends to be positively associated with the level of Resource Commitment (RC). As the level of resources committed to the IOR increases, the degree of IOR effectiveness tends to increase.

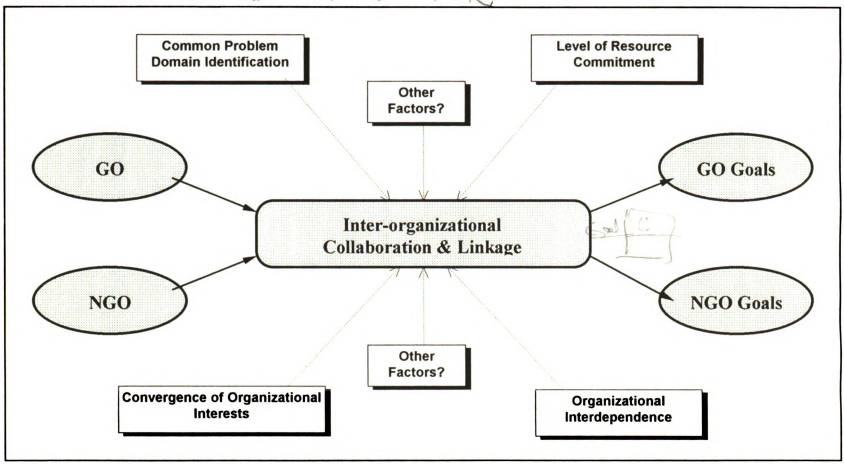


**Figure 1.** Factors Hypothesized to Affect GO-NGO IORs in Agricultural Research and Extension

For the purposes of the present study, the relevant concepts will be defined as follows:

- Combining components of Wood and Gray (1991) and Farrington et al. (1993), the term collaboration is used to describe formal, interactions between autonomous organizations involved in agricultural research and/or extension that are mutually supportive (such as joint validation trials).
- Linkage is defined as formal or informal relationships between autonomous organizations involved in agricultural research and/or extension that are neutral or are less mutually supportive than collaborative relationships (such as exchanges of information).
- Effectiveness is the degree to which an inter-organizational relationship achieves the goals of the field staff and directors of each organization.
- Organizational Interests (OI) are the interests that an organization seeks to promote and protect during any interaction with its environment.
- Organizational Interdependence (OID) is defined as the perception of each organization's staff of the need for, or dependence on, another group or organization in order to fulfill its own goals and objectives.
- Problem Domain Identification (PDI) is defined as the perception of the problem area which a linkage or collaboration was created to address.
- Resource Commitment (RC) refers to the amount of resources invested in a collaboration or linkage.

## Research Questions

In testing the four hypotheses, the following questions guided the study:

1. How do the administrators, staff and clients of the organizations selected for study perceive the interests of their organizations being served, or not, by the inter-organizational collaboration or linkage (effectiveness)? Do these interests differ from the formally stated goals of the organization?

2. How do the administrators and staff of each organization perceive the need of their organization to collaborate or link with their partner organization[1] (interdependency)?

3. Have the partners clearly identified the problem domain of their collaboration, and to what extent has the means by which it will be addressed been clarified (common problem domain identification)?

4. With what intensity do the partners interact (resource commitment)? What impact does the intensity of interaction have on the effectiveness of the collaboration or linkage?

5. Are there other factors, such as shared characteristics, staff fluidity or administrative attitudes that affect IOR effectiveness in Bolivian agricultural research and extension? If so, what impact do they have on resource-poor small farmers?

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[1] For the present study, the term "partner organization" refers to one or the other of two organizations taking part in inter-organizational activities.

## Organization of the Thesis

The thesis is organized into five chapters and five appendices. Following the present introduction, Chapter two contains a problem-focused literature review. Chapter three then describes the research design, methods and limitations of the study. Chapter four presents an analysis of the data and the research findings. Chapter five offers a summary of inferences based on the findings and their corresponding policy implications, and recommendations for future research. Lastly, the appendices contain information about the primary funding agency, Winrock International, the participant consent form, a complete list of open-ended responses, a list of the organizations contacted, and the contingency tables used in the data analysis.

# Chapter Two
# LITERATURE REVIEW

To provide a context for the study, this chapter provides an overview of pertinent literature relating to the major study concepts. The first section focuses on the main actors, mainly governmental agricultural research organizations and non-governmental organizations. The second section concentrates on the concept of inter-organizational relations and its context within the area of agricultural research and extension.

## Governmental Organizations in Agricultural Research

> Resource-poor farming in the Third World presents intractable problems. Probably well over a billion people depend for their livelihoods on the complex, diverse and risky forms of agriculture which have been poorly served by agricultural research. (Chambers et al., 1989, pp. xiii)

In addition to Chambers et al., many development scholars note that conventional agricultural research has tended not to meet the need of resource-poor farmers (Farrington and Martin, 1987; Flora, 1992; Richards, 1985) For this reason, Hildebrand (1976) and others (Bebbington et al., 1993; Harwood, 1994; Flora, 1992) have begun to rethink the assumptions upon which

agricultural development and the extension of agricultural technologies have traditionally been based, and the strategies by which they have been carried out.

During a workshop on linking farmer participatory research to policy planning and implementation in Eastern India, then FAO representative Dr. George Axinn made the case that agricultural research should be as concerned with issues of policy as it is with operation (Axinn, 1990). First, he pointed to the fact that past research efforts have often wrongly assumed that new technologies would be value neutral, instead of, as he noted, benefiting larger farmers while making things worse for smaller farmers. This has also been noted by Kaimowitz (1993) who states that 'Green Revolution' technologies, while helping to solve some problems, created others. Secondly, Axinn made it clear that while it was assumed that agricultural research would benefit farmers, it has not done so. In Axinn's view, the benefits from agricultural research have tended to accrue to those in control of the research operation by virtue of their control over of staffing and the research agenda. Consequently, Kaimowitz points out that unless farmers have the power to make their voices heard, research organizations will tend to pursue their own intellectual, social and political objectives. Both of these "serious, unwarranted assumptions" have led to a system that has, while "scientifically" sound, taught without listening, tended to be unsustainable, and has not responded to farmers' needs and priorities, and has failed to enhance the quality of rural life (Axinn, 1990). As noted by Thiele et al. (1988), this description appears to apply to most Latin American national

research institutions, which lack mechanisms through which farmers can participate in the determination of research priorities.

Another aspect of this problem is the GO's difficulty in coping with the wide range of agro-ecological and socio-economic conditions of the resource-poor small farmer, and what Kaimowitz (1993) refers to as "the new technological agenda" (Bebbington, 1991; Farrington & Bebbington, 1992). Partly due to factors of control and participation, the State's inability to cope with the small farmer situation has been linked to other obstacles. First, there is a problem with financing public sector agricultural services (Pardey and Roseboom, 1989; Mungate, 1991). As Martínez (1990) notes, declining state resources not only cut out the fat from GO research and extension activities, it slowed them down to the point where "stagnation set in." Without resources for sufficient wages or supplies to cover vast national territories, GOs lost staff to other, more fiscally stable institutions, and left farmers disillusioned.

Kaimowitz (1993) also discusses the inability of "traditional" research and extension institutions to meet the need for what he terms a "new technological agenda" that achieves more sustainable and equitable patterns of development. Aspects of this "new agenda" include:

- problem solving using diversified production systems that take advantage of beneficial interactions existing in nature, rather than simplifying production systems and importing capital goods from outside of the farm;

- location-specific practices that, while based on common principles, must be adapted to specific conditions in each situation; and
- technologies that tend to make intensive use of knowledge (both from the scientific establishment and the farmers) and genetic material, rather than machinery and agrochemicals.

Kaimowitz states that traditional research and extension institutions tend to have a limited ability to address this new agenda. Limitations within the research system include an institutional structure and culture that were designed to test new varieties for commercial agriculture in favorable environments. Finally, according to Kaimowitz, the training of extension agents is based on prescriptions to farmers, rather than the "more complete educational approach involving a permanent dialogue and collective problem solving that is now required" (p. 1142).

According to Bebbington (1991), the State's apparent difficulty in meeting the challenges of creating a more sustainable and equitable pattern of agriculture development has led policy makers and social activists to promote and create new institutional actors such as non-governmental organizations.

## Non-Governmental Organizations

While widely used in the literature, the term non-governmental organization, or NGO, represents a broad spectrum of organizations that seem to defy precise classification and that leave the term without much meaning

(Clark, 1990; Korten, 1990). The following section therefore provides a overview of NGO typologies offered in the literature, the relative strengths and weaknesses of NGOs, and their current and potential roles in international development activities.

Many development scholars (Carroll, 1992; Cernea, 1988; Clark, 1990; Korten 1990; Uphoff, 1986) have created varying and sometimes complex classification systems for non-governmental organizations. There are, however, three themes that cut across each of these. These are: types of activity undertaken by the organization, the level at which each acts, and the location of control within the organization.

**Types of Activity.** Using Clark (1990) as a model, five basic types of organizations can be identified. Historically first among the Northern NGOs are *relief and welfare agencies* that emphasize bringing relief to persons suffering from the consequences of war, famine and other disasters. The second type of organization specializes in *technical innovations* and pioneers new or improved approaches to specific problems or specialized fields such as animal traction. The third group of NGOs, *public service contractors,* are often supported by Northern governments to undertake specific components of Southern governmental programs. Next, *advocacy groups and networks* tend to carry out activities in education and lobbying rather than field projects. Lastly are *popular and grassroots development agencies* that operate at various levels and with various types of control, concentrating mainly on shaping the popular

development process though self-help, social development, and grassroots democracy initiatives.

**Level of Activity.** An alternative classification system groups NGOs based on the level at which each carries out its activities: international, national or local (Cernea, 1988). International NGOs work either in countries other than their own, or represent a federation of national organizations from various countries. National NGOs are supra-local and represent an intermediate level of activity. Finally, local NGOs are grassroots organizations such as cooperatives and various types of local committees that have grown out of local communities.

**Ownership.** The last classification scheme for NGOs noted here is based on the ownership or control of the organization. While found in the typologies listed above, this characteristic is used by Uphoff (1986) and Carroll (1992) to create two additional classes of NGOs. The first of these has been labeled "*Membership Organizations*" (Uphoff) or "*Membership Support Organizations*" (Carroll). These tend to be self-help groups or associations working at the community level that serve the collective needs and interests of their membership. Leadership and staff of these groups are generally selected from within the membership and, therefore, tend to belong to the same class. The second group of NGOs under this system is made up of what Uphoff refers to as "*Service Organizations*" or what Carroll terms "*Grassroots Support Organizations.*" These groups, while formed primarily to benefit the rural poor

and marginalized, are generally controlled by "outsiders" who are not of the same social class as their intended beneficiaries.

While not definitive, these typologies make it easier to define the term non-governmental organization. Integrating the key points of each of these typologies the present study defines the term NGO as any national or international institution with development objectives, including both membership and membership support organizations.

## Non-Governmental Organizations in International Development

> In their attempts to assist peasant farmers left unattended by government agricultural programs, grassroots support organizations have developed new approaches to agricultural technology development and extension that make beneficiaries co-partners in the search for solutions (Bebbington, 1991: 21).

While NGOs may be difficult to place into neat categories, there is little doubt that their role in the international development arena has increased greatly over the past twenty years. As Clark (1990) points out, both the media and the public love NGOs. He notes that it is the *government*, with all of its bureaucracy, that the public "loves to hate," and not the small, *non*-governmental entity. Since 1970, when they managed less than US $9 million (ibid.), funding for NGOs has dramatically increased to over $7.2 billion in 1990 (UNDP, 1993). According to Kaimowitz (1993) NGOs in Honduras, El Salvador and Nicaragua provide services to approximately 15 percent of the farmers in those countries.

The following sections summarize the relative strengths and weaknesses of this new actor.

