Improving the way people live through R&D

Photo by Rita dela Cruz

KEEPING THE MILKFISH FRESH. A boy is helping his father soak the fresh catch in icy water early in the morning at Lucap Wharf, Alaminos City, Pangasinan. This is an indigenous technology done by the local fishers to maintain the freshness of the fish keeping its skin firm and elastic, and the eyes clear.

BAR envisions a stable and progressive future for the Filipinos through excellence in research and development (R&D) in agriculture and fisheries, specifically to transform the agriculture and fishery sector from a resource-based to a technology-based industry. In doing so, BAR through the Department of Agriculture-National Research and Development System for Agriculture and Fisheries (DA-NaRDSAF) must develop knowledge, methods, and technologies that can make the industry competitive and efficient.

BAR Research and Development DIGEST

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Entered as Second Class Mail at Quezon City Central Post Office Permit No. 752-01 NCR subject to Postal Inspection

ISO 9001:2000

ISSN 1655-3934

BAR Research and Development DIGEST

Official quarterly publication of the Bureau of Agricultural Research

Gawad Oscar Florendo Awardee for Outstanding Information Tool for Print

Volume 9 Issue No. 3 | visit us at: *http://www.bar.gov.ph* | July - September 2007

Understanding the role of *social science* in agriculture and fisheries

INSIDE...

Understanding social dimension and key players in agriculture

MARLOWE U. AQUINO, PHD

It has been a discourse of people engaged in agriculture on how they are going to address and study the people who are affected by the sector. Many would believe that these very people, especially farmers and fisherfolk, including their communities, are the center of their work particularly when it comes to research and development, extension/education, development including policy advocacy.

Today, we are faced with the challenge to look closer on how we could describe and provide the specific details to the issues and concerns about people, communities, processes, and development in agriculture. Key players and stakeholders in agriculture take on an important and significant role in development. They are the very reason why we continue to strive for excellence in research and development, participatory development and the dynamic and systematic management of agriculture and fisheries for productive, profitable, sustainable, and competitive development.

As we move on in doing what we believe we do best, we ought to understand people, communities, their activities, interactions, relationships, and patterns that constitute agriculture. Social movements, transformations, reforms, and changes are the realities shaping in the sector. These are the foci of the social dimension of agriculture and fisheries development.

This third issue of the Bureau of Agricultural Research (BAR) Digest is the very first since its maiden issue in 1998 to highlight and recognize the significant role of social science in agriculture and fisheries. Documentations were conducted to assess what happened to the people and their communities but limited areas were covered as bases in doing research and development.

The role of social science in agriculture and fisheries is what we would like to share to all practitioners – researchers, extensionists, development workers, and even policymakers. Since we all aim toward the upliftment and advancement of people, communities, and societies, we must be prepared to show that something is happening – realities in agriculture is what we ought to know.

Now, we are at the crossroad of integrating and complementing the efforts of the hard sciences such as crop and animal biotechnology, agricultural engineering and mechanization, integrated and diversified farming, sea ranching, aquaculture, and food processing, our concerted efforts towards better crop, animal and fish production management system.

What is left is our concern in bringing the lessons learned, experiences and observations done and changes that affect the people and their communities in the different processes and activities they participated must be pooled together. More so, the adoption of commodity and location-specific technologies in a community-based participatory manner is what we intend to do. This is also supported by the role of the social scientist in making sense in his work together with areas of partnership within an innovative development approach.

May this be the start of appreciating the soft science in agriculture and fisheries development– people's involvement in making agriculture work for a common goal.

BAR Research and Development DIGEST
The official quarterly publication of DA-BAR

BAR R&D Digest is published by the Bureau of Agricultural Research (BAR), a bureau of the Department of Agriculture (DA) mandated to ensure that all agricultural research is coordinated and undertaken for maximum utility to agriculture. This quarterly publication contains articles that are based on studies conducted by NaRDSAF-member institutions.

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matching, and market assistance. Development assistance coming both from government and private organizations in the form of loans and grants often requires legal business identity.

The most important change brought about by the business was the empowerment of women-entrepreneurs. They realized that they could do things without entirely depending on their husband. The significant outcome of the business was that their children went to school with financial security that afforded some luxuries. Important noticeable result of doing business was the self-confidence gained that made them more assertive and persistent. HBDE allowed them to realize that they can contribute to the household income while maintaining internal locus of control. Their realization for self-development transcended to benefit their families and communities. They saw themselves providing jobs to the community in the form of hired labor and income for the numerous carabao raisers who provided their daily milk requirements and makers of semi-processed *pastillas.*

The impact of HBDE on social status was felt at two levels: the household level, where it influenced their community standing; and at the individual level, where it influenced household politics. The two are not independent, as a change in one influences the other. Since women took major share in HBDE activities within the family, it was their status that was most affected.

Improved economic and social status of the women in HBDE led to new attitudes towards established modes of thinking. These new attitudes of women indicated high motivation to engage in work and their acceptance as contributors to household income. This is because of their consciousness of the value of acquiring skills, and for having greater awareness of the significance of women's work to improving family welfare.

The above-cited scenario provides local program planners and rural development workers ideas on how to properly deal with women-entrepreneurs in order to inspire them to work collectively towards the creation of a formal organization that can allow them to address their needs for technical assistance, skills enhancement, improve linkages and other support mechanisms.

In terms of business operations and management, there was significant difference between groups in terms of volume of production and sales. Profit was found dependent on sales, labor cost, and total cost of production. Level of production was dependent on family savings and market coverage. Respondents operated mostly as single enterprises and offered similar products in a heavily saturated local market. They relatively had similar business impediments such as limited fund to finance larger operations and marketing. The level of profitability between groups was comparable. Net returns derived by those in Mode 1 did not vary significantly with those in Mode 2. Poor financial management capabilities took their toll on profits, particularly those in Mode 1. This gives the impression that taking risk by way of infusing more capital resources into the business is meaningless without putting in place an effective financial management system.

Business indicators provide guidelines to program planning and program implementers in identifying support mechanisms in specific business areas. For the case of women in HBDE, bridging knowledge gaps, access to funds and technical assistance should be in place. In the short run, direct assistance along the areas of accounting, bookkeeping, access to credit, linking, and market matching should be undertaken. The increase in dropout rate among women-entrepreneurs signals their need for assistance. By way of collectively drumbeating these concerns of women can

Community...from page 20

and nontraditional forms.

We have seen in several literatures that the term '*community*' simultaneously invokes a particular way of organizing social relationships, a general (and desirable) quality of sociability and mutual regard, and summons to undertake joint social action. As an established fact – it is a 'taken for granted' reality and as a mission to be accomplished. In contrast as an encompassing social fact – it gives rise to feelings of fondness and solidarity, through social relationships that are largely conscious, and which therefore, tend to deny individual choice and volition.

In a rapidly changing social world, certainly there is a transformation on the central meaning of community, from one interpretation to the other. By any change there is also a provision of a secure and stable setting of everyday social relationships to a state of affair in which 'to speak of community is to speak metaphorically or ideologically' (Urry 2000:143) about what it is that different sets of people are trying to achieve, in the face of reality that seems to be increasingly fragmented, fluid, and chaotic.

In addition, there is a very considerable distance between the kinds of geographical and usually deprived communities that are mainly targeted by government policies, and the freewheeling, imaginative groupings of internet enthusiasts and lifestyle celebrants who see themselves as representing the future of community. As these cases and examples increase, more and more social science researchers try to dip their fingers and test who these communities interact, relate, participate and develop to make a difference in a social reality.

Indeed, research made the difference because of the people within and those that affect and study them let them construct or re-construct the future direction.

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PHOTO BY LIZA BATTAD

contribute to the improvement of the business. They viewed themselves to be equally skilled as men and their attention to details render them more capable of rendering an avenue for a lucrative venture that can sufficiently sustain a family.

Involvement of women in HBDE

Time-use pattern was found significantly different between the women's groups. Women in Mode 1 spent less time in production activities while those in Mode 2 spent a great deal of their time performing labor-intensive activities such as *pastillas* making, wrapping, deliveries, and inventory management. Mode 1 processors tended to delegate said activities to hired workers to relieve them of production-related work burdens and allow them more time for marketing and related activities. Household members helped out in the business.

The home-based dairy industry of Bulacan was principally anchored on carabao milk production. Delivered fresh on a daily basis, it was sourced mostly from neighboring barangays. Twenty percent of total milk purchased daily was delivered by the NEFEDCCO, a federation supported by the Philippine Carabao Center. The level of milk utilization was found significantly different between the two groups which were attributed to the seasonal demand for *pastillas*. Owing to business contracts, Mode 1 processors adopted a continuous production cycle. Mode 2 production was seasonal. During lean season, production was mostly on order basis.

In terms of management practices, all were engaged in the storage or buildup of semi-processed *pastillas* produced from milk processed daily but normally not sold daily. During peak season, 13 out of the 36 women-respondents purchased ready-made *pastillas* from wholesalers of Mode 2. The majority used the same type of cooking stove. Hired labor utilization varied significantly between groups. Mode 1 processors tended to hire more workers because of larger scale of operation, particularly for finishing. Most of the workers were from the locality.

Mode 1 processors sold most (80%) of their products on contract to institutional buyers in Manila, Pampanga, Batangas, and Bulacan. Mode 2's market reach was more limted. Most of their products were traded within the province.

A large number of women entrepreneurs from both groups could not provide direct account of their business performance owing to poor financial analysis. Calculating business gains in monetary terms did not come naturally. Based on estimates, the level of profit of the groups did not differ from each other. Profit realized by each group was not significantly different. Mode 1 processors may be realizing more sales than Mode 2; however, it was spending four times more than their counterparts.