**NGO Strengths.** NGOs have been reported to be innovative in developing effective approaches to agricultural technology generation and transfer. According to Farrington and Bebbington (1992), NGOs have introduced systems approaches which go beyond conventional farming systems research, and have advantages for meeting the challenge of promoting the new technological agenda. Bebbington (1991) states that part of this may be attributed to their tendency to be more willing than government technicians to ask farmers what they think, and therefore focus technology adaptation and transfer mechanisms towards real farmer concerns. Clark (1992) also notes that although government institutions suffer from demoralization and apathy, NGO personnel tend to be highly motivated and committed, working long hours in remote areas for low pay. As a result, Bebbington (1991) states that NGOs are less likely than GOs to push high-cost technologies, preferring instead holistic technologies that minimize risk, recuperate degraded resource bases, and improve family nutrition levels.

In addition to these strengths, Clark (1992) notes that due to their modest size, NGOs are less likely to have the inefficient bureaucracies often associated with official aid agencies, allowing them greater flexibility to experiment, adapt and attempt new approaches. Other strengths attributed to NGOs include

greater efficiency in the use of resources and relative freedom from political constraints.

Although NGOs have been noted for their comparative advantages over GOs, Bebbington (1991: 24) also points out that NGOs should not be canonized: "even the best GSOs [Grassroots Service Organizations] suffer from certain serious limitations."

**NGO Weaknesses.**

> [I]n the face of pervasive poverty, "small scale" can merely mean "insignificant," "politically independent can mean "powerless" or "disconnected," "low-cost" can mean "underfinanced" or "poor quality," and "innovative" can mean simply "temporary" or "unsustainable" (Annis, 1987 in Clark, 1990:54).

As noted by Annis and others (Carroll, 1992; Bebbington and Farrington, 1993), the advantages of NGOs may be, in some cases, more rhetoric than reality. For example, Clark (1990) argues that the image of NGOs working with "the poorest of the poor" is overstated. He points out that even for NGOs reaching this sector, work is often very difficult: "the provision of credit, irrigation or market outlets to small farmers is easier than the provision of land, farming skill and confidence to the landless" (ibid.: 47). Other authors (Ayers, 1992; Bebbington, 1991) also note that because of their commitment to, and focus on, locally specific issues and interventions, some NGO project designs may be conceived in the absence of broader planning strategies. And, as the number of

NGOs multiply in some areas, the result may be a proliferation of uncoordinated micropolicies that fail to address regional issues.

Some authors have also pointed out that short-term funding sources and donor pressure for "action" and "results" make it difficult, if not impossible, for NGOs to commit to doing the long-term basic research needed for technology development (Copestake, 1990; Farrington & Bebbington, 1992). Bebbington (1991) warns that in such cases, NGOs should not attempt to fill technological gaps in government programs on their own, but rather should push for reallocation of government resources. Another problem related to short-term finances is that some NGOs may be reluctant to use scarce resources on non-project expenses such as personnel training, thereby limiting their managerial, organizational and technical capacities (Ayers, 1992). Similarly, Kaimowitz (1993) reports that NGO staff and volunteers tend to have a low level of formal education. While this may help in establishing rapport with farmers, it may lead to poor results in the field. Further, Kaimowitz states that the new technological agenda will require studies of production systems, soil fertility, crop interactions and pest epidemiology, of which, most NGOs lack the capacity to carry out.

## Bolivian Non-Governmental Organizations

According to a recent article in *La Razon* (1994), a Bolivian newspaper, the government of Bolivia (GoB) estimates that there are over 600 NGOs operating in the country, of which only 374 are registered with the government's Office of NGO Coordination (Dirección de Coordinación con ONGs, DCONG).

According to the article, the majority of these organizations work in the health services sector, and manage between $US 175 to 200 million annually. Rosa María Balcázar, the director of the DCONG, states that while the principle objective of the Bolivian NGOs is to reduce poverty, their presence is less in zones considered to be extremely impoverished. Balcázar states that another weakness of NGOs is their lack of mechanisms for measuring the impact of their programs. Although NGOs are open to coordinating with the State, she also notes that many fear doing so for reasons of being financially audited or politically manipulated. Finally, Mrs. Balcázar stated what appeared to be the Bolivian government's general attitude toward NGOs at the time of the study: "For this reason [fear and lack of coordination], we need clear rules. The State should exercise its regulatory function and should recognize NGOs as independent and private, but not autonomous" (p. 24).

In summary, NGOs can be categorized in terms of their structure, level of activity and function. And though their strengths make them an increasingly attractive mechanism for rural development, their weaknesses leave some doubt as to the sustainability of their efforts. As a compromise of sorts, some authors suggest that the problems of both governmental and non-governmental organizations may be solved, or at least mitigated, through some form of inter-organizational collaboration or linkage between the two.

## Inter-Organizational Relations

Case studies have documented the use of collaborative arrangements in resolving a variety of social issues including educational and homelessness (Logsdon, 1991). This section reviews the phenomenon of inter-organizational relations (IORs), both in general and within the specific context of agricultural technologies research and extension.

**Definitions.** Westley and Vredenburg (1990) use Gray's (1989) definition of collaboration as "a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible." Logsdon (1991) uses Gray's (1989) second definition of collaboration as "a process of joint decision making among key stakeholders of a problem domain about the future of that domain." Finally, in an attempt to define collaboration in such a way as to "encompass all observable forms and exclude irrelevant issues," Wood and Gray define collaboration as:

> [W]hen a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms and structure to act or decide on issues related to that domain (1991: 146).

## Inter-Organizational Relationships in Agricultural Research and Extension

While the study of inter-organizational relationships in agricultural research and extension is still in its infancy, it has begun to generate much interest. In recent years, development scholars have promoted the concept of

collaboration (Carroll, 1992; Clark, 1991; Esman, 1991; Farrington and Bebbington, 1993).

For example, Bebbington (1991) states that GO-NGO cooperation could improve the effectiveness and the legitimacy of both parties. He points out three areas of potential complementarities: "representative administrative structures," "functional specialization," and "operational style." The first, representative administration structures, refers to potential for opening participation in setting research and extension priorities to those outside of the GO research system such as NGOs and farmer representatives. Next, functional specialization would allow the comparative advantage of each to make up, in some degree, for the weakness of the other. For example, while the public sector lacks the resources for adaptive on-farm trials and for gaining knowledge of farmers' needs, NGO strengths in this area would help to fill that gap. Likewise, the expertise of GO technicians would be used to overcome the technical limitations noted of some NGOs. Lastly, Bebbington points to the importance of operational style. If governmental and non-governmental organizations are to work together, it is important that each be convinced that the other shares, to some extent, the same operational style, such as concern for the rural poor.

As a result of these complementary areas, Bebbington goes on to describe the potential roles for NGO as independent innovators, public sector contractees, persuasive collaborators, and as networkers. He warns, however, that pressure from donors or others to require GO-NGO collaboration may result

in the effort "dying on the vine," and that attention must be given to ensuring that the ground work for such relations is well laid.

Another proponent of greater coordination among development actors has been David Kaimowitz. He points out that a key NGO weakness, lack of technical capacity, implies that the quality of their work could be enhanced by access to technical services (Kaimowitz, 1993). One such functional complementarity espoused by Sotomayor (1991) and Wellard et al. (1990) is that GOs be assigned the work of research, and NGOs the task of adapting and transferring technologies. While there have been cases of NGOs successfully adapting GO generated technologies to their specific needs, Kaimowitz believes that such proposals should be treated with caution. He notes: "It is a significant and complicated transition for NGOs to move from merely adapting GO technology to changing the sorts of research that GOs do in the first place, for this implies a direct relationship with government" (p. 210). Kaimowitz also points out the potential for conflict. If GOs continue act as though the State should maintain its traditionally central role in administering rural development, and if NGOs continue to perceive their role as the opponent, the result will be conflict.

Kaimowitz closes his discussion by identifying several types of emerging GO-NGO relationships. In the first, NGOs are "instruments" of GO programs. Here, the large number of NGOs complements the constraints of GOs in implementing development programs. Relationships of this type include

contracting NGOs to implement government technology transfer, delegating of extension activities to NGOs without any financial resources from the government, and allocating small grant or 'social funds' to NGOs for the implementation of small rural projects. This type however, caters to cutbacks in the public sector, and does little to address either the weaknesses of NGOs or their strengths in innovation and popular organization. Another type of relationship identified by Kaimowitz is the "NGO as a source of lessons for wider programs." As one of the NGOs' main strengths appears to be their experience and capacity for innovation, GOs could gain from incorporating such methods into their programs. Strategies might include: 1) GO adoption of technologies adapted by NGOs, 2) the incorporation of NGOs methodologies in participation, organizational strengthening and technology dissemination into GO praxis, and 3) the incorporation of NGO institutional structures into those of the GO. Lastly, Kaimowitz points to power sharing as one of the most promising areas of GO-NGO relations. In this relationship, local structures are created with representation from NGOs and farmer organizations acting as advisory councils for public programs. As such, the needs perceived by farmers, NGOs and GOs are met, theoretically. According to Kaimowitz, such a relationship is attractive to NGOs as it allow them to: access GO technologies, gain direct research and technological support, and influence research station experimentation. From the GOs perspective, such collaboration allows them to keep their on-farm research alive, even under severe resource limitations. Whatever the configuration or

reason for such relationships, he notes that one thing is clear, the roles to which both have become accustomed will be different.

One of most recent publications to consider such relationships between the State and NGOs is one of a four-part series developed by the Overseas Development Institute (Farrington et al., 1993). According to the authors of the Latin American volume (Bebbington et al., 1993), several other factors (in addition to functional complementarities) have favored increased coordination between NGOs and the State in Latin America. Among them are: political democratization and the weakening of authoritarian tendencies, administrative decentralization in the public sector, structural adjustment programs that have reduced the capacity of the State, and donor pressure on the state to work more closely with NGOs. Like Kaimowitz (1993), the authors believe that increases in GO-NGO ties are "irredeemably on the agenda," and will create the need for NGOs to reappraise their ideas of being champions of social and policy change. Likewise, the state will have to reappraise its tendency to exclude NGOs and farmers from decision-making. For NGOs and the state alike, the question now becomes how to best manage these relationships in order to strengthen the contribution of each in the generation and transfer of technologies relevant to farmers.

Factors Affecting Inter-Organizational Relationships.

IOR literature has tended to focus on the *definition* of collaboration, *preconditions* for collaboration and the *outcomes* of collaboration (Gray and

Wood, 1991), and has offered little on the subject of factors *impacting* such relationships. Therefore, the present research focused on four factors which are hypothesized by the researcher to not only affect the initiation of IORs, but their effectiveness as well. These factors are: the convergence of organizational interests, organizational interdependence, the common definition of the problem domain, and the level of resources committed to the IOR.

**Organizational Interests (OI).** Wood and Gray (1991) cite Lax and Sebenius (1986) to identify three types of organizational interest: shared, differing and opposing. While shared interests are those that are held in common (corporate interests) between the various stakeholders, differing interests are self-interests (individual) that are based on different valuations that do not interfere with one another. Opposing interests are "self-interests" that directly interfere with one another. According to Logsdon (1991) shared interests are seen as one of two critical preconditions in the formation of collaborative relationships. While not indicating the type, Gray (1989) also cites organizational interests as a condition for collaboration. How interests affect the relationship, however, appears to be unclear. As Wood and Gray note in their review of nine cases of inter-organizational relationships:

> The differences among these cases raises interesting questions regarding the extent to which the pattern of shared, differing and opposing interests among the stakeholders has a *differential* influence on a collaboration's potential for successful outcomes. Answers to that question *remain* for future researchers to explore (1991: 161).

Within the context of international development, Wellard, et al. (1990: 14) state: "strong efforts may have to be made to identify common ground in which the interests of neither side are threatened." They conclude that although the scope for wider GO-NGO collaboration appears considerable, "much sensitivity is required, not merely in identifying how complementarity might derive from areas of strength and weakness on each side, but also in recognizing and respecting the principles and agenda underlying the activities of each" (p. 20).