The increased proliferation of home-based *pastillas de leche* processors was the most important problem of the women-entrepreneurs. The other problems were uncertainty of the demand caused by the influx of product substitutes and limited income among middle class families as their primary market. Aside from the increased price of material inputs that affected sales, women-respondents expected the forthcoming increase in the price of milk. The economic crisis was something beyond their control and a fact that they had to contend with in order to survive in the industry.

Beyond the roles and directions of women in HBDI

Women entrepreneurs carried multiple workloads. Their involvement in the HBDE was driven by the need to address the insufficiency of family income. The enterprise wass fitted fitted to their basic responsibilities as mothers and housewives. The HBDE was regarded an extension of the home wherein activities were performed on top of their home duties. They applied skills learned as homemakers in the business.

Women entrepreneurs had rich business experience learned from their ancestors. They had technical knowledge in production and high processing skills but with very limited capabilities in financial management. Financial resources were allocated in a passion similar with household budgeting. They had identified sources of raw materials, planned and approved purchases, but did not take appropriate recording and accounting.

These scenarios call for development planners and practitioners to identify and undertake capability-building interventions that will enhance women's competence. To foster their business capabilities, the design and delivery of continuing education programs such as seminars and trainings should be initiated.

Women-entrepreneurs' linking and networking capabilities with external organizations are yet to be developed. Their lack of formal business identity made them shy away from seeking institutional assistance. Therefore, a business license should be appreciated by women entrepreneurs as stringboard in tackling business concerns related to technical support and financial requirements. Information about women's attitude and behavior provided by this study can guide local government units to disseminate and appreciate the legal identity that will encourage business registration for the purpose of linking and networking, business

Social research in agriculture and fisheries:

PHOTOS BY RITA DELA CRUZ

CHALLENGES, TRENDS, AND DIRECTIONS

RITA T. DELA CRUZ

Over the years, there has been a notable decline in the number of social research being conducted in the country. Whether this is due to scarcity of funds or the ever-changing shift in priority programs, there is a presumed assumption that most funding R&D agencies are still heavily given to the conduct of biophysical researches that produce more tangible results on crop improvement and production yield.

This is also reflected in the incorporation of social science staff capacity within the agricultural research system. Take the case of the Consultative Group on International Agricultural Research (CGIAR), for example. CGIAR is a strategic partnership of countries, international and regional organizations, and private foundations supporting the work of 15 international centers in fostering sustainable agricultural growth through high-quality science.

According to A.H. Kassam (2005), since 1995 the social science staff capacity in CGIAR has decreased by 24 %, making the overall balance of social science research significantly tilted away from the "bread and butter" of technology generation and development effort. He further noted that the bulk of the social science research has low social research content despite the significant expansion of CGIAR's initial goal to increase poverty alleviation and address food security. And with this kind of scenario, he concluded that a concerted effort is required to mainstream social research within the system.

The need for social research: Challenges and impacts

Strengthening social research has become an important priority in responding appropriately to the needs of the times, particularly in the agriculture and fishery sector. But prior to strengthening, there is a need to address the challenges confronting social research today.

Inevitably, a discussion on these challenges will also throw light on the essential role that social research plays in providing decision-support in the prioritization of research and policies on innovation.

Where does the need for social research lie?

Given its immense scale and diverse field covering multi-sector research areas, results of social research provides a clear understanding the human dimension and the complex aspects of development.

Essentially, social research is conducted for the purpose of establishing or validating facts or theory related to a group of individuals through data collection and analysis. This is done to explore, describe, and explain the behavioral patterns of a social group, through measurement of variables, and analysis of actual collection of data to test hypotheses and relationships. It is by conducting social research that the human dimension is understood, bringing people into the mainstream development.

For agriculture and fishery, results of social research are essential for policy formulation and amendments aimed at providing a better environment conducive to development. According to J.M. Lantican (2007), results of such research provide information on how farmers and fisherfolk perceive a development program in terms of its impact on the community, or why they should adopt or should not adopt a specific technology being introduced.

Information from this social research is relevant in providing decision-support in research prioritization necessary to create stronger impact on development, given the national budget constraint.

Budget allocation is an old issue in research. And given the important role of social research in agriculture and fishery, its share of resource allocation and prioritization in the system is still in question.

In a study conducted by CGIAR in 1997 to review its policy and management research, it showed that the overall budget

allocation to social sciences (i.e., socioeconomic, policy, and management research) is 14.8% (see Table 1). This indicates that although social researches have assumed a significant role in the system, the share is still considerably small.

This small share of budget compared to scientists presumably reflects on the fact that social science researchers are less costly because they do not require extensive laboratory facilities. It

Table 1. Percentage share of CGIAR's budgets allocated to social research.

CGIAR-MEMBER INSTITUTION	PERCENTAGE (%) SHARE OF CGIAR'S BUDGET ALLOCATED TO:			
	policy	management	socioeconomics	SOCIAL SCIENCE
IFPRI	100.0	0.0	0.0	100.0
IIMI	8.0	28.0	16.0	52.0
ISNAR	13.0	8.0	15.0	36.0
CIAT	1.8	0.0	7.2	9.0
CIFOR	6.5	1.3	15.6	23.4
CIMMYT	0.5	0.0	3.0	3.5
CIP	2.0	0.7	6.0	8.7
ICARDA	1.5	1.5	3.8	6.8
ICLARM	1.0	0.0	9.0	10.0
ICRAF	1.0	0.0	14.0	15.0
ICRISAT	3.0	0.0	7.0	10.0
IITA	3.0	0.0	4.3	7.3
ILRI	3.0	0.0	12.0	15.0
IPGRI	2.1	0.8	3.1	6.0
IRRI	1.0	1.0	5.2	7.2
WARDA	4.0	0.0	4.0	8.0
Grand Total	6.7	1.4	6.8	14.8

Source: Policy and Management and Institution Strengthening Research and Service in the CGIAR. 2007. FAO.

In the local scene, social science as an area for research has experienced a decline over the years. This is mainly due to the shift in priorities and strategies of the current management. At the Bureau of Agricultural Research (BAR), a staff bureau of the Department of Agriculture (DA) mandated to coordinate the national R&D of the agriculture and fishery sector, social research underwent a brief spotlight. This was during the height of discipline-commodity networks interface wherein a special network was created especially to focus on social science policy RDE program of DA. Although BAR supported these researches, it was the Philippine Institute for Development Studies (PIDS) that led in the evaluation and implementation.

A great bulk of social researches funded were implemented by state colleges and universities (78%) and topic mainly on management research (61.90%) (see Tables 2 and 3).

Still on the issue of resource allocation, Lantican (2007) cited that conducting social research is essentially a high-cost venture, which is the main reason why such activity is rarely conducted at the Department of Agriculture (DA). This is despite the fact that conducting social researches is essential in the fine-tuning of development policies and research priorities.

Moreover, it can promote actions that will improve the living standard of the poor by recovering its costs many times over in fiscal savings alone. The value of social research is the expected social gain from policy decisions influenced by the information generated. The gain from policy decision depends on choosing the best policy given the state of the community or nation which is uncertain (Lantican, 2007).

Trends and future directions

Apparent to agricultural development is the generation of new technologies that would improve the plight of poor farmers and fisherfolk. The technologies include new knowledge specific on how they will improve production and income. On a general scale, this includes technologies that will address food security and poverty in the country.

Expectations based on *ex-ante* evaluation of a research program are made from the information about decision-maker's prior perception of probabilities of the state of the community or nation and the likelihood of correct and incorrect research findings (Lantican, 2007).

To know the trends and directions in social research requires knowing the priorities that drive R&D institutions (international and local) in funding and implementing their researches.

International scene: The Case of CGIAR

CGIAR, as an international agricultural research organization, made an overview study of both the agricultural technology needs in developing countries and the global technological opportunities in agriculture relevant to those needs. The results are important in taking into consideration the priorities in which social research particularly that of policy research, is being brought to light.

Specific to policy research institutions under CGIAR, research priorities are primarily driven by national considerations. But for the international level, directions and trends are set based on the priorities of funding agencies such as the United Nations, World Bank, and developed country universities that do policy research. They have missions and intended beneficiaries in consonance with that of CGIAR.

In terms of socio-economic researches, the nature is mostly designed for the purpose of guiding research resource allocation towards priority areas, helping in technology design, assessing the determinants of adoption of new

Women in home-based dairy industry

Liza G. Battad PhD

Women's participation in development has already been institutionally recognized. In a world where women are considered part of the labor force, their contributions in terms of their knowledge and skills in farm production management, enterprise development, and business management remain relevant. This has been exhibited in their involvement in food processing, product development, and decision-making in household activities.

In the Philippines, women in animal production management could be observed during pasturing and feeding management, mostly on large and small ruminants. However, there is limited literature addressing the processing of dairy product including its marketing and enterprise management. The case of the Bulacan women, particularly their involvement in the home-based dairy industry (HBDI), was studied and documented .

Home-based milk processing, particularly *pastilles de leche* making, was introduced in rural communities as new opportunities of gainful employment. Women from the poorest sector of the population have immediately responded to these. Men were not displaced from their jobs. New jobs were organized around activities in which women already had engaged in.

Income derived from milk processing constituted a major portion of the household income. Most women undoubtedly spent their money from this endeavor for food of their families, for themselves, or home improvements. This opportunity also appeared to increase women's bargaining power in the family by providing cash income over which they might have some control. At the very least, this household engagement in dairy processing has provided concrete public and private recognition of the value of women's work.