**Organizational Interdependence. (OID)** Logsdon (1991: 26) states that an: "[e]ssential factor necessary for an organization to consider collaboration is the organization's perceived interdependence with other groups as necessary for the social problem to be addressed effectively." According to Logsdon, the potential for collaboration occurs only in cases of high perceived interdependence and high interest by potential collaborators (Figure 2).

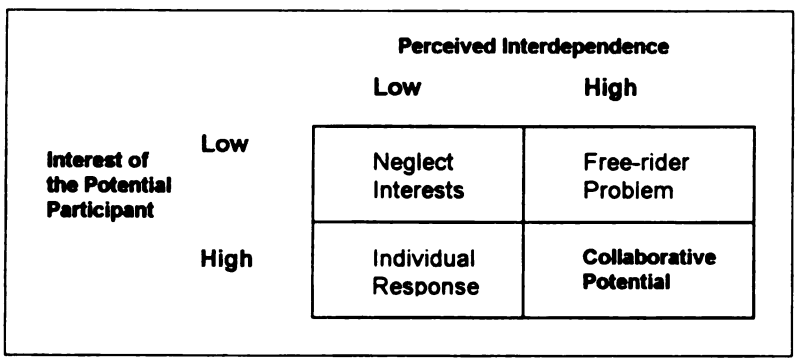


**Figure 2.** Essential Preconditions for Organizational Participation in Cross-Sectoral Social Problem-Solving Collaborations (Logsdon, 1991:27)

Accordingly, the potential for fulfilling interests alone does not prompt an organization to initiate collaborative efforts, but rather it must be in conjunction with a high perceived interdependence. Likewise, the perception of interdependence alone is not sufficient to foster collaboration, but must be linked to shared interests. Finally, in relating the concept of interdependence to inter-organizational relationships in rural development, Rogers and Glick (1973) state that such work is beyond the scope of any one institution, and further, that it is beyond the scope of either public or private sectors acting in isolation of one another.

**Problem Domain Identification (PDI).** One key element in inter-organizational relationships is that the stakeholders are bounded by a common problem domain. According to Westly and Vredenburg (1991) problem domains that are complex and wide in scope tend to foster collaboration. However, Gray (1989) states that one issue crucial to collaboration is a common definition of the problem. Nathan and Mitroff also identify the importance of arriving at what they term a "shared understanding" or "negotiated order" of the problem domain and the place of each organization within it:

> However experienced they may be in planning competitive strategies, organizations may not be as familiar with the formal planning required for inter-organizational cooperative strategy. To address a problem shared by two or more organizations, those involved must at least be able to grasp the problem's full scope (1991: 164).

Such understanding can be achieved by the mutual negotiation and/or by creating or employing a third party as a linking device. Westley and Vredenburg underscore this need in the following description of a situation facing environmentalists and businesses (not unlike the situation faced by Bolivian NGOs and GoB research organizations):

> [T]he concept of sustainable development framed a problem domain that was highly underorganized, In practice, many groups on both sides had only a hazy notion of their responsibilities in the domain or of the domain's parameters. Considerable dialogue was needed to begin to map the boundaries and structure of this new problem and determine the legitimate stakeholders, appropriate language, and interaction patters. In addition, the emerging domain was plagued with residues of previous problems, such as conflicts in definitions of environmentalism . . . (1991: 72).

**Resource Commitment (RC).** While much of the IOR literature is concerned with the preconditions for collaboration, Rogers and Molnar (1975) were concerned with determining the factors related to the intensity of interaction between development organizations. As noted in their report, one method for determining the extent of interaction between organizations is to measure the amount of resources committed to the interaction. They found that organizations that were perceived to be more effective also had higher levels of interaction (commitment of resources) with other organizations. They report: "it is also possible that the more intense interaction may have increased resource flows to other organizations making goal attainment more possible" (p. 19). Therefore,

as a potential factor impacting upon IOR effectiveness, interaction intensity was used as one of the variables in the study.

Based on this review of the literature, the following section operationalizes the key concepts and describes the research design and data analysis process.

# Chapter Three
# RESEARCH METHODOLOGY

In order to test the hypotheses stated in Chapter 1, face-to-face interviews were conducted with personnel of Bolivian governmental and non-governmental organizations. This chapter details the methodology used in collecting, processing, and analyzing the data collected from the interviews.

## Selection of Research Site, Sample Organizations and Respondents

The Bolivian context was chosen for study because of the relevant implications of this issue to Bolivian agricultural research and extension policy. Since 1991, Bolivia's Institute of Agricultural Technology (IBTA) has defined NGOs and other private sector representatives as "intermediate users" of its research and extension services, and specific cases of GO-NGO collaboration have already been documented in the country (Bebbington, 1991; Kaimowitz, 1993). It was also anticipated that the large number of NGOs reported to be working in the country would facilitate the identification and selection of study organizations. Finally, it was hoped that the study would complement work

already being undertaken by the sponsor of the study, Winrock International's Center for Institutional and Human Resource Development (CIHRD).[2]

As originally proposed, selection of sample organizations was to be carried out in two stages. During the first stage, a list of potential participant organizations was to created in conjunction with Winrock personnel in Bolivia. The second stage was to be carried out upon arrival of the principal investigator in Bolivia. However, due to complexities of identifying and contacting potential participants amid the 600 plus organizations working in Bolivia, it was necessary for the selection process to be carried out entirely in Bolivia, in a progressive, piecemeal manner. Study organizations were selected based on two criteria: 1) they were currently involved in agricultural technologies research and/or extension activities, and 2) they were currently participating in, or had previously participated, in an inter-organizational relationship by collaborating or linking with another organization fitting the first criterion.

As governmental agricultural research organizations were considered to be the focal points for IOR activities within the Bolivian context, initial contacts were made with the two largest organizations of this type in Bolivia: the Bolivian Institute for Agricultural Technologies (Instituto Boliviano de Techología Agropecuaria, IBTA) and the Center for Tropical Agricultural Research (Centro de Investigacíon Agrícola Tropical, CIAT). In addition, and as a result of later interviews, two additional research organizations were also contacted: the

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[2] See Appendix A for more information concerning Winrock International.

Potato Research Program (Programa de Investigacion de la Papa, PROINPA) and the Potato Seed Project (Proyecto de Semilla de Papa, PROSEMPA).

Within each of these organizations, initial contact was made with either the director of the organization or, when possible, with persons who either knew the researcher or who could be contacted by someone known to both the researcher and the organization. These initial contacts, termed here as "context interviews," allowed the researcher to gain an understanding of the organization, its goals and its inter-organizational relationships. It was also during these context interviews that lists of potential GO-NGO IORs were drawn up (including the name of relevant GO technicians). Subsequently, GO technicians were contacted and interviewed. This process also led to further refinement of the IOR list, including potential NGO contacts. While such a selection process was not random, and potentially created a bias toward "GO-selected" relationships, time and access limitations left few options for the selection of study IORs.

Using the lists defined during the GO interviews, NGO directors were contacted and asked for an initial appointment. When setting up the initial NGO context interviews, no mention was made of the previous contact with the GO unless it was necessary for gaining access to the NGO director. This was done to lessen the possibility that the researcher would appear to have some official connection with the GO, and thereby potentially biasing the NGO response.

During the course of the context interview with the NGO directors, lists of technicians who had taken part in IOR activities were drawn up and preparations

were made for conducting interviews. In some cases, interviews with NGO technicians were conducted on the same day, in the same office. In other cases, however, interviews were scheduled by contacting potential respondents by two-way radio. When this occurred, the researcher was required to travel to the field where the NGO technicians were based. Because of the distances involved and the lack of frequent public transportation, such excursions took up to three days, exacerbating time constraints.

## Face-to-Face Interviews

All interviews conducted in the study were face-to-face at a place and time determined by the respondents. While part of the original study design called for use of focus groups for gathering group data, this was not feasible due to scheduling and transportation limitations of both the researcher and the study participants. As a consequence, all but two interviews were held with individual respondents.

Before each interview was conducted, each respondent was informed of his or her right to refuse participation in the study. Those agreeing to participate were further informed that their responses would be kept confidential, that their participation would require approximately one hour, and that they could stop participating at any time during the interview. For more information on this subject, see Appendix B, Oral Consent Presentation Script.

During the course of the actual interviews, both closed and open-ended questions were administered using an interview guide created by the researcher.

Over time, the initial interview guide was modified to reflect the researcher's increasing understanding of the research topic and the Bolivian context (these changes are presented in the following section). Accordingly, some respondents were contacted for a second interview in order to obtain their responses to modified and/or additional questions. The last stage of data collection entailed creating and distributing survey questionnaires to each of the study participants. This was done by the researcher in an effort to guard against missing or confusing data encountered during processing of the interview tapes. As such, data from the written surveys were used in these select cases only.

The research proposal also called for a team of national interviewers to be contracted for assisting in data collection and analysis. It was felt that this approach would provide an opportunity for team members to gain experience in the study of IORs, and give each member additional insights into the actual process of collaboration. It was also believed that such a method would ensure that the effects of cultural and language barriers were minimized in data collection. However, during discussions with key informants upon arrival in Bolivia, it became apparent to the researcher that this design would not be possible. First, personnel limitations of potential participant GO and NGO organizations made the "loan" of any qualified personnel for a three month period impossible. Secondly, funding limitations made the support (food and housing) and transportation of additional researchers impossible. As a consequence, the principal researcher was responsible for all activities in data

collection and analysis. While this may have introduced some cultural or linguistic bias into the study, it is believed that the researcher's previous experience in the region and country was sufficient to minimize such bias.

## Operational Definitions

To test the hypotheses presented in Chapter 1, it was necessary to define each of their components and operationalize them into measurable variables for use in the face-to-face interviews. The present study revolved around four major concepts and their impact upon the effectiveness of inter-organizational relationships: organizational interests, organizational interdependence, identification of the problem domain and resource commitment. In addition, information was collected from respondents as to their perceptions of factors impacting IOR effectiveness. For convenience's sake, each operational definition is accompanied by a restatement of the corresponding hypothesis.

**Effectiveness of Inter-organizational Relationships.** Initially, the effectiveness of each inter-organizational relationship was to be estimated by interviewing administrators, field staff and clients of each partner organization. However, the time and transportation limitations noted earlier made it operationally impossible to visit the field site of each IOR. Consequently, evaluation of this and all other variables was limited to interviews with administrators and field staff of each partner organization, while client or farmer[3]

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[3] As noted in Chambers et. al. (1989) the term "farmer" is used here to refer to poor farm families, including women.

perceptions were not collected. Next, while each respondent was to be asked to rate the extent to which the relationship has affected their *personal* goal achievement (based on the three point scale: diminished, no effect and enhanced) the researcher determined, after several initial interviews, that this measure had to be modified.

First, efforts on the part of the respondents to detail their individual goals and rate the impact of the IOR on those goals took extremely long, making overall interview times unacceptably long for the researcher. In addition, it happened that *all* of the initial respondents reported that their capacity to achieve their goals had been enhanced by the IOR. Therefore, to reduce interview time and potentially increase differentiation between response categories, a five point scale was introduced for approximating the effectiveness of each IOR activity. Here, respondents were asked to evaluate the extent to which the specific IOR activity had affected the ability of their *organization* to achieve its goals:

- greatly enhanced its ability
- enhanced its ability
- had no effect
- diminished its ability
- greatly diminished its ability

Each response was then assigned a numeric value or *score* for processing. At the Individual IOR level, effectiveness *ratings* were then generated for each collaboration or linkage by taking the mean of the effectiveness *scores* given by both GO and NGO technicians. These mean

scores were then pooled and divided two equal categories of effectiveness ratings: High and Low. Similarly, effectiveness ratings were generated at the Combined IOR level by taking the mean of the effectiveness scores provided by the personnel of each partner organization. These NGO and GO means were then averaged in order to arrive at an overall Combined IOR rating.