Women entrepreneurs have predominantly undertaken this activity; although their capacities have never been assessed. Their technical knowledge in the dairy enterprise, managerial skills, innovativeness, access to resources, role in decision-making and their role as women in dairy development are researchable areas for further studies.

Two modes of HBDI

The home-based dairy industry has two enterprise modalities. Mode 1 has women-entrepreneurs as large-scale processors that have marketing contracts with institutional buyers (i.e., hotels, supermarkets, resorts, restaurants and food shops). Mode 2 comprises of the smallscale processors with seasonal production cycles and local market orientation.

The women in home-based dairy enterprises (HBDE) were the primary stakeholders of the home-based dairy industry. The supply chain was composed of farmers who were the common source of daily supply of fresh milk, wholesalers of ready-made *pastillas de leche*, traders of material inputs and subcontractors of other home-made sweets. The output side included institutional buyers and retailers. The final stakeholders were the customers who purchased *pastillas de leche* directly from women-entrepreneurs or through market intermediaries along the output chain.

Characteristics of women-entrepreneurs in HBDI

Women engaged in home-based dairy enterprises were married, educated, practiced the Roman Catholic faith, and Tagalog speaking. They belonged to nuclear family type and predominantly male headed with an average family size of five members. Most of the families are not members of any formal organization and had no formal training related to the family-owned businesses. However, they had been into the business for at least 20 years. The primary push factors that influenced them to engage in business were their entrepreneurial mothers and relatives who had been in the same business. Their participation in the industry was either through succession or economic circumstances during the rearing stage of their family life cycle.

Furthermore, women engaged in the home-based dairy industry generally believed that their prime obligation was their family but also assisted in generating family income. The concept of the business as a family-owned business centered on shared responsibility wherein each household member had task to perform. For economic reasons, women generally viewed their home-based business as a fallback option for their children should they fail to penetrate the labor market.

Women entrepreneurs had strong conviction that they can significantly

PHOTOS BY Liza Battad




PHOTO BY RITA DELA CRUZ

or divide in social action.

Beyond the community

The term '*community*' is one of the most elusive and vague concept in sociology and is by now largely without specific meaning (Abercrombie et al. 1984:44). In view of the ambiguity of so many sociological concepts, this is a notable claim. However, many would agree that '*community*' is a concept that has been worked to death; its range of meanings is so wide and diverse, its connotations so inconsistent, and at times, downright dangerous, that it deserves no place in any serious social analysis.

The value of the concept and its ability to tell us anything really useful about the nature of communities and its people were critically scrutinized. Nevertheless, it remains as one of the most common points of reference, not only among social scientists, but also for policy makers, politicians and the general public. Precisely because it is so elastic and diverse in its meanings, the idea of community continues to grip people's imaginations, and even grow in significance as it takes on new application.

Furthermore, there is a continuous change in the nature of communities which are influenced or even determined by a wide range of material and institutional forces. Nowadays, the major influence exploring how community relate to factors such as size, function, roles and system, the continuity and stability of its social relationships, and its capacity to assimilate new members are considered study areas that could direct the community. The potential for further study can be found wherever people engage in social interactions. Cyber sociology now takes into account how people interact and make use of their relationship to effect change and encourage involvement in activities. Although this may sound vague to others, still, there is enlightenment as information communication and technology manipulate the conditions of people and communities for a common goal or activity.

This is now the emerging concern and researchable area incorporating ICT in agricultural development. More so, it is also the area in which communities and people use technology to effect a change in their farming and fishing activities for more stable, productive, and profitable endeavor. This makes sense on the information and communication technology and the communication management in agriculture and fisheries development.

In reality, the future of communities represents a particular kind of social bond, involving direct personal relations and intimate knowledge of others; also that the existence of this kind of relationship is associated with the presence of certain definite social conditions, which may or may not have been more likely to occur in the past than they are now (Mayo 1994:51 and Day 2006).

The analysis of communities and people

The analysis of communities within a sphere of a given social reality or phenomenon could be understood in three broad areas in research. These are gathering – collecting or assembling data; focusing – asking social scientific questions about these data; and analyzing – developing and presenting a social science analysis of the data (Lofland and Lofland 1995).

All communities and the people within them provide vital and relevant data which are translated into information to generate and explain the social reality. For the information to be appreciated, the researchers' own interest and judgment based on the research framework will serve to the analysis and conclusion of understanding the observed reality.

To make wise judgments, every researcher must consider these aspects in the broad areas of community studies and research. During data gathering, researchers must observe readiness to start where you (researcher) are; the preference for rich sites for direct, face-to-face engagement where intimate familiarity is required; the need to deal with the difficulties in entry; the management of relationships with the people in the situations or settings under study; and the logging motif of data collection.

The second activity in which communities are analyzed is based on focusing of data on questions which are asked on the basis of possible *topics* on which to concentrate; on those topics; and treatment of these data that will *arouse* interest.

Finally, analysis is based on the overlapping and intertwined tasks of gathering and focusing data. This is one of the most difficult things to do. However, the basis for proper analysis is anchored on the framework on which analysis is developed as guided by considerations of social framing, socializing anxiety, coding, memoing, diagramming and flexible thinking and appropriate writing with proper explanation, discussion, and conclusion.

The future of community R&D direction

It seems that far from disappearing as an issue, new kinds of community are '*ever more frequently invented, so that such invention of community becomes almost expected.' It is no longer the exception, but the rule.*' Contrary to claims that community is defunct, this implies that it has taken on a new lease of life, albeit in quite unexpected

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technologies, and determining the impact of diffusion of these technologies on welfare and the environment. This type of social research has an important service function in giving guidelines to researchers and CGIAR covering a wide array of issues and showing how this type of research has became an integral component of research programs as the social work becomes increasingly more complex and holistic.

The days are gone when socioeconomic research was introduced merely as a prop to the definition and diffusion of technological change. Now, with the current trends and directions, it has become an inseparable part of the search for solutions to complex interdisciplinary problems. This is, of course, the main reason

Table 2. Percentage share of social research funded according to implementing agencies.

IMPLEMENTING AGENCY	PERCENTAGE (%) SHARE OF SOCIAL SCIENCE RESEARCH
Government Institution	22
State College and University	78
Total	100

Table 3. Percentage share of social research funded according to areas.

Implementing Agency	PERCENTAGE (%) SHARE OF SOCIAL SCIENCE RESEARCH ACCORDING TO:			
	Policy research	Management research	Technology intervention	TOTAL
Government Institution	16.67	50.00	33.33	100
State College and University	4.77	61.90	33.33	100

Source: Project Development Division Main File, 2000

Local scene: The Case of DA-BAR

At the local scene, the Philippines is sharing its direction in the conduct of social research and development (R&D) based on the emerging new challenges in agriculture and fisheries (A/F).

At the heart of this challenge is the Bureau of Agricultural Research (BAR), the national coordinator of agriculture and fishery R&D. The bureau sets the directions in social research against the backdrop of the Agriculture and Fisheries Modernization Act of 1997 (AFMA) or Republic Act 8435 in incorporating the "social dimension" in the conduct of research and in the generation of new technologies from its R&D outputs.

PHOTO BY MARLOWE AQUINO

BAR cited four major areas to be considered in future R&D project conceptualization and preparations. These are: 1) globalization and commercialization, 2) technology management including development and commercialization, 3) knowledge management, in research and extension/education system, and 4) community development.

These major areas are translated into research themes that highlight social interactions, relationships, transformation and reforms, and movements along people, communities, and industries. These are also integrated into the complex issues of development that agro-fishery business must be responsible on areas such as poverty, environment, population, growth, change, and globalization.

According to BAR, if these major areas are placed and considered in social research, the possibility of making a better community could be attained with productivity, profitability, and sustainability.

Among the specific researchable areas that can be covered are: agro-fishery rural communities' participation in development, changing food systems, blending of environment and agriculture with tourism, biotechnology, policy advocacy and governance, changing roles of communities as affected by globalization, climate change and social injustices, and the social uses of information communication and technology.

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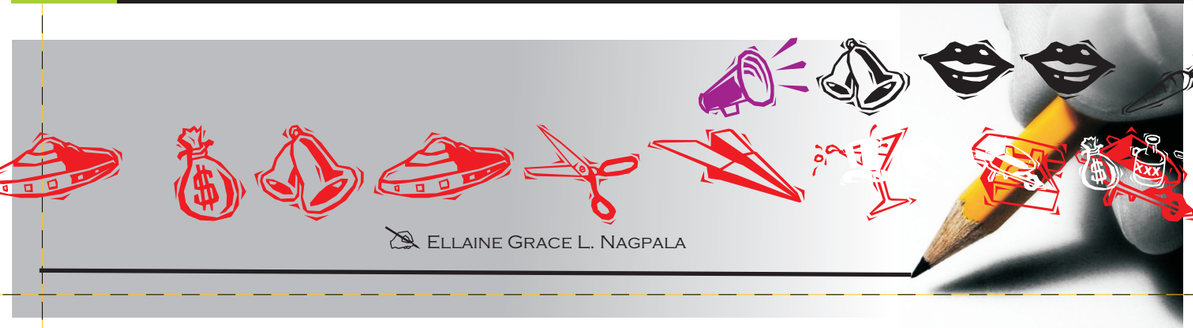

Ellaine Grace L. Nagpala

She is among the prominent personalities in the field of social science. A sociologist, a professor, a researcher, and an extension worker all in one, she can be regarded the "superwoman" in her field of specialization. Dr. Corazon B. Lamug, currently a professor of sociology at the University of the Philippines Los Baños (UPLB), is one name that occupies a prominent place in the social science field, considering the vast knowledge and experiences she has gained in her 37 years of service.

Dr. Lamug is an AB Psychology graduate. She obtained her bachelor's degree from the University of the Philippines Diliman (UPD), *cum laude* in 1969. She pursued a master's degree in Sociology and completed it in 1975. In 1980, she earned her doctoral degree in Sociology from the University of Illinois through a study grant awarded by UPLB.

Dr. Lamug has always been an educator. She was an instructor at UPD from 1970 to1980. Later, she moved to UPLB where she spent the rest of her teaching career in the said university.

Dr. Lamug is best known as the Dean of the College of Arts of Sciences (CAS) in UPLB, where she served as such for two terms (2000-2006). Being the dean of the largest college in UPLB, Dr. Lamug has proven that women can also lead. Prior to her deanship, she was associate dean of CAS. She held positions in different offices at UPLB: chair of the social science department, director of the learning resource center, and director for research. She was also with the group that conceptualized the program of Social Forestry in the College of Forestry in UPLB during the 1980s. Her earliest involvement in agriculture could be traced into her participation in the development of upland farmers.

Her abilities were not only seen in teaching, planning, and leading. Dr. Lamug was also involved in numerous research works. She has completed 51 research projects in different fields among them sociology, social research methods, social forestry, environmental impact assessment, agricultural research management. participatory rural appraisal, and community-based resource management to name a few. As a social scientist, Dr. Lamug is often tapped for her expertise. She was a consultant in 28 projects, including the "Feasibility Study of the Development of the Ubay (Bohol) Stock Farm" of the Department of Agriculture (DA). She has also written 82 papers which she presented professorial meetings, seminars and training courses. She has also authored 40 publications, many of which focused on agriculture, fisheries and forestry.

Dr. Lamug considers the process of 'building-up' as her most valuable contribution to agriculture. Through her conduct of training activities for agriculture and fisheries researchers, the knowledge that she has imparted has contributed to the building-up of skills essential to researchers.

The thrust towards the attainment of a modernized and stable agriculture and fisheries sector is a very big challenge for the government, says Dr. Lamug. Citing the Department of Environment and Natural Resources (DENR) as an example, she said that there should be a paradigm shift in the whole agriculture department, from decision-maker to being a part of resource managers in the country. She likewise stresses that farmers and fisherfolk in the countryside must be empowered in terms of managing their resource, in order for them to feel that they really are a part of the value chain that they are working in. A greater commitment on the part of the farmers and fisherfolk will be felt if they will be empowered, according to her.

"The emphasis of sociology in this sector is on the people in agriculture—the people in the academe, those are involved in the training, the decision-makers in the government, the farmers and the fisherfolk—how these people interact and the organization among them , likewise the

PHOTO BY ELLAINE GRACE NAGPALA

Dr. Corazon B. Lamug

Marlowe U. Aquino, PhD

PHOTO BY RITA DELA CRUZ

Several aspects of emerging trends in development have been identified to be studied particularly those involving people, communities, and societies. One may not be aware that roles, functions, systems, and outcomes are intertwined to reveal their inherent interconnection. This is the case of people in a community and communities within society.

The challenge to work on these entities is a progressing endeavor for researchers, especially those who need to show interactions, relationships, transformation, and movements. The social scientists - including economists, development practitioners, anthropologists, and education and behavioral scientists who untiringly study people, their culture, and development- are part of cadre of individuals that analyze and interpret events and conditions affecting people's everyday life.

Today, these are specialists focusing on the different areas and are exposed to the different levels of understanding of a social phenomenon. People as actors and communities as observation arenas of events and activities are becoming the spectra of scrutiny.

Several questions are now posed to be answered to show that there is an episode within this facet of understanding. The agriculture and fishery sectors, for example, take center stage of analysis in the interplay of people, events, and places. First, there should be one common notion of community including roles and functions in agriculture and fisheries development. Second, people are key players in development. Third, there should be illustration and description of events and activities where people and community address common goals, programs, and interests. Lastly, there should be an analysis of how people and community are intertwined to support the development of agriculture and fisheries programs within the dimension of social, economic, and environment.

Understanding the community and people

Community continues to be a persistent theme in political, philosophical and policy debates. The idea of community poses fundamental questions about social inclusion and exclusion, identity and belongingness. Sometimes, the notion of community is associated with governments, or other outside organizations such as police or welfare organizations. Frequently, however, the root causes or explanations are believed to belong closer to home, with the immediate social relationships and motivations of those involved. This is the sphere normally thought of as community, those contacts and dealings which we have with one another in the course of our daily lives, and which form context of our immediate social world. The picture is by no means entirely negative, since individuals and groups also dedicate great efforts, time, and resources to doing things on behalf of their communities, not least through their membership of voluntary bodies and organizations (Day 2006).

The idea of community touches people's lives today in many ways, forming a significant influence on how they live and relate to one another. People are addressed in the media, in politics, and through social policy as members of communities of various kinds, and frequently identify themselves as belonging to particular communities of taste or interest.

The case of farmers and fisherfolk is closely associated with agriculture and fishery activities. They tend to anchor their activities on the interaction, relationship, involvement, and movements affecting the production management systems as well as the processing and marketing activities. As such, people in agriculture make sense on what their ultimate goal is all about.

As a general rule, agriculture and fishery communities are objects of participation, and intervention. The growing field encourages local support and appeal to a particular group for exchange and sharing of resources and their relationship vis-à-vis their general interest. This alone makes the community or people an interesting area of study.

As a whole, it seeks to bring people together by emphasizing what they have in common, while overlooking or subordinating their difference and this generates basic arguments as to which social characteristics really count in deciding how people can and should unite

HYBRID RICE OVER INBRED RICE:

A socio-economic assessment

Ma. Eoisa E. Hernandez

Rice is considered the Philippine's staple food, consumed by the majority of 88 million Filipinos. This is primarily the reason why many farmers have thrived to source their income through rice farming.

Dubbed as the country's bread and butter, this commodity contributes to 21 percent of agriculture's gross value. This prompted the Department of Agriculture (DA) to align and implement programs for a sustainable agriculture sector through rice farming.

"The rice industry also employs more than two million farmers, thousands of traders and millers, and millions of agriculture landless workers. So vital to the lives of the Filipinos, rice becomes a very powerful political commodity and is continuously the center of national agriculture programs," stressed in a paper titled "Socio-economic impacts of Hybrid Rice Commercialization Program in the Philippines" written by scientists from the Philippine Rice Research Institute (PhilRice).

IMAGE COURTESY OF RFU3.DA.GOV.P

Hybrid rice commercialization program

In 2001, DA promoted the Hybrid Rice Commercialization Program (HRCP). This is seen as a solution to address the increasing demand of the country's population for a sustainable rice food security.

Hybrid rice technology was introduced in the Philippines in 1998. Technology demonstrations in several parts of the country were made to test the adaptability and profitability of hybrid rice.

For many years, farmers across Asia have doubted the potentials of hybrid rice farming. They tend to believe that hybrid rice is expensive, starting from the high price of seeds, which is beyond their purchasing power. Hybrid rice technology also requires new seeds to be used every planting season. This led to uncertainties for farmers. Their common practice of saving seeds from previous harvests will be replaced.

Socio-economic impacts

The HRCP was further strengthened to increase farm level productivity, more so the national production. And to assess its socio-economic impacts, PhilRice developed the study.

Specifically, the paper was aimed to 1) evaluate the impacts of hybrid rice technology on input utilization, farm management practices, productivity, and income; 2) assess the social impacts of hybrid rice to its continuous users; and 3) estimate the returns of the government investments on HRCP.

A total of 805 hybrid and 991 inbred rice producers from the five major rice-producing provinces, namely: Isabela, Nueva Ecija, Iloilo, Davao del Norte, and Davao del Sur, were surveyed from the 2002 wet season to the 2004 dry season.

On-farm data showed that hybrid rice can increase yield from eight to 14 percent during the four-season period. Hybrid rice yield showed superior advantage of 11percent (Isabela) and 24 percent (Davao del Norte).

However, location-specificity of hybrid rice technology was observed. There was no significant yield advantage observed in Nueva Ecija, Davao Del Sur, and Iloilo. The paper suggests promotion of the existing hybrid rice varieties in more suitable areas, while research and development for location-specific crop management practices, and adaptation trials of new hybrid rice varieties could be done in less suitable areas.

Hybrid rice has also a price advantage of around 25 centavos per kilogram over the inbred rice. Hybrid rice has a better or at least same eating quality as the inbred rice, and shows good market acceptability.

Though hybrid rice production cost per hectare was higher by five to 16 percent owing to higher costs of seeds, fertilizer, and pesticides and labor, the difference in cost per unit between hybrid and inbred rice production has subsequently narrowed. This suggests that as hybrid farmers became more familiar with the technology. Their efficiency increased. This resulted in higher net income from hybrid rice production compared to inbred.

There are also more hybrid rice farmers who are getting higher net income (P20,000 and above) than their inbred counterparts, which is usually true during the dry season.

The promotion of hybrid rice simultaneously created greater awareness

turn to page 9

PHOTO BY RITA DELA CRUZ

Applying social research in policy advocacy and directions of agriculture and fisheries

Josefina M. Lantican

The Agriculture and Fisheries modernization Act of 1997 (AFMA) provides for the transformation of the agriculture and fisheries sector from resource-based to technology-based industry. This paradigm shift is brought about by the closure of the land frontier for agricultural expansion. Along with the other factors of production, innovative technologies are deemed to be the major drivers that would propel the development of the sector. This involves the vigorous conduct of collaborative basic, strategic, and applied research by the Department of Agriculture in partnerships with the premier state universities and colleges, and the private sector.