**Convergence of Organizational Interests (OI).** As noted earlier, organizational interests are those interests that an organization seeks to promote and protect during any interaction with its environment. Operationally, organizational interests were taken to be the goals and objectives of each partner organization. In order to relate interests to effectiveness, an estimate of the Convergence of Interests between the two organizations was created. Originally, a list of the top five goals and objectives (in order of importance to the organization) of each partner organization was to be created as defined by administrators and field staff. The lists of each organization were then to be compared, and an index of Convergence of Interests created based on the number of overall like responses and like-order responses. However, as the respondents were either unable or unwilling to rank their responses, this measurement was abandoned and another one adopted.

The new measurement called for each respondent to list each of the organization's goals and objects (without ranking). The lists of each partner organization were then compared, and two points were given for each like response. Additionally, NGO respondents were asked to indicate whether they

perceived the agricultural extension objective and the specific IOR activity (potatoes, agroforestry, fruit, etc.) to be less, equally, or more important than other objectives and activities within the organization. For a response of "more important," one additional point was given. As the total score is dependent on the number of goals and objectives within each organization, an average was obtained by dividing the total score by the total number of reported goals and objectives plus two (one point each for the importance of objectives and activities). This procedure resulted in an Convergence of Interests rating for each group of partner organizations.

For this pair of concepts, it was hypothesized that effectiveness tends to be positively associated with the convergence of organizational interests. Therefore, as the degree of perceived organizational interests between the two organizations converges, it was expected that the degree of IOR effectiveness would tend to increase.

**Organizational Interdependence (OID).** While organizational inter-dependence has been shown in the literature to be an important aspect of initiating collaborative relationships, previous studies have not studied its affect on the inter-organizational relationships once initiated. This variable was selected for study, therefore, in an attempt to estimate its relative impact on the effectiveness of GO-NGO interactions.

Assessment of OID was to be achieved by asking each respondents to evaluate his or her own organization's ability to effectively achieve its goals

*without* linking with the partner organization: completely, somewhat, or not able. However, as in the case of the effectiveness measure, initial responses were *all* grouped under "not able." Therefore, in an attempt to increase differentiation between response categories, a four point scale was introduced for approximating the degree of dependency between the two organizations. Respondents were then asked to evaluate the extent to which they believed their organization to depend on the partner organization to achieve its own goals:

- not dependent
- somewhat dependent
- very dependent
- completely dependent

OID ratings were then calculated by summing the scores provided and dividing by the number of respondents. These ratings, or average scores, were then pooled and divided into two equal groups of interdependence : High and Low.

The hypothesis here was that effectiveness tends to be positively associated with organizational interdependence. In other words, as the degree of perceived dependence between the two organizations increases, the degree of IOR effectiveness should also tend to increase.

**Convergence of Problem Domain Identification (PDI).** In the present study, the overall problem domain was considered to be the generation and extension of agricultural technologies. However, while GO-NGO partner organizations may have interests in that domain, their definition of that domain

and the role they expect one another to play in it may differ substantially. Such differences were felt to potentially impact the effectiveness of their relationship such that effectiveness tends to be positively associated with the degree of convergence of PDI.

In order to estimate PDI convergence, an index was again to be created using the perceptions of administrators and field staff of each partner organization. By asking each to identify the top five problems, in order of importance, which the collaboration or linkage was created, an index based upon the number of like responses and like-ordered responses was expected to be created. However, as in the case of organizational interests, the researcher was unable to illicit the responses necessary for creating the index; respondents were either unwilling or unable to rank the problem(s) for which the IOR was created. Consequently, the researcher adopted another format for evaluating convergence of problem domain identification. In the modified format, respondents were asked to describe the IOR and its objectives. A content analysis was then done for each pair of respondents, listing the key words[4] used in their description of the IOR. An index of convergence was then created using the percentage of like responses between the pairs of respondents. As in the case of the other variables, this was accomplished by pooling all of the percentages and dividing them into two equal groups.

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[4] Key words identified in this process included: validate ('validar'), demonstrate ('demostrar'), trial ('prueba'), coordinate ('coordinar'), train ('capacitar'), etc.

**Resource Commitment (RC).** It was hypothesized that effectiveness tends to be positively associated with the degree of resource commitment. In other words, as the commitment of resources of each organization increases, the degree of IOR effectiveness should tend to increase.

An estimate of Resource Commitment was made using Rogers and Molnar's (1990) scale of intensity of inter-organizational relations. This scale estimates the intensity of which two organizations interact by establishing the presence or absence with the following indicators of resource commitment: director acquaintance, director interaction, organizational information exchange (news letters, bulletins, reports), resource exchange (finances, staff, equipment, power, prestige, ideas), overlapping boards (joint decision making), and formal written agreements.

In estimating the degree of Resource Commitment for each IOR, the director and technicians of each partner organization were interviewed and positive responses for each category were scored one point, for an overall possible score of 6. Responses for each Individual IOR were then pooled and divided into High and Low groups.

**Other Factors.** As the concept of inter-organizational relationships in agricultural research and extension is relatively new to both the literature and the researcher, the researcher felt that it would be prudent to provide an opportunity for the respondents to identify, based on their own experiences, factors impacting upon the effectiveness of GO-NGO inter-organizational

relationships. Here, the researcher wanted to know if there were other factors, such as shared characteristics, staff fluidity or administrative attitudes that affected the effectiveness of IORs in Bolivian agricultural research and extension. And, if so, what impact did they have on resource-poor small farmers? To answer these questions, each interview was concluded by asking what factors, in the opinion of the respondent, affect whether or not an inter-organizational relationship was successful.

After carefully compiling and reviewing all of the responses, the researcher created a "master list" of the responses (see Appendix C). Using the master list, the researcher converted each of the respondent's original answers to one from the master list. Where no conversion could be made without completely altering the meaning of the original response, the original was not changed. This process was done in order to count the frequency of the responses and determine the most frequently given responses. In addition, as the number of respondents varied between the NGO and GO groups, relative frequencies were calculated for each sub-group. This was done to allow the comparison of each factor between the two groups.

## Data Processing

Processing of the data entailed a four part strategy. First, as all of the interviews were tape-recorded with the permission of the respondents, a review of each interview was made and their responses entered onto a "Individual Data Summary Sheet." In turn, each summary sheet was compared to the

researcher's field notes. If any inconsistencies were found between the data summary sheets and the field notes, a review of both the corresponding interview tape and the written survey was made. Next, a database was created in *Microsoft Access*, containing fields for each of the components of the interview on the summary sheets. By using Access, the researcher had the flexibility to enter both alpha and numeric interview data into the data base.

As data for each individual respondent was entered into the data base, Individual Respondent data sets were generated and coded. Individual Respondent Data Sets included, for example, all of the data for an NGO technician working with a GO in a specific activity. The coding for each of the Individual Respondent data sets reflects the last name of individual respondent, the name of his or her own organization, the organization with which he or she is engaged in IOR activities, and activity on which the IOR is based (GOy-NGOx-ActivityZ).

With all of the Individual Respondent data sets entered into the data base, the next step was to group the data into "Individual IOR" data sets by pairing up corresponding GO and NGO Individual Respondent data sets. Building on the example, each Individual IOR data set contains data for both the NGO technician and the GO researcher for the specific activity. These paired Individual IOR data sets were then coded to reflect the name of each partner organization and the IOR activity. Using the example above, "GOy-ActivityZ-NGOx."

One final query was made using the Individual IOR data sets in order to create "Combined IOR" data sets, representing all of the data for all activities between two specific partner organizations. These sets were created by combining the Individual IOR data sets for all IOR activities between the partner organizations. Data here are a combination of the data for all of the NGO and GO personnel, for all activities between the two partner organizations. These data sets were also given codes using the names of the partner organizations only: "GOy-NGOx." Finally, all three data sets were exported to *Microsoft Excel* (a Windows-based spreadsheet) and later to *SPSS* (a Windows-based statistical package) for analysis.

## Data Analysis

As noted earlier, the objective of the present research effort was to determine whether variations in the level of inter-organizational effectiveness tend to be associated with differences in the four organizational factors identified. To accomplish this, data analysis was carried out at both the Individual IOR level, (where the perceptions of the personnel from each of the partner organizations were grouped by IOR activity resulting in 29 cases), and at the Combined IOR level, (where the Individual IOR data sets were collapsed to create 16 cases, each representing the combined perceptions of each partner organization for all activities). At each level, the chi-square statistic ($\chi^2$) was used to test whether a significant relationship existed between IOR effectiveness and the other variables. As the data for each variable was divided in half to

create two categories ("High" and "Low"), 2 x 2 contingency tables were constructed with the degrees of freedom equal to 1. As such, the continuity correction factor was also used, making the chi-square test statistic: $\chi^2 = ((|O_i-E_i|-0.5)^2)/E_i$. In most cases, this process allowed the researcher to meet the criteria of the chi-square statistic. In the cases where assumptions for the chi-square were still not met because the data was spread too thinly, (most notably in the analysis of the Combined IOR data set), the Fisher's Exact Text was used and noted. For all tests, the statistical significance level was set at $p < 0.05$, though significance at the 0.1 level is noted in some cases.

In cases where the researcher failed to ask a particular question, or was unable to recontact respondents to solicit their response to modified questions, data were coded as missing. Therefore, the amount of missing data varies by variable and the number of cases upon which the calculations were performed also varies. The following chapter further details the analysis process and presents the data for each of the hypotheses.

# Chapter Four
# ANALYSIS OF THE DATA

The present chapter presents the findings of the study. It begins with a general description of the study organizations and is followed by an analysis of the responses to the open-ended "other factors" question, as well as the results of the numeric analysis. Where the results of the qualitative and quantitative analyses overlap, they are reported together. The chapter concludes with a discussion of the limitations of the collection and analysis of the data.

## Study Organizations

In total, 58 persons from 19 organizations were selected for the study.[5] As seen in Table 1, participating organizations were placed into two groups; those taking part in agricultural research and technology transfer activities, and those whose primarily activity is development extension. The first group, those working in research and technology transfer, was comprised of one non-governmental and three governmental organizations. The non-governmental organization in this group, PROSEMPA (Potato Seed Project), was included in this group although it may not share all of the characteristics common to

[5] See Appendix D for a complete listing of all organizations contacted during the study.

government-sponsored organizations. This was done for two reasons. First, PROSEMPA's main activities are technology research and transfer, not extension as in the case of the other NGOs. Secondly, it has taken part in many inter-organizational relationships with other NGOs, and was perceived by the personnel of some organizations to be a governmental entity due to its close links with PROINPA (Potato Research Program).

The second group consisted of 15 non-governmental organizations. As seen in the following table, this group was comprised of one international, ten national and four local membership organizations.

**Table 1.** List of Organizations Selected for Study

| Acronym | GO/NGO | Activity | Level | Ownership |
|---|---|---|---|---|
| CIAT | GO | Research/Transfer | Regional | - |
| IBTA | GO | Research/Transfer | National | - |
| PROINPA | GO | Research/Transfer | National | - |
| PROSEMPA | NGO | Transfer/Research | National | - |
| AGROPLAN | NGO | Developmental | Local | Membership |
| ASTEC | NGO | Developmental | National | Service |
| CCAVIP | NGO | Developmental | Local | Membership |
| CCM | NGO | Developmental | International | Service |
| CEDEAGRO | NGO | Developmental | National | Service |
| CIPCA | NGO | Developmental | National | Service |
| CIS-C | NGO | Developmental | Local | Membership |
| FAN | NGO | Developmental | National | Service |
| FEPADE | NGO | Developmental | National | Service |
| FIDES | NGO | Developmental | National | Service |
| INCCA | NGO | Developmental | National | Service |
| OASI | NGO | Developmental | National | Service |
| PAAC | NGO | Developmental | National | Service |
| SEMTA | NGO | Developmental | National | Service |
| UNAPEGA | NGO | Developmental | Local | Membership |

## Effectiveness

Perception of IOR effectiveness was the dependent variable in the present study. Table 2 shows that while both governmental and non-governmental sources gave effectiveness ratings ranging from 1 to 5, non-governmental sources tended to give slightly higher responses than governmental sources at both the Individual and Combined IOR levels.