In keeping with the AFMA, these research initiatives are geared toward the goals and objectives for the sector, namely: 1) food security, 2) poverty alleviation, 3) equitable distribution of benefits in the sector, 4) protection of the agricultural resource base, 5) farmers and fisherfolk empowerment, and 6) global competitiveness.

Social research should be given equal importance, together with the biological and physical researches. It is conducted for the purpose of establishing or validating facts or theory related to a group of individuals through data collection and analysis. This is done to explore, describe, and explain the behavioral patterns of a social group. It involves creating a theory, measurement of variables, and observation through actual collection of data and tests of hypothesis and relationships. It is through the understanding of social behavior that a group of individuals can be brought into mainstream development. In the case of the agriculture and fisheries sector, results of such research provide knowledge on how farmers and fisherfolk perceive a development program in terms of its impact on the community, or why they adopt or do not adopt technologies introduced to them. This information is relevant to decision-makers for making adjustments in development programs or in technologies to suit the needs of the target beneficiaries. Such knowledge will also provide decision-support in research prioritization which is necessary to create stronger impact on development, especially under given fiscal constraint. Results of social research are essential for policy formulation or adjustments aimed at providing a better environment conducive to development.

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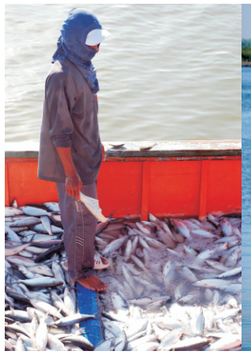

The conduct of social research entails high cost. But the results are essential in fine-tuning development policies. As in policy research, studies show that it can promote actions that improve the living standard of the poor, such research often recover its costs many times over in fiscal savings alone. The value of research is the expected social gain from policy decisions influenced by the information generated.

New knowledge on how to improve food security and incomes of small farmers and fisherfolk, for example, is expected to result in large social benefits. Expectations based on ex-ante evaluation of a research program are made from the information about decision-maker's prior perception of probabilities of the state of the community or nation and the likelihood of correct and incorrect research findings.

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Looking into social equity and public policy aspects of technology adoption

RITA T. DELA CRUZ

Human is inherently resistant to change. It is always easier to do what one knows well rather than pioneering. Once a cultural system is embraced, introducing a new idea becomes a tough act to follow.

This is also the case in agriculture, particularly among farmers. It is a daunting task to introduce a new technology to farmers, most especially if it challenges a method or idea that they have been doing for years and has proven beneficial to them. Socio-cultural consideration is a crucial point when introducing a new technology.

Introducing something new

It is important to know how farmers understand the world before trying to introduce new technological options. Discover whether or not the new system can fit in well with the farmer's concerns, beliefs, and values.

Remember that farmers are scientist, too. They have been developing, testing and adopting their own technologies for centuries in ways that are customized according to their cultural setting. There is a need to make an effort to learn from them about the fit between cultural outlook and technology, which results in a much better idea of which new technologies they are likely to take an interest in.

(Worby, 2001).

The conclusion is that farmers do not necessarily adopt technologies imposed on them. Farmers make their own adaptations of a certain technology according to their own needs. They innovate owing to necessity, changing conditions, and curiosity, doing informal experiments on new ideas either from their own ingenuity or learned from other farmers, researchers, extensionists, and other information sources such as the mass media. That is why the new school of researchers/scientists and extension workers encourages participatory research to widen the ownership of a certain technology and consequently improve adoption of that technology.

There is a virtual collection of successful technology transfer experiences making extension campaigns successful. But even though the technologies and practices have been widely proven to be both productive and sustainable at research stations, adoption is comparatively low. The reason behind this is that resource-conserving technologies involve the substitution of management skills, knowledge, and labor for external inputs.

There is a need to utilize the benefits from the latest and more productive advances in agricultural technology. But more important, farmers need to benefit first from these technologies.

Social equity and public policy factors in technology adoption

There is a dictum in the field of research and every technology-generating field that says, "Research not disseminated is research not done." In aiming for agricultural modernization, this dictum turns into something like: "Research disseminated but not adopted is tantamount to resources wasted."

Agricultural modernization is propelled by the farmers' use of modern and appropriate technologies. But the question is, how do we ensure that farmers will adopt the new technologies being introduced to them?

How does social equity come into play? Does it affect technology adoption at all? What are the demographics of the farmers who are more likely to adopt these technologies?

Does government policy and support affect the farmers' behavior in adopting technology? Or is adoption fully based on the assumption that "those who can afford the technology are likely to adopt it"?

These are just some of the questions that a group of scientist from the University of the Philippines Los Baños tried to determine as they delved deeper into the dimensions of social equity and

Recombinant DNA vaccines were also developed and its future role in the development of poultry vaccines was studied in several researches. Recombinant vaccines involve the insertion of a gene from one organism into the DNA of another organism to produce a protective immune response out of the combination of these two organisms, thus a recombinant.

As compared to the conventional vaccines, recombinant vaccines have a higher possibility of improving protection from disease by increasing a specific immune response to the key protective antigen. Owing to certain properties, recombinant vaccines also reduce the requirement for a high initial dose of vaccine.

Bio-industry commercialization

The poultry industry is a lifeline to many people. For the producers, poultry means a source of income and livelihood. For the consumers, the nutrients that can be derived from poultry products are essential for an individual to be properly nourished. With the contribution of bio-industries to health-care, especially in battling bird flu, a huge potential for the commercialization of technologies resulting from bio-businesses have been recognized.

There are more than 4,000 bio-businesses in the world, and the most well-known are located in the United States or Europe. Emerging ones are found in Canada, Australia, New Zealand, and Japan. These companies are also outsourcing operations in Asia in order to reduce research and development (R&D) costs. More so, as these companies expand internationally, the focus of bio-industry activities has shifted from a purely R&D orientation to technology business that generate revenue and earnings streams at a particular stage on the value chain. Commercialization of R&D output in the bio-industries could also be addressed well by strictly implementing intellectual property (IP) protection mechanism for the scientists and scientists.

In line with its commercialization, the emerging business for bio-industries must therefore recognize the following: 1) management of corporate reputation; 2) pharmaceutical and healthcare industry as a major client and ally; 3) biodiversity conservation as an opportunity and threat; 4) innovation as a core competence with a network of third party providers in product development, manufacturing, and marketing; and 5) role of governments in fostering innovations, pursuing coherent strategy in R&D in the life and biological sciences, and attracting investments, and developing infrastructure and protecting IP rights.

Challenges and opportunities

Entrepreneurs of bio-industry or bio-entrepreneurs recognize several opportunities that bio-industries can offer. Products and processes in the global market of bio-industries are rapidly accelerating because of genomics. Advances in the life and biological sciences have generated new opportunities in the pharmaceutical industry, such as the continuous development of diagnostic test kits for the H_5N_1 virus and the recombinant vaccines. Opportunities for businesses in smaller economies to participate in bio-venture's research intensive networks were also opened.

In articulating these opportunities, bio-entrepreneurs face challenges that are brought about by players who are external to the business, and those internal to organizations. The viability of bio-industries is affected by macro-environmental factors such as changes in technology, political conditions, and social beliefs/demographics. These are further manifested through the competition among bio-industries within and beyond national boundaries of nation and the harsh financing condition at their start-up stage. To make things easier, it was proposed to that bio-industries must offer a commercially-acceptable investment proposition in addition to scientifically exciting discoveries.

Meanwhile, the internal actors that are contributing to the bio-entrepreneurs challenges are those who are responsible for: maintaining technical excellence in a rapidly advancing scientific field, managing an appropriate commercial focus, adding downstream skills in a timely fashion, and sustaining an innovative corporate culture in the face of accelerating growth.

Conclusion

The outbreak of bird flu once again demonstrated the need to be prepared to face unexpected events at all times. Concurrent to this is the response to the outbreak, which is timely, an innovative, and all products of intensive R&D. The continued use of recombinant DNA technology by bio-industries will lead to development of antibodies, diagnostic kits, vaccines, and other treatments that can hopefully protect man from the deadly virus that paralyzed the poultry industry.

The article is based on the study "The Bird Flu and Technology Commercialization Challenges of Bio-Industries in the Farm Input Markets" by Dr. Louie Divinagracia of the Graduate School of Business-De La Salle Professional Schools, Manila, Philippines.

PHOTOS BY RICARDO BERNARD

Ellaine Grace L. Nagpala

The first widespread outbreak of avian influenza hit the headlines in 1997. Flocks of domestic poultry species became infected with a certain deadly virus. Poultry products became unfit for human consumption and the public consumer avoided them; and an offshoot was the million dollar worth of losses incurred by the poultry industry.

The culprit

The outbreak was traced to H5N1, a subtype of the Influenza A virus strain that infects bird species. H5N1 is a highly pathogenic avian influenza virus (HPAI) and is the causative agent of avian influenza or what we commonly know as the bird flu.

The bird flu is an infectious disease affecting all kinds of birds, particularly for domesticated chickens. This deadly and contagious disease can be transmitted easily through direct contact with feces and respiratory secretions from infected birds. Originating in Asia, the disease spread from one continent to another.

In 2005, the Food and Agricultural Organization (FAO) and the World Health Organization (WHO) released a document titled "Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza" which presents the strategies for controlling the disease. These include surveillance for early detection, immediate stamping out of new outbreaks, enhanced security of poultry farms, implementation of strict quarantine measures, humane culling of infected poultry, improvement of sanitation practices, and separation of poultry species into "compartments".

Introducing the bio-industry

As urgent as the need to prevent the spread of the H5N1 virus of the influenza A virus is the development of molecular-based technologies in detecting and verifying the presence of the virus in flocks of poultry. Innovations such as test kits for early detection and diagnosis of avian influenza; monitoring genetic modifications that spontaneously occur in the influenza A virus; formulating vaccine; and in reformulating the vaccine as the influenza virus mutates surfaced.

Such technologies are all products of bio-industries. Also known as biotech industries, bio-industries develop products and services that are concerned with the industrial application of knowledge and techniques that pertain to molecular, cellular, and genetic processes. The development process of such services involves the commercialization of life sciences through products, technologies, and services.

Bio-industries cover a broad range of application. The Biotechnology Industry Organization based in the United States stated that biological knowledge and techniques are utilized in agricultural production in crop biotechnology, food biotechnology, industrial and environmental management, national security, and in health care, as it is utilized to battle bird flu.

Molecular diagnostics and detection test kits

Bio-industries rely heavily on molecular biology. Hence, methods based on molecular biology were developed to detect the presence of the H5N1 virus.

One of the most common technology-driven products of bio-industries to control the spread of the avian influenza is the detection test kit, which is based on molecular diagnostic techniques.

New generation detection methods that are based on nucleic acid base amplification (NASBA) or polymerase chain reaction (PCR) were developed and applied by Fung, Lau, and Yu (2004). The authors believed that these detection methods would enable public health agencies around the world to coordinate the monitoring of the current viral load of avian influenza strains among wild birds and poultry.

Another marketing research company, Bioportfolio, reported other technologies that will play an important role in molecular diagnostics such as fluorescent in situ hybridization (FISH), peptide nucleic acids (PNA), electrochemical detection of DNA, biochips, nanotechnology, and proteomic technologies.

BioMerieux, a major player in the field of in vitro diagnostics for clinical and industrial applications, has also launched its avian influenza test kit—the NucliSens EasyQ Influenza H5 and N1. The test kit is composed of reagents that are used by health and disease research laboratories involved in the detection of avian influenza.

In general, these techniques help laboratories identify new infectious agents and detect modifications of known infectious agents such as the influenza A virus.

Poultry vaccination

Reports have shown that vaccines have remained the primary means of controlling most pathogens in the poultry industry but cultural practices of identifying and promoting appropriate farm management practices, and the genetic breeding of resistant lines by poultry breeders are equally important.

Vaccines work by administering a molecule (antigenic material) that stimulates an response against a certain disease.

The All-Russian Poultry Breeding Veterinary Research Institute of the Russian Agricultural Academy conducted vaccination test on poultry. Results showed that test animals developed an intensive immunity against avian flu, several weeks after these were vaccinated.

public policy in the adoption of technologies, specifically on rice and corn technologies. Leading the study was Dr. Linda M. Peñalba, research and extension coordinator from the College of Public Affairs (CPAf), UPLB. With her in this study were co-researchers from UPLB, Aida O. Grande and Flordeliza A. Sanchez.

In the social and equity implications of innovative technologies, results of their study showed that better-off farmers planted modern varieties of corn and rice and were able to access government support. On the part of the government, there was a greater effort to inform and educate a larger number of farmers about its programs on rice and corn, the economic importance of using modern technology, and the services that they could avail themselves of through their local government.

In terms of socioeconomic characteristics, the study indicated that modern technology adopters and those who were able to access technology promotion and incentives were more likely to have bigger farms, better education, and higher farm and household incomes.

Farm size seems to play a big part in technology adoption of rice and corn. According to the study, farm size indicated a farmer's capability whether to use modern technologies and high-yielding crop varieties or stick to the traditional varieties.

Among the rice farmers, those who used traditional varieties had the smallest farm size (1.25 hectare) while those who adopted various high-yielding varieties had the biggest farm size (2.49 has). In between them, were farmers who used hybrid rice and owned 1.77 ha of farm.

In terms of the kind of assistance, studies showed that less than half of the farmer-respondents were able to avail themselves of at least one type of incentive and production support either from the government or the private sector. The types of support also varied depending on technology package and support provided.

Likewise, the study noted that access to policy incentives seemed to be affected by the level of education that farmers attained. Farmer-respondents who had college education (25%) were likely to avail themselves of policy incentives and government support than those who only had primary education.

This article is based on the study, "Social Equity and Public Policy Dimensions of Innovative Rice and Corn Technologies" by Linda M. Peñalba, Aida O. Grande, and Flordeliza A. Sanchez of the University of the Philippines Los Baños, College, Laguna, Philippines.

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Determining...from page 15

tilapia, milkfish and other high-value species. Similarly, households in the metropolitan and urban areas showed relatively higher consumption of high-value fish.

Results of the study showed distinct spatial fresh fish demand structures, which justified region-specific policy interventions. For example, in Northern Luzon, fresh fish was considered as a luxury commodity owing to scarcity of supply in this area while it was treated as an inferior commodity in some part of the Bicol region because of its abundance. This demonstrates the effect of the spatial difference in the supply and demand of fresh fish in these regions.

Coastal provinces mostly found in the Visayan regions produced and consumed higher amount of fresh fish than the areas in the northern (Luzon) and southern (Mindanao) regions. This was attributed to the variation in the "physical landscape" of these regions. Luzon as primary producer of milkfish and *tilapia* demonstrated more elastic demand for these species, implying that a slight increase in their price will result in an abrupt decrease in quantity demanded.

The paper further noted that spatial models demonstrated a need in studying regional differences in consumer behavior, especially when geographic factors played an important role. The technique can be similarly useful in evaluating geographic impacts of economic policies, technology and infrastructure development. The study concludes by pointing out some policy implications of the results and by providing recommendations for further research.

The article is based on the study "Spatial econometric analysis of fresh fish

Hybrid rice...from page 18

on the other component technologies in rice production that have been ignored in the past. The newness of hybrid rice and the relatively costlier seed made rice farmers more careful and diligent in applying the new technology. They are now interested in optimizing hybrid rice production, at less cost.

In Isabela, 100 percent of hybrid rice-adopter respondents considered themselves as better providers as their income increased by 20 percent compared to the 60 percent of the inbred farmers who professed satisfaction as income provider. In addition, about 90% of the hybrid rice farmer-respondents also declared significant gain in skills and techniques, specifically on seedbed preparation and seedling management. This gave them higher level of confidence in discussing rice issue with their peers. Hybrid rice-respondents also claimed to have acquired more assets after continuous planting of hybrid rice compared with inbred rice respondents. These are some of the social impacts of hybrid rice that were documented by the study.

The study showed the great impact of the government's program on hybrid rice on local farmers over the years. Hybrid rice production is one of the best options to increase farm productivity and income among technologies available today.

In the end, the researchers encouraged the private sector to lead the next phase of hybrid rice commercialization. The government resources could then be allocated to research, extension, and technical assistance to farmers.

The article is based on the study "Socio-economic impacts of Hybrid Rice Commercialization Program in the Philippines" by Flordeliza H. Bordey, Leonardo A. Gonzales, Leocadio S. Sebastian, Cheryll B. Casiwan, Jesusa C.

Trends in socioeconomic R&D in agri and fisheries

Jude Ray P. Laguna

Socio-economics plays a vital role in the public expenditure of agricultural research. It ensures if a program is worth investing in, and if the claimed benefits have impacts on the intended beneficiaries.

Socio-economic research is usually carried out by the public or the government sector, in that the target of these studies is to determine that the impacts of a certain program or project will benefit not only a particular group but also the society as a whole.

In economic terms, this is referred to as the "social rate of return". Studies have shown that public-funded research provides a very high social rate of return in countries that have invested at least one percent of their total budget for public research in agriculture.

According to David (1999), the "opportunity cost of under investing in public agriculture research and development is high," and social rates of return are 40-60 percent. She said that, "the private sector will not invest in social science research to analyze policy and institutional issues and to evaluate the impacts of new technologies on efficiency, equity and environment."

PHOTO BY RITA DELA CRUZ

This remark concretizes the claim that the private sector will not invest in research unless results are marketable or will make a profit. The government however, has been quick in learning from the outputs of socio-economic studies. Unfortunately, a significant number of policymakers seem to undermine the findings of socio-economic studies, particularly on impact assessment, leading to impractical and poorly designed programs.

Socio-economic studies, be it *ex ante* or *ex post*, aid in the development of sound programs and projects, as well as seeing to it that the taxpayers' money is being used efficiently and effectively.

In accountability terms, it sees to it that those implementing the programs or projects deliver their promise to the target beneficiaries.

To know if a project is worth pursuing, socio-economists come up with assumptions and simulations using empirical and historical data, exposing these to different variables or possible scenarios. The chances of certain events happening in the aftermath of the project are presented and policymakers and government base their plans of action on the results of these studies. Experiences of previous programs may also be considered in an *ex ante* analysis to craft better decisions. In other words, learning from mistakes of the past gives the project a higher expected rate of return by coming up with better programs.

Social science and policy programs of BAR

The Bureau of Agricultural Research (BAR) has always been anchored on social science, policy and economic studies in crafting better R&D programs and seeing to it that taxpayers' money is used wisely.

Over the years, BAR has focused its priorities on three major program areas: 1) *supply-demand trade analysis* (analyzes behavior of producers and consumers, tracking economic performance across commodity markets both at the national and regional levels and making projections of supply, demand, and trade); 2) *macro-economic policy issues* (deal with trade and exchange rate policies, financial credit, and interest rate policies and public expenditure, focusing on allocation issues, across commodities and at the national and local level); and 3) *expenditure programs* (i.e., on research, development and extension, irrigation, infrastructure, production and price stabilization).