**Table 2.** Summary of Effectiveness Ratings by Level of Analysis and Organizational Type

| Level | | GO | NGO |
|---|---|---|---|
| **Individual** | Min. | 1.0 | 1.0 |
| | Ave. | 3.6 | 3.8 |
| n=29 | Max. | 5.0 | 5.0 |
| **Combined** | Min. | 2.0 | 2.9 |
| | Ave. | 3.8 | 4.1 |
| n=16 | Max. | 5.0 | 5.0 |

## Effectiveness and the Convergence of Organizational Interests

In terms of the convergence of interests between partner organizations (both at the Individual and Combined IOR levels), the maximum convergence of interests score was found to be 0.7, and the minimum was found to be 0.23. In other words, no pair of organizations had goals and interests exactly alike (a score of 1), nor were any pair found to have no convergence of interests (a score of 0).

Table 3, which lists the 11 most frequently given responses (after combing like categories), shows that study respondents identified the

convergence of organizational interests as one factor affecting IOR effectiveness. In fact, 16 of 17 GO respondents, and 11 of 36 NGO respondents indicated its importance, ranking it first among the combined responses to this question.

**Table 3.** Frequency of Top Combined Response Categories by NGO and GO personnel

| Factors | NGO | GO | Total |
|---|---|---|---|
| Convergence of Interests | 11 | 16 | 27 |
| Finances | 8 | 14 | 22 |
| Political Interests | 14 | 5 | 19 |
| Logistical Matters | 9 | 8 | 17 |
| Number of Personnel | 8 | 7 | 15 |
| Institutional Openness | 9 | 6 | 15 |
| Institutional Willingness to Collab. | 9 | 4 | 13 |
| Interpersonal Relations | 5 | 8 | 13 |
| Problem Domain Identification | 5 | 8 | 13 |
| Viable Technologies | 8 | 5 | 13 |
| Organizational Interdependence | 6 | 5 | 11 |

Next, in order to test the hypothesis that perceptions of effectiveness tend to be associated with the convergence of organizational interests, two by two contingency tables were constructed using response frequencies for the two variables (Tables 1 and 2, Appendix E). The level of significance calculated for the Individual IOR level was 0.5723 (using chi-square) and 0.6193 for the Combined IOR level (using Fisher's Exact Test). At the $p < 0.05$ level, this implies that neither value is significant; the variables are statistically independent.

Effectiveness and Organizational Interdependence

Analysis of the second set of variables was accomplished using the same methodology as was used for the first. In the case of Organizational Interdependence, the Individual IOR data set shows that, on average, NGO personnel have a higher perception of their dependence on GOs than *vice-versa*. Average scores were 3.45 for NGOs (between very and completely dependent) and 2.58 for GOs (between somewhat and very dependent). Moreover, this pattern was repeated at the Combined IOR level where average scores for NGO and GO dependence were 3.51 and 3.01 respectively.

During the open-ended portion of the interview, 15 of 53 respondents perceived organizational interdependence as having an impact on their inter-organizational relationships. Overall, this factor was identified among the eleven most frequently given combined responses to this question (Table 3).

As in the case of the first hypothesis, contingency tables were made to evaluate the relationship of the perceptions of IOR effectiveness and Organizational Interdependence (Tables 3 and 5, Appendix E). The levels of significance found for the data indicate that the variables, as measured, are not significant at the $p < 0.05$ level; 0.6912 at the Individual IOR level (using chi-square), and 0.6193 at the Combined IOR level (using Fisher's Exact Test).

Effectiveness and the Convergence of Problem Domain Identification

The third hypothesis tested was the relationship between perceived IOR effectiveness and the convergence of the identification of the IOR problem

domain. A review of this variable indicated that in 9 of the 28 cases, the terms and conditions for which the IOR activity was undertaken were fully identified by both parties (a score of 1). However, the range for the majority of scores was found to be between 0.67 and 0.89, with an average score of 0.87.

Additionally, 8 GO and 5 NGO respondents cited identification of the problem domain as a factor impacting upon the effectiveness of IORs. Along with the factors of Organizational Willingness, Interpersonal Relations and Viable Technologies, this response ranked seventh among the combined responses (Table 3).

Finally, contingency tables were again constructed in order to further examine this pair of variables. As seen in Table 4, the directional grouping of the data in the high-high and low-low quadrants of the matrix indicates some relationship between the variables at the Individual IOR level. At the $p < 0.1$ level, the calculated chi-square statistic (2.8234) was found to be significant. This indicates that there is a significant relationship between the perceptions of IOR effectiveness and the degree of convergence of PDI at this level. However, the calculated statistic *was not* significant at the $p < 0.05$ level. Likewise, at the Combined IOR level, the level of significance found for the data using Fisher's Exact Test (0.6193), indicates that the variables, were not significant at either the $p < 0.05$ or 0.1 levels (Table 5, Appendix E).

**Table 4.** Frequency of High and Low IOR Effectiveness Ratings by High and Low Problem Domain Identification Ratings at the Individual IOR Level

| **Individual IOR Level** (n=29) | High effRating | Low effRating |
|---|---|---|
| High pdiRating | 10 | 5 |
| Low pdiRating | 5 | 9 |

Effectiveness and the Level of Resource Commitment

Of the 29 cases studied at the Individual IOR level, 15 cases received scores of 4 or 5 (out of a possible score of 6), while 4 cases received scores of 2 or less. No case received a perfect score of 6, nor were there any scores of zero.

In reviewing the data from the open-ended question, it was found that while no respondent specifically identified "Resource Commitment" (as defined in the study), various persons did identify aspects of it. For example, 14 GO respondents and 8 NGO respondents identified Finances as impacting upon IOR effectiveness, raking it second among the combined response categories (Table 3). Likewise, 8 GO and 9 NGO respondents identified Logistics during this portion of the interview, ranking it forth behind Political Interests (Table 3). The number of Personnel committed to an IOR effort (another important resource) was also identified by 15 respondents, placing it fifth (Table 3). When taken together, these three resource-related factors make up the most frequently cited response to the question of factors impacting the effectiveness of IOR activities.

Finally, to test the hypothesis that perceptions of effectiveness tends to be associated with the level of resource commitment (as defined in the study), two by two contingency tables were again constructed (Tables 6 and 7, Appendix E). The level of significance calculated at the Individual IOR level was 0.8575 (using chi-square) and 0.6193 at the Combined IOR level (using Fisher's Exact Test). At the $p < 0.05$ level, this implies that neither value is significant, and that the variables are statistically independent.

## Respondent Identified Factors

Table 5 provides a summary of the data collected on the respondents' perceptions of factors affecting IORs. Based on the experiences of the respondents, this table lists all of the factors which were identified by at least two respondents.[6] As the total number of NGO respondents was higher than GO respondents, the frequency counts for each factor identified were also divided by the number of respondents, resulting in a relative frequency for each. Figure 3 shows these relative frequencies for the ten most frequently given responses.

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[6] A complete listing of responses is found in Appendix C.

**Table 5.** Frequency of Responses by NGO and GO personnel

| Factors | NGO | GO | Total |
|---|---|---|---|
| Convergence of Interests | 11 | 16 | 27 |
| Political Interests | 14 | 5 | 19 |
| Number of Personnel | 8 | 7 | 15 |
| Institutional Openness | 9 | 6 | 15 |
| Institutional Financial Capacity | 4 | 10 | 14 |
| Institutional Willingness to Collab. | 9 | 4 | 13 |
| Interpersonal Relations | 5 | 8 | 13 |
| Problem Domain Identification | 5 | 8 | 13 |
| Viable Technologies | 8 | 5 | 13 |
| Interdependence | 6 | 5 | 11 |
| Personal Contacts | 6 | 5 | 11 |
| Institutional Dependability | 8 | 2 | 10 |
| Institutional Logistical Stability | 6 | 3 | 9 |
| Institutional Logistical Capacity | 3 | 5 | 8 |
| Institutional Financial Stability | 4 | 4 | 8 |
| Mutual Respect | 4 | 3 | 7 |
| Other Tasks | 4 | 3 | 7 |
| Convergence of Methods | 5 | 1 | 6 |
| Availability of Technologies | 3 | 2 | 5 |
| Communications | 4 | 1 | 5 |
| Mechanisms for IOR | 1 | 4 | 5 |
| Mutual Recognition | 3 | 2 | 5 |
| Convergence of Values | 2 | 2 | 4 |
| Horizontal Relations | 2 | 2 | 4 |
| Institutional Seriousness | 3 | 1 | 4 |
| Institutional Transparency | 4 | 0 | 4 |
| Role Identification | 3 | 1 | 4 |
| Director Willingness to Collab. | 1 | 2 | 3 |
| Institutional Capacity, General | 2 | 1 | 3 |
| Institutional Flexibility | 2 | 1 | 3 |
| Mutual Trust | 3 | 0 | 3 |
| Use of Written Agreement | 2 | 0 | 2 |
| Complementary Interests | 2 | 0 | 2 |
| Individual Openness | 0 | 2 | 2 |
| Individual Seriousness | 2 | 0 | 2 |
| Individual Willingness to Collab. | 1 | 1 | 2 |
| Institutional Jealousy | 1 | 1 | 2 |
| Mutual Participation | 1 | 1 | 2 |
| Professional Distance | 1 | 1 | 2 |

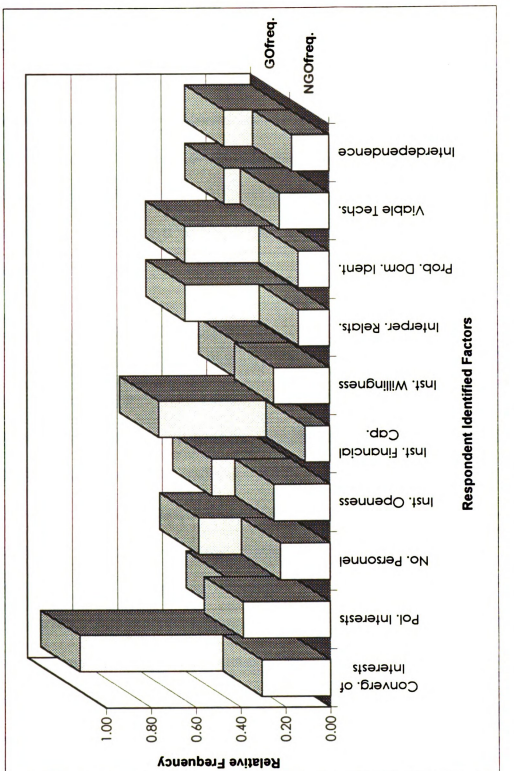


**Figure 3.** Relative Frequencies of Top NGO and GO Responses

Finally, in addition to those observations already made concerning combined categories, it was found that 17 respondents cited aspects of Institutional Stability as important to the effectiveness of inter-organizational activities. Next, 35 respondents were found to have cited factors dealing with Institutional Relations (openness, willingness, transparency and flexibility). Lastly, by combining all of the categories dealing with personal interactions (Interpersonal Relations and Personal Contacts), 24 of the 53 respondents perceived this to be a factor which impacts upon the effectiveness of IOR activities.

## Limitations of the Data and Analysis

Data collection poses the most serious potential for error in any study of this nature. In the present study, the absence of Bolivian national counterparts during data collection and analysis was one such limitation. As the researcher is a North American male, and the respondents Bolivian males and females, the lack of Bolivian counterparts may have introduced both cultural and gender biases. Secondly, while the researcher's Spanish language abilities are excellent, it is his second language. As the majority of interviews were conducted in the Spanish language, this may also have limited the study in some way. Finally, as only organizations currently taking part in IOR activities were selected for study, a bias may have been introduced by the lack of data for organizations not taking part in IOR activities.

While there is no way for the researcher to determine the impact of such limitations and biases in the data collection process, each was considered by the researcher at the outset of the study, and attempts were made to mitigate their effects. Such measures included the use of open-ended questions and lengthy discussions with key informants (not selected as respondents) so as to more fully comprehend the context of GO-NGO IORs in Bolivia. For these reasons then, the researcher believes that these factors did not significantly impact upon the results of the study.

Finally, time and transportation limitations also made the selection of study organizations and data collection very challenging, and limited the total number of cases available for study. While such a small number of cases impacted the analysis of the numeric data, the researcher did employ several statistical tests where needed, helping to mitigate these factors.

# Chapter Five
# CONCLUSIONS & RECOMMENDATIONS

## Summary

The present study began with the premise that inter-organizational relationships (IORs) between GOs and NGOs are quickly becoming an important aspect of international agricultural research and extension, and that a gap exists in the development literature regarding the factors that affect these relationships. In an attempt to address this problem, the researcher proposed to examine the extent to which four specific factors have had impacts on the effectiveness of Bolivian GO-NGO inter-organizational activities. These factors were: the convergence of organizational interests, organizational interdependence, the convergence of the perception of the problem domain, and the level of resource commitment. The study objective was to generate knowledge that could be brought to bear by both governmental and non-governmental organizations in building stronger and more effective inter-organizational relationships to the benefit of resource-poor farmers.

In order to reach the objective of the study, each of the four factors were examined in their relationship to the effectiveness of IORs between agricultural research organizations (primarily governmental) and non-governmental organizations with agricultural extension activities. It was hypothesized that the

effectiveness of IORs tends to be positively associated with each of the factors mentioned above. In testing these hypotheses, the major research questions addressed were: 1) how do the personnel of organizations selected for study perceive the interests of their organizations being served, or not, by the inter-organizational relationship, 2) how do the administrators and staff of each perceive their organization's need to collaborate or link with their partner organization, 3) have the partners clearly identified the problem domain of their relationship, and to what extent has the means by which it will be addressed been clarified, 4) with what intensity do the partners interact, and finally, 5) are there other factors that affect IORs in Bolivian agricultural research and extension?

## Data Collection and Analysis

To test the hypotheses and answer the research questions, the study examined 29 cases of inter-organizational collaboration and linkage in three provinces of Bolivia. During the first phase of the study, various key informants were interviewed to gain a contextual understanding of inter-organizational relationships in Bolivian agricultural research and extension, and to select organizations for study. The result was the selection of four research oriented organizations (of which one was non-governmental), and fifteen non-governmental organizations. From this group, a total of 53 face-to-face interviews were conducted. Each interview was tape recorded with the permission of the respondent, and was then coded, reviewed and entered onto a

summary sheet. The summary sheets were then entered into a *Microsoft Access* data base. By using Access, the researcher was able to generate, by grouping the data, three separate data sets: Individual Respondent, Individual IOR and Combined IOR.

The Individual Respondent data set was the basis for the other sets and contains all of the information provided by each respondent separately. The Individual IOR data set combines two or more Individual Respondent data sets and contains all of the data relating to a particular inter-organizational activity (agroforesty trials for example) between a pair of partner organizations. Finally, the Combined IOR data set includes the data collected representing all of the IOR activities between two partner organizations. While some Combined IOR data sets were limited to only one activity, others were the result of three.

Analysis of the data was carried out at both the Individual IOR and the Combined IOR levels. At the Individual IOR level, 29 cases were analyzed. At the Combined IOR level the Individual IORs were collapsed, forming 16 cases. At each level, the chi-square statistic was calculated using the statistical package *SPSS* to test whether or not a significant relationship existed between the perceived effectiveness of IOR activities and the other variables. In order to meet the assumptions of the chi-square statistic however, it was necessary to collapse the data for each of the variables into two response categories: High and Low. In cases where the criteria for the chi-square statistic were still not met because of low frequency counts, (most notably at the Combined IOR level), the

Fisher's Exact Test was used to examine the relationship. For all tests, the statistical level of significance was set at $p < 0.05$, though the 0.1 significance level was noted in the case of the variable dealing with the convergence of problem domain identification.

Finally, in order to provide additional insights into the four variables, and to address the question of other possible factors affecting IOR activities, each respondent was asked to identify, based on their experience, factors affecting of IOR effectiveness. The responses to this question were categorized and frequency counts were made for each. The results and conclusions from the analysis of the frequency counts and the statistical tests are detailed in the following sections.

## Research Findings

The dependent variable, perception of IOR effectiveness, was defined as the degree to which an inter-organizational relationship achieves the goals of the field staff and directors of each organization. Operationally, this variable was estimated by asking respondents to evaluate the extent to which a specific IOR activity had affected their organization's ability to achieve its goals: greatly enhanced, enhanced, no effect, diminished, or greatly diminished.

In testing the hypotheses, it was found that effectiveness scores ranged from 1 to 5 at the Individual IOR level. On average, GO personnel scores were at a level between the "no effect" and "enhanced" response categories (mean score = 3.6). Likewise, NGO personnel, on average, scored effectiveness

between the same categories with a mean score of 3.8. At the Combined IOR level, the scores ranged between 2 and 5. While the scores for both GOs and NGOs were higher at this level, there was little difference between GO and NGO perception of effectiveness; mean scores at this level were 3.8 and 4.1 respectively for GOs and NGOs.

Finally, while no IOR was found to be prefect, organizations tended, overall, to perceive their inter-organizational relationships as *enhancing* their ability to achieve their goals and objectives.

**Convergence of Organizational Interests.** The first hypothesis to be examined was the relationship between perceptions of IOR effectiveness and the convergence of organizational interests. Organizational interests were defined as the interests that an organization seeks to promote and protect during any interaction with its environment. The specific hypothesis here was that IOR effectiveness tends to be positively associated with the degree of convergence of organizational interests.

During the open-ended portion of the interviews, each respondent was asked to identify, in his or her own experience, the factors affecting IOR effectiveness. Analysis of the responses given revealed that the convergence of organizational interests was perceived as important by the study respondents. In fact, out of a total of 53 respondents, more than half (27) stated that the convergence of organizational interests affects inter-organizational relationships. As the director of one NGO stated, "common interests are even more important

than financial resources." The data also shows that the GO subgroup agrees; 16 of 17 GO respondents identified the convergence of organizational interests as having an impact upon IOR effectiveness, making it the most frequently identified factor by the this group (Figure 3).

As organizations do not always share the same interests, what appears to be important here is the need for partner organizations to identify their areas of common interests before initiating an inter-organizational relationship. Put another way by a GO technology transfer agent, "all of the organizations in the area have common interests, the problem is finding a mechanism that will allow them to come together and identify those commonalties." An NGO technician agreed, "it is not always clear as to how they [organizational interests] converge, they need to be identified."

In dealing with this situation, two research organizations were found to have already created mechanisms for identifying the convergence of interests with potential partner organizations. In the first case, the research organization convenes monthly meetings in which technicians from a given region (GO and NGO alike) come together to coordinate activities, unify technical criteria and exchange ideas. As the technician from a membership organization attending those meetings related, "it [the meeting] is tremendous, one learns a lot, and finds commonalties with the other organizations." The second strategy found was the pre-screening of potential IOR partners to determine their level of interest in the particular activities carried out by that organization. In cases

where interest in their technologies (either current or potential) was high, linkages were sought. Where interest was deemed low, linkages were not pursued. Unfortunately, however, there was insufficient information related to these two strategies to analyze them in the present study.

In addition to the above, each respondent was also asked to list the goals and objectives of their organization. Master lists were then created for each organization by combining the responses from individual respondents. To judge the convergence of interests between partner organizations, the master lists were compared and scored based on the number of like responses between the lists. Additional points were also awarded in cases where the NGO considered its agricultural objective as "more important" than its other objectives, and in cases where the IOR activity was considered to be "more important" than other activities within agriculture.

Analysis of the data showed that while none of the organizations under study had interests that were exactly alike, none were found to have completely divergent interests (the range of scores was 0.23 to 0.7). However, the levels of significance found for the data indicate that the variables, as measured, were not significantly related at the $p < 0.05$ level; 0.5723 at the Individual IOR level (using chi-square), and 0.6193 at the Combined IOR level (using Fisher's Exact Test).

In attempting to understand the differences in results between the two types of data analyzed, it may be useful to look at the level at which each was

focused. While some attempt was made to include the convergence of micro level interests (particular IOR *activities*), the measurement for the convergence of interests emphasized macro level interests (*organizational* goals and objectives). In contrast, responses to the open-ended question tended to focus on micro level concerns in IOR activities. It is possible therefore that the attempt to quantify the convergence of interests may have overstated the importance of convergence at the macro level while understating convergence at the micro level. Future instruments for evaluating organizational interests may need to find a balance between the emphasis placed on macro and micro levels of convergence.

In summary, while the convergence of organizational interests was not found to be statistically related to the perception of IOR effectiveness as measured by the researcher, it was found to be perceived by study respondents as significant. The attempt to quantify the convergence of interests by way of macro indicators (organizational goals) may account for this difference. Additionally, two of the four research oriented organizations were found to be employing mechanisms to deal with this issue.

**Organizational Interdependence.** The second hypothesis to be examined was the relationship between IOR effectiveness and levels of organizational interdependence. Interdependence was defined as the perception of each organization's staff of the need for, or dependence on, another organization to fulfill its own goals and objectives. For the purposes of

the study, it was hypothesized that as the degree of perceived interdependence increased, so too would the degree of perceived IOR effectiveness.

Variation within variable was estimated by asking respondents to evaluate the extent to which they believe their organization depends on the partner organization to achieve its own goals. The scale used included the following responses: not dependent, somewhat dependent, very dependent, completely dependent.

Analysis of the data showed that dependence scores ranged from "somewhat dependent" to "completely dependent" at the Individual IOR level. On average, GO personnel scored their dependence on *specific* NGOs at a level between "somewhat" and "very" dependent (mean score = 2.58). However, when asked about their dependence on NGOs in *general*, GO personnel overwhelming stated that they could not accomplish their goals and objectives without the NGOs ("completely dependent" on the scale):

> We need the technicians of other institutions. They are the goal population of our Department. Our organization needs them to translate our information, and take it to the farmers. We do not have the capacity, personnel, infrastructure or financial resources to do so. -Department of Technology Transfer Technician.

> We would not be able to reach our goals and objectives without them. We lack personnel. We need to hear from the farmer and therefore the organizations that work with them to know what the problems are. -Director of a Governmental Research Institution.

In contrast to the *specific* GO responses, NGO personnel tended to rate their dependency on GOs as higher, between the "very" and "completely" categories with a mean score of 3.45. Commentary by NGO personnel concerning their organization's ability to independently reach its goals included phrases such as: "definitely no, we could not do it alone," "directly, its impossible," "we don't have the technical, human, or financial capacity to do it alone," and "its one of the reasons that our relationship hasn't broken down in spite of pressures to do so, we need the research, they need the extension." One NGO director put it simply, "we use them (the GO), we don't research anything."

In terms of overall perception of this variable by respondents in the open-ended portion of the interview, organizational interdependence was among the ten most frequently given responses, with 11 of 53 respondents indicating its impact on IOR effectiveness (Table 5). However, in terms of quantitative indicators of OID impact on effectiveness, the statistical analysis showed no significant relationships existing between the variables as measured; levels of significance were 0.6912 at the Individual IOR level (using chi-square) and 0.6193 at the Combined IOR level (using Fisher's Exact Test).