These priority programs of BAR came out with a number of studies covering different commodities including other agriculture and fisheries disciplines such as biotechnology and urban agriculture.

These are projects that tried to dig deep into the structure, conduct, and performance of the seed industry, under the supply-demand trade analysis.

Under the Public Expenditure Program, geographic information systems (GIS), using agriculture, climatic and socioeconomic data, the program covered selected regions in the Philippines. The program, titled "Targeting Technology Intervention for Food Security in the Philippines: A GIS Application for Agricultural Research Prioritization," came out with recommended target areas for public research programs.

These studies showed where certain crops/commodities would grow best as well as areas hit by extreme poverty and hunger. With the help of these digital maps, the government can target these areas instead of just coming up with programs for a wide area in certain provinces, with minimal results. At present, government programs have been taking advantage of this technology to assist in prioritizing research areas, thus minimizing the cost of public expenditure.

Another area of focus is looking into the importance of extension, which is one of the key elements of technology adoption and ultimately, technology commercialization. Since the devolution of the extension services from the

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DETERMINING THE CONSUMPTION BEHAVIOR OF FRESH FISH DEMAND IN THE PHILIPPINES

Ma. Eloisa E. Hernandez

The Philippines has been blessed with a vast water area comprising about three-fourths of its geography. This is why Filipinos depend more on fish rather than meat products as a complement to rice as staple food. Furthermore, Filipino households have rely on fish as their primary source of animal protein owing to its much lower price.

The country's archipelagic nature makes Filipinos differ widely in their fish consumption behavior. As a consequence, fish consumption behavior varies across locations. However, neighboring locales illustrate more similarity in consumption behavior by influencing one another. This can be attributed to inherent spatial influences in culture, weather, market factors, and production similarities, among other things.

This article summarizes the study conducted by Mr. Ferdinand J. Paraguas and Dr. Yolanda T. Garcia of The World Fish Center aimed at determining the spatial econometric patterns of fresh fish demand in the Philippines. The authors focused on the spatial dependence of consumption behavior and the factors that brought about spatial behavioral changes in demand.

Consumption behavior

Previous studies have shown that consumption behavior in different locales is based on two main factors: "psychological landscapes" and "physical landscapes". Physical landscapes distinguish the socio-demographic, historical, religious, and cultural factors that are likely to affect consumption differences. Other factors also include climate, topography, and natural resource endowment in the area.

On the other hand, psychological landscapes are based on two determinants: economic and non-economic factors. Consumer demand theory postulates that "the economic-related landscape is the most important determinant of demand behavior." Hence, demand is highly influenced by household income, price of the commodity or the "own-price factor", and the price of substitute products.

Non-economic determinants such as tradition or preferences, population structure (family size), and supply (actual availability of the commodity) must also be taken into consideration for a complete account of consumer demand.

Cluster analysis through GIS

Fresh fish demand functions incorporating spatial dependence and spatial heterogeneity or spatial behavioral changes in demand were specified and estimated in the Paraguas and Garcia study. Cluster analyses were then conducted on the estimated province-specific elasticities to characterize distinct spatial groupings of fresh fish demand relationships. To enhance visualization and interpretation, these clusters and the province-specific elasticities were mapped using geographic information system (GIS) data and spatial modeling tools.

Data used in the study were derived from the Philippine Family Income and Expenditure Survey (FIES) for the year 2000 of the National Statistic Office. Price data were generated from the Consumer Price Index Survey (CPIS). The Bureau of Agricultural Statistics (BAS) provided the fish production data while the National Statistical Coordination Board (NSCB) supplied the province-specific poverty lines.

Interpretation of results

An average Filipino consumes 19 kg/year of fresh fish or 59 percent of the total fish consumption while the remaining 49 percent are consumed either in canned, dried, smoked, or salted forms. Poor and non-poor households showed differences in their per capita fish consumption with the latter consuming twice as much as the former.

Poor households showed higher dependence on fresh fish as source of animal protein. They considerably preferred the roundscad, popularly known as *"galungong"*. This is the reason why *"gg"* was coined as the "poor man's fish".

In general, relatively poor households were more responsive to and dependent on the supply of low-value fish from municipal fisheries. On the other hand, the non-poor households generally preferred

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appropriate remedies can be formulated and offered advise to policymakers.

There is an enduring concern with scientific methodology and a widespread belief that those who intend to do social research ought to have some grasp of what it means to be '*scientific*' and have some awareness of what is meant by the '*scientific method*'.

The principles of scientific methods being introduced represent the 'gold standard' for social research – something that any aspiring social researcher must know in order to undertake good research. The scientific methodology provides the *best starting point for understanding the various issues and controversies* that surround social research. The *rigor* of a scientific approach is something that most social researchers continue to *value as research skill*. Those who *evaluate the research proposal* – examiners, clients, employees, etc. are likely to have been raised on a strong diet of the natural scientific model of research methods, and the chances are that they will *judge the research according to criteria drawn from the natural science model*. Finally, though criticized by many social researchers as having limitations when applied to social areas of investigation, it remains the *dominant model* for research in many other areas.

The 10-point guide of social research

1. *Purpose* – Research should have clearly stated objectives. The purpose of the research is stated clearly and explicitly in a format appropriate to the method of investigation. These statements of purpose indicate the focus and direction of the research, and provide criteria for the evaluation of the outcomes of the research.
2. *Relevance* – Research should relate to existing knowledge and needs. The research is worthwhile when it makes a contribution to the development of existing knowledge and/or addresses specific practical needs.
3. *Resources* – Research should recognize the constraints that time, money and opportunity impose. The scale and timing of the investigation reflects the resources available to the research and the opportunities for access to relevant data. In practice, research is a matter of choosing suitable methods – one that is feasible given the resource constraints within which the investigation has to operate.
4. *Originality* – Research should contribute something new to knowledge. In the choice of topic, in the methods of investigation or analysis undertaken there is at least one element of originality and this must be explicitly identified.
5. *Accuracy* – Research should produce valid data using reliable methods. The idea that good research should be accurate is one that has an immediate appeal. After all, what value is research if it turns out to be inaccurate? The vast majority of people who undertake research, who read the findings and who judge the quality of the work will operate with the assumption that research aims to be accurate.
6. *Accountability* – Research should include an explicit account of its methodology. To convince readers about the credibility of the research it is vital that reports of the research, contain sufficient information for readers to make the necessary judgments.
7. *Generalizations* – Research should produce findings from which generalizations can be drawn. A generalization involves drawing some conclusion about a whole group or category of things on the basis of information drawn from particular instances or examples.
8. *Objectivity* – Researchers need to be open-minded and self-reflective. The research must be designed, conducted and reported in a genuine spirit of exploration and the research explicitly acknowledges, as far as possible, the ways in which any vested interests, social values and aspects of the researcher's self-identity have had a bearing on the nature of the research.
9. *Ethics* – Researchers need to recognize the rights and interests of the subject of research. Due considerations must be given to the impact of the research on those affected by it and, where it has been reasonable to do so, informed consent has been obtained from those directly involved in the research. Where appropriate, measures have been taken to maintain the confidentiality of information and minimize intrusion into people's lives.
10. *Proof* – Researchers need to be cautious about claims based on their findings. Proof is never a matter of faith as far as social researchers are concerned. It is always the product of enquiry. Proof refers to something that is achieved rather than something that is given. Social researchers cannot rely on the logic and rationale of an argument unless this is corroborated by empirical evidence. It relies on evidence that has some calculable qualities. Lastly, as far as social research is concerned, the idea of proof presumes that evidence has been collected in a rigorous, systematic and accountable fashion.

The principles of scientific methods being introduced represent the 'gold standard' for social research – something that any aspiring social researcher must know in order to undertake good research.

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PHOTO BY ANTHONY CONSTANTINO

Ms. Flordeliza H. Bordey of the Philippine Rice Research Institute (PhilRice) bagged the 2005 AFMA Best Paper for the study, "Socioeconomic impacts of hybrid rice commercialization program in the Philippine."

PHOTO BY ANTHONY CONSTANTINO

2006 AFMA Best Paper (socioeconomics category) was awarded to the study, "An Ex-Ante Evaluation of the Economy-wide Effects of an Avian Influenza Outbreak in the Philippines" by U-Primo E. Rodriguez, Reynaldo L. Tan, and Yolanda T. Garcia of UPLB-CEM.

national government (handled by the Agricultural Training Institute) to the local government, the delivery of technological discoveries and breakthroughs has changed. The program titled "A Comprehensive Assessment of the Philippine Agricultural Extension System" is composed of studies that look into the delivery of extension services in different regions of the Philippines, problems encountered, success stories, and recommendations to policymakers for the improvement of the system.

NRS best papers on socio-economic studies

BAR is not limited to commissioning institutions and individuals in its socio-economic programs and projects; it also opens its doors to the National R&D System for Agriculture and Fisheries (NaRDSAF) member-institutions to present their findings through public fora.

In the early years of the Agriculture and Fisheries Modernization Act (AFMA), the Department of Agriculture's (DA) concern was focused on increasing the knowledge-base of agriculture and fisheries research to update the available literature generated over the years.

Research and Development (R&D) has never forgotten its close ties with extension. Technologies or methodologies developed in the laboratory and in the field as a result of public-funded agriculture and fisheries research are of less value if left to gather dust in libraries or bookshelves. The commitment of the country's top scientists and researchers has paved the way for the evolution of the sector from resource-based to a technology-based.