Taken together, the data collected on organizational interdependence (both qualitative and quantitative) may indicate that while recognized interdependence may be necessary for *initiating* inter-organizational relationships (especially for NGOs), it may not be *sufficient* to ensure that such relationships are perceived as effective. In other words, while organizational

interdependence may be a driving force behind the initiation of inter-organizational relationships, other factors may play a more significant role in the sustainability and effectiveness of such relationships.

**Convergence of the Problem Domain Identification.** The third hypothesis to be examined was the relationship between convergence of the identification of the problem domain and the perception of IOR effectiveness. PDI was defined as the perception of an organization's staff as to the problem area which a linkage or collaboration was created. It was hypothesized that the perception of IOR effectiveness tends to be positively associated with the degree of problem domain identification. In other words, IOR partners who have a high degree of PDI convergence should report higher perceptions of IOR effectiveness.

During the open-ended portion of the interview, this factor was mentioned by 13 of the 53 respondents. Along with the factors of Organizational Willingness, Interpersonal Relations and Viable Technologies, PDI was ranked seventh among the most frequently given responses (Table 5). Further, while only 5 of 36 NGO respondents identified this factor as having an impact on IOR, nearly half (8/17) of the GO respondents did so (Figure 3). This may be due to the fact that GO personnel were reported to be authors of inter-organizational agreements (where they exists), thereby potentially giving a more specifically defined criteria by which to judge the problem domain of the IOR.

Analysis of the convergence of PDI was also achieved quantitatively by comparing lists of key words used by the respondents of partner organizations to describe their perceptions of the objective of a particular IOR activity. Convergence was then estimated based the percentage of like responses. The responses were then collapsed into categories of "high" or "low" for analysis.

As reported in the previous chapter, frequency counts for the two variables tended to group in the high-high and low-low categories. At the Individual IOR level, 66% of the responses fell into these categories, indicating a relationship between the variables. At the $p< 0.1$ level of significance, the calculated chi-square statistic (2.8234) was found to be significant, again showing a relationship between IOR effectiveness and the degree of convergence of PDI at this level. However, this relationship was not found to be statistically significant at the 0.05 level, nor was it found to be significant using the Combined IOR data set at either the 0.05 or 0.1 levels.

Finally, the convergence of PDI between GO and NGO personnel was found to range between 0.67 and 1.0 with an average score of 0.88. While this shows a tendency for common descriptions at the time of the interview, many respondents expressed sentiments that this was not the case at the initiation of their IOR activities:

> The risks of an activity should be known up front as to how sure it is. Both of us [the NGO and the GO] will be risking our time and resources, and its better to know exactly what we're getting into.
> -A Member of a Membership Organization.

> The roles of each involved [GO, NGO and Farmer] were not well defined, so coordination was low as we all had other responsibilities and expected the other to take care of things. -An NGO Technician.

The director of a local membership organization also expressed his surprise at how "expensive" the process of validating technologies can be: "they're very costly in time and materials."

The evidence seems to point therefore to the importance of PDI. Its also raises the issue noted by many field technicians within this context: the tendency for GO personnel to *unilaterally* write IOR agreements or for NGO *directors* to deal directly with GOs in making IOR agreements. Both situations tend to limit the participation of the field technicians, thereby creating problems in the understanding of the IOR, and the means by which it is to be carried out. If such problems are to be avoided in the future, field personnel (*both* GO and NGO *together*) must be allowed to take part in identifying what is to be done *and* how it is to be done.

In summary, PDI was rated among the most frequently identified factors impacting IOR effectiveness, and tended to be more frequently mentioned by GO personnel than NGO personnel. While the variables were found to be statistically related at the $P < 0.1$ level they were not at the 0.05 level.

**Levels of Resource Commitment.** The last hypothesis to be examined in the study was the relationship between levels of resource commitment and perceived IOR effectiveness. Resource Commitment was defined as the amount of resources invested in a collaboration or linkage. It was hypothesized that as

the level of resource commitment increases, so too does the degree of perceived IOR effectiveness. An estimate of RC was made by employing the index of IOR intensity developed by Rogers and Molnar (1990). This index uses six aspects of IORs to indicate their intensity: director acquaintance, director interaction, organizational information exchange, resource exchange, overlapping boards, and formal written agreement.

Of the 29 cases examined at the Individual IOR level, 15 cases were found to be operating at intensities of 4 or 5 (out of a possible 6), while only 4 cases were operating at intensities of 2 or less. Again, the chi-square and Fisher's Exact statistics were used to explore the existence, or not, of a relationship between the two variables at both the Individual and Combined levels. The calculations at both levels indicate that the scores for the level of resource commitment are not statistically related to the perception of IOR effectiveness as measured in the study.

However, the results of the open-ended question did show that respondents perceived the commitment of resources as impacting upon IOR effectiveness. Taken together, resource-related responses (Finances, Logistics and Personnel) made up the most frequently cited category of combined responses. Taken separately, resources such as the number of Personnel committed to IORs was ranked fifth overall during this portion of the interview (Table 3). Finally, it should be noted that the open-ended responses tended to focus on financial and field-level relational factors whereas the numeric rating for

RC was split in its focus; half of the measurement reflected administrative factors (director acquaintance, director interaction and common boards). For example, the frequency of responses identifying director exchanges, which was included in the RC rating, was low (6/53), while field-level relational factors, not included in the RC rating, were high (36/53). As in the case of the convergence of organizational interests, this trend may indicate that the instrument for measuring RC may need a change in focus; an instrument giving more weight to financial and field level relational exchanges may be more useful in the Bolivian IOR context.

One factor within the RC measure that also generated a great deal of discussion and interest was the role and importance of written agreements. Some respondents stated that "working under formal agreements is difficult as it causes problems when people begin making demands [rather than requests]," and that "using written agreement should be analyzed, they may have the effect of creating the idea that there is no trust." However, the lack of written agreements or, as noted earlier, the presence of agreements written unilaterally may result, in a lack of understanding of the IOR at the field level. This leaves open the question of whether or not IORs should use written agreements. One possible solution to this problem may be to move the concept of written agreements out of the realm of "legally binding, formal documents" (which tends to be perceived negatively) into the realm of "coordination tool." This would

address the negative impacts on problem domain identification, while bringing about a greater understanding of the IOR.

Findings from Open-Ended Responses

The following section discusses the factors most frequently identified by respondents as affecting inter-organizational relationships. (Only those factors not previously addressed will be discussed here.)

**Political Interests**. According to both NGO *and* GO respondents, the effects of organizations that are strictly motivated by political interests have been devastating on Bolivian agricultural research and extension. Of the 53 persons interviewed, 19 identified this as a factor influencing the effectiveness of inter-organizational relationships, making it the second single factor identified in the study (Table 5). This response was also the most frequently reported factor among NGO personnel. By looking at the relative frequency of responses (Figure 3), this factor was also found to be more frequently cited by NGO personnel (14 of 36) than GO personnel (5 of 17). It was also one of the most commonly identified factors by NGO key informants not participating in IOR activities as their reason for not doing so.

According to the majority of those interviewed, the effects of an organization being guided by political motives are twofold and equally damaging to inter-organizational relationships between GOs and NGOs. First, NGO personnel state that their relationships with communities have been damaged, in

some cases, by working with highly politicized governmental organizations. As several different NGO technicians related:

> With other GOs [other than the one they're working with], one must be careful about the terms of the agreement, or else they might use the work for political ends.

> I'm afraid to work with other GOs [other than the one he's working with] as they make a lot of promises of gifts, etc., and when they don't, I'm left looking bad with the community.

> Relations with organizations that have political motivations is [sic] bad, especially in an election year, it quickly destroys our relationship with the communities.

Furthermore, this influence does not seem to be restricted to GO-NGO relationships. A technician working for a governmental research organization related that his work was adversely affected by linking with a politically motivated governmental organization working in small farmer development. The result, he recalls, was disastrous.

The second way in which political interests appear to affect IOR activities relates to the institutional instability that they create. On numerous occasions, personnel of both GOs and NGOs referred to recent situations where political interests have crippled governmental institutions through their instability:

> Sometimes its a very political institution. Technicians come and go, sometimes every six months, so there isn't much collaboration.

> Their strategies have not worked because there is no continuity. There are changes in personnel every six months because its so politicized. One [technician] starts something, leaves, and another starts it all over.

In contrast to this, the director of the GO research agency noted above by the NGO technicians to have escaped this problem stated: "we've not been managed politically, and this has been helpful, since the beginning, we've not had political changes like other [GO] organizations."

**Institutional Capacity.** Aspects this combined category (financial, logistical and personnel) were identified by a 37 of 53 respondents. Within this combined category, "sufficient numbers of personnel" was identified by 15 respondents, "financial capacity" by 14, and "logistical capacity" by 8 respondents.

In terms of financial capacity, the effects of this factor on IOR effectiveness were mentioned by many respondents during the interviews and by key informants not included for study. Of the 17 GO respondents, 10 cited this factor as impacting IOR effectiveness, making it the second most frequently given GO response (Figure 4). Governmental sources further reported:

> Even if there is interest in a problem [by GOs and NGOs], there may not be the personnel or resources to address it, so it ends there.
>
> There are [financial] shortfalls at times where they cannot work or buy materials, and this negatively affects the work.
>
> We need money for more technicians, logistical and material support and stable pay. As it is now, we plan and I always have to cut things.

Likewise, the effects of this problem appear to be felt within NGOs. As one NGO director expressed: "our greatest weakness is finances. We're continually

looking for funds, and it tends to make us project-minded." The data appears to indicate therefore that without sufficient funds, both NGOs and GOs may not be able to provide sufficient personnel, material and logistics to effectively carry out their IORs.

In terms of personnel, extreme cases of limitations or instability have been cited as affecting IOR effectiveness: "when the area technician left [for training in another country], it caused problems" and "they [the GO] changed the technician, and then the consultant left for training. So it hasn't gone as we'd liked." This seems to be especially true of new or complex technologies. In nearly all of the cases involving a specific "new" IOR technology, NGO technicians stated that the lack of technical follow-up caused problems. They state, "they [the GO] have low numbers of technicians for large areas, which has led to short and infrequent visits" and "the follow-up is not optimum, the number of people [that they cover] is small, the area is large, and they cannot give enough support."

In short, it appears that IOR activities should fit within the financial, logistical and personnel limitations of the partner organization. Otherwise, reports such as those noted above may continue to plague GO-NGO inter-organizational activities, decreasing their ability to assist resource poor farmers.

**Institutional Openness, Willingness, Transparency and Flexibility.** Together, these factors were identified by 35 of the 53 respondents. According to respondents, if organizations (GO *or* NGO) are unwilling to be open, flexible

and transparent with their current or potential partners, it is unlikely that IORs in agricultural research and extension will be established, or effective once established. This is point is especially critical for all four of the research agencies in the study as they have identified NGOs and other organizations as their target population. For example, note the contrast between the following descriptions of two different organizations involved in IOR activities:

> They have too few people for far too large an area. They've also closed themselves into what they believe to be the problems, and not what the reality is in the field. Instead of doing just desk-bound diagnostics, they should consult with the organizations that are working in specific [geographical] areas.

> They are very open, especially in comparison to other State organizations. Its possible to plan with them, they are very interested in the interests of the technician and the farmers of the region.

The data also indicate that once IORs are established, organizations must be open to the way other organization's work, their objectives and values. As the director of one NGO put it,

> They [GOs] must realize that we are not researchers and have other interests. And, we [NGOs] must also realize that they are not extensionists. Each has its place, but if we're not open to one another, it [IORs] won't work.

Finally, the following quotes from several GO technology transfer agents summarize the attitude which appears to be needed if NGO-GO IORs are to be effective:

> They [the NGOs] tell us what their need and problems are, and I say, "let's have a course about that, on site!"
>
> We take into account that they are already working with other goals and objectives, and don't have a lot of time, so we go to them.
>
> We try to find out what the NGOs would like, we don't impose a particular activity, we try to fit into their objectives and activities.

And from the NGO perspective:

> We could probably work without them [a GO], but we're not going to do so, we're in a society where there are other organizations, GOs and NGOs, and we should try to work together.

In sum, "if institutions are not willing to accept each other and be more willing to help each other, it [IOR activities] won't work."

**Interpersonal Relations.** Thirteen of the 53 respondents identified interpersonal relationships as an impact on IOR effectiveness. As one NGO technician stated, "even if the interests of the organizations are the same, it doesn't work if the personnel don't get along." A GO respondent concurred, "sometimes poor interpersonal relations can ruin a good organizational relationship." This factor was so important to the director of one governmental research institution that he replaced the administrator of a regional research center when it was learned that he (the administrator) could not get along with the personnel of largest NGO in that region.

**Viable Technologies.** Finally, 8 NGO and 5 GO respondents (in addition to many key informants) noted that, for effective IORs to take place, GO

research institutions must provide viable technological alternatives for the socio-economic and ecological environments of small farmers. Otherwise, such relationships are unlikely to begin, or once begun, participants in them are unlikely to feel that they are not enhancing their capacity to meet their goals and objects. This factor was also found to be related to a lack of perceived interdependency among various NGOs not participating in IORs with GO research institutions. In other words, NGOs that do not perceive research organizations as having viable technologies may not seek to enter into inter-organizational relationships with them.

Furthermore, it was reported that and even when technologies are viable, they must also be *available* to the NGO personnel. Note the difference in the descriptions of two different GO research organizations:

> A strong point of GOx is its results. You see them [the results] in their documents. You can evaluate the product, and they always have something new coming out, unlike the work of other organizations.

> Their [GOy] results have not been transmitted. They are a clear example of negative communication.

Clearly then, it is important that the technologies on which IOR activities are based to be both viable and easily obtained. How to make these technologies viable and available is, however, beyond the scope of the present study.

## Recommendations for Future Research

Because it is likely that inter-organizational relationships between governmental and non-governmental organizations in agricultural research and extension will continue to increase, there exists a need for further research in this area. First and foremost, research is needed to examine these concepts at the field level, where they are likely to impact upon the ultimate "beneficiary," the resource-poor farmer. Additional research could also be done in relation to the hypotheses of this study. By using other tools for measurement and increasing the sample size, a better understanding of the dynamics involved between IOR effectiveness and other variables might be obtained. Finally, additional investigation is also needed to build on the understanding of factors identified by the study respondents.

In summary, respondents identified more than 39 factors which, according to their experience, impact upon the effectiveness of inter-organizational relationships. Among these, "Convergence of Interests" and "Political Interests" were found to be the two most frequently cited factors. These were followed by "Number of Personnel", "Institutional Openness" and "Financial Capacity." Within the organizational subgroups studied, "Financial Capacity" was found to be an especially important factor to GO respondents, while "Political Interests" was the most frequently factor cited by NGO respondents.

Quantitative analysis of the data also indicated while no statistically significant relationships existed between the variables at the $p < 0.05$ level of significance, the relationship between IOR effectiveness and the common identification of the problem domain was found to be significant at the 0.1 level.

Given these observations, organizations engaged in agricultural research and extension may find the general concepts presented in this study useful for evaluating and adjusting potential and ongoing attempts at effective inter-organizational relationships. In doing so, it may also be possible to diminish or resolve the effects of the problematic issues described, bringing both governmental and non-governmental organizations closer to truly serving the resource-poor small farmer.

# APPENDICES

**Appendix A.** Additional Information concerning Winrock International Institute for Agricultural Development.[7]

Winrock is an autonomous, nonprofit organization whose activities are funded by grants, contracts, and contributions from public and private sources. Its mission statement is:

> Winrock International Institute for Agricultural Development seeks to reduce poverty and hunger in the world through sustainable agricultural and rural development and enhancement of the rural environment and natural resource base. Winrock help people expand their institutional and human resources, design and implement environmentally sensitive, sustainable, agricultural systems, and improves policies for agricultural and rural development.

In describing how Winrock achieving its mission, Robert Thompson, Winrock's President states the following:

> The ways that Winrock attempts to expand food production and rural employment while protecting the environment include the following:
>
> - We train the researchers and trainers, who in turn work directly with the farmers- the ultimate beneficiaries.
>
> - We strengthen institutions that help educate, conduct research, transfer technology, an analyze policies.
>
> - We develop human resources. We participate in educating and preparing individuals to identify and overcome barriers to development within in their own countries.
>
> - We provide policy analysis and assistance. We help governments examine how their existing laws and regulations affect rural people and whether or not they impede food production.

For more information about Winrock International, call or write:

**Winrock International Headquarters**
Route 3, Box 376
Morrilton, AR 72110-9537, USA
(501) 727-5435

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[7] All of the Information provided in this appendix was taken from "Charting the Course, Winrock International Annual Report, 1993" (Winrock International, 1993).

**Appendix B.** Oral Consent Presentation Script[8]

This study is an attempt to assess the extent to which various factors impact the effectiveness of collaboration between *Group A* and *Group B*. The objective of the study is to better understand their relationship so that they can build a stronger and more effective collaboration, ultimately benefit small farmers.

Your participation in this study is purely voluntary, you do not need to participate if you do not wish, and you may quite participating at any time if you choose. Additionally, all of you responses will be kept confidential and there will be no means by which to link them to you during or after the study. Lastly, it will take us approximately *X minutes / hours* to complete the your portion of the study.

Do you have any questions or doubts about what I've just explained to you? Do you consent to participate in the study under the conditions that I've explained?

---

8 the statement will be in the native language of the subject where possible, and where not possible, it will be in a language in which the subject is competent

**Appendix C.** Master List of Open-ended Responses

Convergence of Interests
Political Interests
Number of Personnel
Institutional Openness
Institutional Financial Capacity
Institutional Willingness
Interpersonal Relations
Problem Domain Identification
Viable Technologies
Interdependence
Personal Contacts
Institutional Dependability
Institutional Logistical Stability
Institutional Logistical Capacity
Institutional Fin. Stability
Mutual Responsibility
Other Tasks
Convergence of Methods
Availability of Technologies
Communications
Mechanisms for IORs
Mutual Recognition
Convergence of Values
Horizontal Relations
Institutional Seriousness
Institutional Transparency
Role Identification
Director Willingness
Institutional Capacity
Institutional Flexibility
Mutual Trust
Agreement
Complementary Interests
Individual Openness
Individual Seriousness
Individual Willingness
Institutional Jealousy
Mutual Participation
Professional Distance
Timing of Activities
Bureaucracy
Language
Director Openness
Director Relations
Information Flows
Institutional Capacity Director
Institutional Capacity Organization
Institutional Formality
Institutional Honesty
Institutional Image
Shared Benefits
Institutional Sincerity

**Appendix D.** List of Organizations Contacted During the Study

AGRUCO, Agroecologia Universidad Cochabamba (Agroecological University of Cochabamba), GO.
CIAT, Centro de Investigacion Agricola Tropical (Tropical Agricultural Research Center), GO.
COTESU, Cooperacion Tecnica Suiza (Swiss Technical Cooperation), GO.
IBTA, Instituto Boliviano de Tecnoligia Agropecuaria (Bolivian Institute for Agricultural Technologies), GO.
PROINPA, Programa de Investigacion de la Papa (Potato Research Program), GO
USAID, United States Agency for International Development, GO.

AGROPLAN, Asociacion Agrobiologica La Naturaleza (Agro-biologic Association, Nature), NGO.
ASTEC, Asistencia Tecnica para el Desrrollo de Proyectos Agricolas (Technical Assistance for Agricultural Development), NGO.
CCAVIP, Cooperative Central, Via Paraiso (Central Cooperative, Via Paraiso), NGO.
CCM, Comite Central Menonita (Mennonite Central Committee), NGO.
CEDEAGRO, Centro de Desarrollo Agropecuario (Center for Agricultural Development), NGO.
CESA, Centro de Servicios Agropecuarios (Center for Agricultural Services), NGO.
CIPCA, Centro de Investigacion y Promocion del Campasinado (Center for Research and Farmer Promotion), NGO.
CIS-C, Cooperativa Integral de Servicios "Cochabamba" (Integrated Services Cooperative, "Cochabamba"), NGO.
FAN, Fundacion Amigos de la Naturaleza - Neol Kempff (Friends of Nature Foundation), NGO.
FEPADE, Fundacion Ecumenica para el Desarrollo (Ecumenical Development Foundation), NGO.
FH, Fundacion Contra el Hambre (Food for the Hungry International), NGO.
FIDES, Funación Integral de Desarrollo (Integrated Development Foundation), NGO.
INCCA, Instituto de Capacitacion Campesina (Farmer Training Institute), NGO.
OASI, Oficina de Asistencia Social de la Iglesia (Social Assistance Office of the Church), NGO.
PAAC, Programa de Asistencia Agrobioenergetica al Campesino (Farmer Bioenergy Assistance Program), NGO.
PROBIOMA, Productividad Biosfera y Medio Ambiente (Biosphere and Environmental Productivity), NGO.
PROSEMPA, Proyecto de Semilla de Papa (Potato Seed Project), NGO.

SEMTA, Servicios Multiples de Tecnologias Apropradas (Multiple Services of Appropriate Technologies), NGO.

UNAPEGA, Union Nacional de Pequenos Ganaderos y Agricultores (National Union of Small Cattlemen and Farmers), NGO.

UNITAS, Union Nacional de Instituciones para el Trabajo de Accion Social (National Union of Social Action Institutions), NGO Network

World Concern, NGO.

**Appendix E.** Contingency Tables for Quantitative Analysis of Study Variables

**Table 1:** Frequency of High and Low IOR Effectiveness Ratings by High and Low Convergence Organizational Interests Ratings

| **Individual IOR Level** (n=29) | High effRating | Low effRating |
|---|---|---|
| High oiRating | 7 | 8 |
| Low oiRating | 8 | 6 |

**Table 2:** Frequency of High and Low IOR Effectiveness Ratings by High and Low Convergence Organizational Interests Ratings at the Combined IOR Level

| **Combined IOR Level** (n=16) | High effRating | Low effRating |
|---|---|---|
| High oiRating | 3 | 5 |
| Low oiRating | 5 | 3 |

**Table 3:** Frequency of High and Low IOR Effectiveness Ratings by High and Low Organizational Interdependence Ratings

| **Individual IOR Level** (n=29) | High effRating | Low effRating |
|---|---|---|
| High oidRating | 8 | 7 |
| Low oidRating | 7 | 7 |

**Table 4:** Frequency of High and Low IOR Effectiveness Ratings by High and Low Organizational Interdependence Ratings at the Combined IOR Level

| **Combined IOR Level** (n=16) | High effRating | Low effRating |
|---|---|---|
| High oidRating | 3 | 5 |
| Low oidRating | 5 | 3 |

**Table 5:** Frequency of High and Low IOR Effectiveness Ratings by High and Low Problem Domain Identification Ratings at the Combined IOR Level

| **Combined IOR Level** (N=16) | High effRating | Low effRating |
|---|---|---|
| High pdiRating | 5 | 3 |
| Low pdiRating | 3 | 5 |

**Table 6:** Frequency of High and Low IOR Effectiveness Ratings by High and Low Resource Commitment

| **Individual IOR Level** (n=29) | High effRating | Low effRating |
|---|---|---|
| High rcRating | 8 | 7 |
| Low rcRating | 7 | 7 |

**Table 7:** Frequency of High and Low IOR Effectiveness Ratings by High and Low Resource Commitment at the Combined IOR Level

| **Combined IOR Level** (n=16) | High effRating | Low effRating |
|---|---|---|
| High rcRating | 3 | 5 |
| Low rcRating | 5 | 3 |

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