BAR is a national R&D institution mandated to ensure that agricultural research is coordinated and undertaken for maximum utility to agriculture. To realize this, the Bureau must see to it that the outputs of research reach the poor farmers and fisherfolk with the help of extension showing to them the latest developments in agriculture and fisheries research.

Every year, BAR holds its National Research Symposium (NRS) to showcase the latest breakthroughs and innovations in agriculture and fisheries, with a socio-economics category included.

For the past three years, the winners under this category have come from both the academe and the individual R&D units of DA. The common theme of these papers have been emerging issues and concerns in the agriculture and fisheries sector applying social science and economics techniques to better understand the effects to the economy as a whole.

In 2005, the paper of F.H. Bordey, titled "Socioeconomic Impacts of Hybrid Rice Commercialization Program in the Philippines," looked into the effects of the technology commercialization program implemented by the Philippine Rice Research Institute's (PhilRice) program on the social and economic well-being of rice farmers who adopted the hybrid rice together with new farming practices as compared to those who opted not to adopt the technology.

Results of the study showed higher yield and income to those farmers who adopted the technology. Farm costs were also higher for the adopters during the initial adoption stages, but were minimized, once the farmers have been properly accustomed to the proper farm management practices needed for the optimal growth of the hybrid rice.

The runner-up paper titled "The Effects of Trade Policies on Philippine Fish Markets" by Prof. U. Rodriguez and Dr. Y. Garcia, which made use of an econometric simulation model (AsiaFish model, a partial equilibrium model to be exact), looked into the effects of various government trade policies on the Philippine fish market, specifically supply and demand of fish and the import and export of fishery products. Prof. Rodriguez's paper also studied the benefits and costs of the different trade policies on the stakeholders of the sector, such as the suppliers, consumers, and traders.

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The study, "Development in the Supply Chain of the Philippine Goat Industry: An Assessment" by Elmer R. Esplana, Larry Nel B. Abao, and Rolando M. Vasquez of the Bureau of Animal Industry (BAI) took home the grand prize for the socioeconomics category in the 2007 NRS.

"An *Ex Ante* Evaluation of the Economy-Wide Effects of the Avian Influenza Outbreak in the Philippines" was the 2006 best paper in the socio-economics category, authored by Prof. Rodriguez.

The paper was timely, given that the avian flu scare has been affecting the Asian region, and at the time, the Philippines was the only bird flu-free nation in the Southeast Asian region.

The study presented the socioeconomic effects to the poultry and related sectors of the economy. It made use of the TARFCOM Model to simulate shocks using empirical data, giving policymakers a picture of what would happen in the event that the Philippines is hit by the bird flu, providing DA with an idea of possible areas that should be protected/supported to cushion the effect of the epidemic. The paper explained these effects by doing away with the complex formulas and technical terms for easier comprehension to the reader.

Meanwhile, the paper "Development in the Supply Chain of the Philippine Goat Industry: An Assessment," took home the top honor at the 2007 NRS. Thus study, conducted by researchers from the Bureau of Animal Industry (BAI) led by Mr. Elmer Esplana, was timely, given the DA's effort to focus on the supply chain of major agriculture produce. The results showed that there have been great improvements in the supply chain from input to consumption of the goat industry and that goat meat (chevon) as potential export to countries that are predominantly Muslim. The paper suggests that investment opportunities for goat production should be pursued and that the market for goat meat should further be developed.

Key factor for socio-economic studies

The common denominator of all the papers that have caught the eye of the judges has been the *timeliness* in addressing emerging socio-economic issues and concerns that affect or that may affect the agriculture and fisheries sector.

Currently, BAR is focusing its resources on the conduct of impact assessment studies on programs that it has funded in the past to determine whether such programs have had effects on intended farming and fishing communities.

One of these programs is the Community-based Participatory Action Research (CPAR). This project was implemented in barangays of selected provinces of the different regions of the Philippines. An impact assessment study was conducted in Regions 2 (Cagayan Valley), 4a (CALABARZON), 6 (Western Visayas), 8 (Eastern Visayas) and 9 (Western Mindanao) as sample regions.

Initial results of the study showed an increase in the income of cooperator-farmers as compared to those who did not adopt the package of technology offered by the DA regional field units. This was attributed to the increase in yield and lower costs of production incurred by the cooperators.

The study recommends that with continuous implementation of the CPAR program, poverty incidence and hunger could be addressed in the long run, including areas within a 50-kilometer radius to the site owing to spillover effects of the technology and farmer-cooperators, which serve as demonstration farms for package of technologies.

At present, BAR, in response to the United Nations Millennium Development Goals for 2015, is focusing its CPAR programs on the 10 identified poorest provinces of the Philippines, namely: Maguindanao, Zamboanga del Norte, Lanao del Norte, Masbate, Agusan del Sur, Surigao del Norte, Mountain Province, Zamboanga Sibugay, Camarines Norte, and Saranggani. The results of the impact assessment study have justified the investment of the Department of Agriculture in promoting mature and commercialble technologies to the poorest sectors of the country.

The trends in socio-economic studies go hand-in-hand with emerging issues and concerns of the agriculture and fisheries sector. It also justifies public spending for agriculture R&D and provides government officials with the necessary decision-making tools to design programs and prioritize allocation of scare resources.

Currently, BAR has focused its resources on conducting impact assessment studies...to determine whether the said programs have had effects on intended farming and fishing communities.

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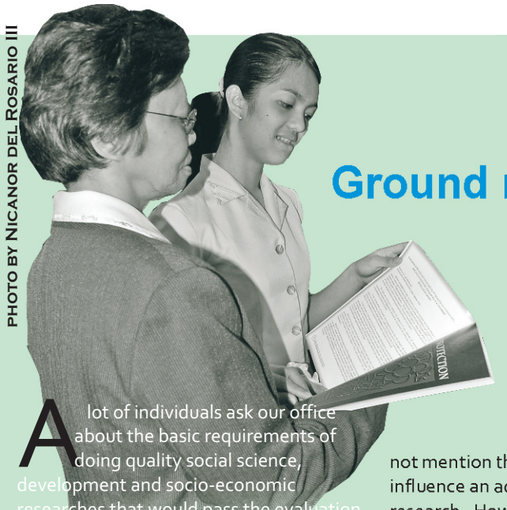

Ground rules for good social research

MARLOWE U. AQUINO, PHD

There is no such thing as perfect research and 'you cannot please all the people all the time' when it comes to doing social research. However, an awareness of the ground rules can help the project researcher to do a competent job that can be defended and justified to those who judge the quality of the end-product (Denscombe, 2002)

A lot of individuals ask our office about the basic requirements of doing quality social science, development and socio-economic researches that would pass the evaluation criteria of the Bureau of Agricultural Research (BAR). Ever since this inquiry, we ended up with reflections and analysis of the total understanding of social phenomena in which researchers in agriculture and fisheries would like to study.

As we described our stand on this issue, again a blank face unfolds and reflects the expression of being puzzled and uncertain. Given these reactions, we have to act fast and provide simple tips and guidelines in coming up with doable, realistic and fundable social researches and projects.

Being a social science researcher and development practitioner myself, I searched for some basic rules to be shared that would satisfy our evaluation requirement. Experts across the disciplines were consulted but emphasis was given to agriculture and fisheries.

We are therefore suggesting a ten-point guide and ground rules for good social research. This guide was lifted from my personal readings, exposure to various types of social researches, and experiences of people who integrate indicators for fund consideration especially from local and international funding agencies.

Expectations from good social research

Doing research is considered as one of the requirements to complete a course or a requirement in seeking a better job in a chosen field. Whatever is the purpose of doing the research, it does not mention that exact factors that influence an acceptable and appropriate research. However, given the magnitude and diverse controversies and disagreements among the experts, there are neither clear guidelines nor easy steps into such endeavor. Why?

This is because social research is under a big topical umbrella covering research areas such as agriculture, fisheries, health, business, social work and development. The different disciplines like sociology, psychology, economics and politics, with their distinct way of seeing the social world or the reality within a social phenomenon are engaged in social research.

What complicates matter more is the variety of approaches to nature of the social world. Within the social science there are broad divisions between positivistic approaches and interpretivist approaches, between realists and relativists, between those favoring quantitative data and those advocating the use of qualitative data. There is no single approach that is universally accepted (Denscombe, 2005).

Despite the apparent diversity of approaches, however, there lie certain expectations about social research that tend to be accepted across a wide spectrum of disciplines and approaches. It is possible to detect the shared assumptions which form ground rules for good research. Even with key issues and debates on agreements and disagreements area in some underlying factors, shared basis for conducting social research are bound to be recognized and supported. As such, social research is structured around underlying common ground and builds on shared vision using scientific method of social inquiry.

Foundations for social research

In the realm of undertaking social research, two important concerns are introduced - *positivism* and *interpretivism* – alternative approaches to social research which adopt contrasting perspectives about what the social world is like and how it is possible to understand the social world.

Here social researchers are confronted with two modalities which they must address. Researchers hold different beliefs about the nature of social reality (*ontology*) and competing visions about the ways that humans create their knowledge of the social world in which they live (*epistemology*). These two modalities of social research must be satisfied in order to draw useful results. More important, despite the complex debates and sophisticated theorizing that have gone on for many years, the notion of *positivism* and *interpretivism* remain current in terms of common parlance among researchers. They remain shorthand terms that summarize the major schism within approaches to social research.

As the starting point for mapping out the issues and debates within these complexities, social research as a scientific inquiry is anchored on the ten ground rules for good research. Science provides the avenue for success in uncovering many of the mysteries of the world to help humans to gain control of their natural environment. Based on the same principles of science, social research must diagnose social, economic and psychological problems by describing the social reality and phenomenon they are confront so that