Knowledge Transfer Strategy for Social Entrepreneurship based on Local Agro-resources for Food and Health Industries

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Knowledge Transfer Programme (KTP)

It provides the platform for the exchange of tangible and intangible intellectual property, expertise, learning and skills between academics, industry and the community.

- **Academia**: able to incorporate relevant and up to date knowledge from industry and the community into their teaching, learning and consultancy activities.
- **Industry**: can utilize the resources of ITPAs to enhance their business capability and economic activities.
- **Community**: can benefit from the knowledge generated in ITPAs to improve quality of life within the community.
- **Graduate/Postgraduate Intern**: enhance their personal and professional development.

**GOAL OF KNOWLEDGE TRANSFER PROGRAMME (KTP)**

- To enable the development and improvement of the quality of products, services and policies to be shared for mutual benefits between the stakeholders i.e. academia, industry, community and the graduate/postgraduate intern.
- Aligning agriculture to improve household nutrition security
- Understand nutrition objectives which will be used in the integrated agriculture-health programmes.

**KEY RESULT AREA (KRA) OF KNOWLEDGE TRANSFER PROGRAMME (KTP)**

- Education - raising level of education in certain areas.
- Economic gains for sector/s of industry in identified sector.
- Sustainability and Green Technology Initiatives.
- The Disadvantage groups.
- Developing Industry Relevant curriculum (for High Impact sector).

**Key Areas in Knowledge Transfer**

- Education - raising the level of education in certain areas
- Economy - Economic gains in identified sectors
- Sustainability and Green Technology Initiatives
- The Disadvantage Groups
- Developing Industry Relevant Curriculum (for High Impact sector)

**Roles of Knowledge Transfer Programme**

- Enhanced and Enrich Knowledge Transfer in public universities
- Total number of knowledge transfer and academic projects in collaboration with industry/community
- Value of investment for enhancement and enrichment of knowledge transfer projects
- KTP in Context of Industry and Community Growth

- Agent of Change for Sustainable Knowledge Transfer
- Number of best practices in Knowledge Transfer adopted by Community and innovations accepted by industry, respectively.

**Introduction to Local Resources for Food and Health**

Consumer interest in local resources is growing. Need to identify resources for farmers and organizations and they are looking to get involved.

**What are Local Resources for food and health**?

- There are many reasons why people purchase local food. Does one of the following statements sound like you?
  - I want the freshest and best tasting food possible.
  - I am concerned about the distance that food typically travels before reaching my plate.
  - In purchasing food from local farmers I know and trust, I hope to better ensure that sustainable growing practices will be utilized.
  - I want to support the businesses of my local farmers and support local economies and diversified local agriculture.

**Food Environment**

- The physical presence of food that affects a person’s diet
- A person's proximity to food store locations
- The distribution of food stores, food service, and any physical entity by which food may be obtained, or
- A connected system that allows access to food.

- Food environment is also known as the community food environment, nutritional food environment, or local food environment. The retail food environment includes the community level (e.g., presence and locations of food stores, markets, or both) and the consumer level (e.g., healthful, affordable foods in stores, in markets, or in both).

- Good nutrition is vital to good health, disease prevention, and essential for healthy growth and development of children and adolescents. Evidence suggests that a diet of nutritious foods and a routine of increased physical activity could help reduce the incidence of heart disease, cancer, and diabetes.

**Agriculture**

- **Crop-based clusters**
  - Grain & vegetables
  - highland agriculture
  - women's/indicator plants
  - tobacco
  - nuts
  - rice
  - cocoa

- **Fish-based clusters**
  - Marine capture fisheries
  - Freshwater aquaculture
  - Freshwater aquaculture

- **Livestock-based clusters**
  - Beef
  - Livestock
  - Healthy
  - Dairy animals
  - Animal feed production

**Local Agro-resources for food and health industries**

- **Health**
  - Traditional and medicinal plants
  - Food ingredients
  - Food supplements
  - Preservatives

- **Food industry**
  - Food processing
  - Food trade

- **Food additives**
  - Colours
  - Flavouring compounds
  - Food ingredients

- **Food sources**
  - Plant-based food products
  - Processed food
  - Animal-based food products
  - Meat and beef
  - Eggs

**Agriculture in Malaysia**

- Selected crop production (1000 tonnes)

**Internal Trade for Agricultural sector (RM millions)**

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**Local Food systems**

- "Local food system" refers to the interrelated pieces of production and processing, distribution and direct marketing, and consumption that strengthen the economic, environmental, social and nutritional health of a geographic region.

- General information on local food systems before delving into more specific sub-topics, including food policy and law, community food security and access, farm-to-school programs, urban agriculture and community gardening, and farmland conservation.

- Also included is information on sustainable and organic agriculture; while these concepts are not mutually exclusive, there is natural overlap.

- The interdisciplinary nature of food systems research — as well as the growing popularity of "local foods" in our culture.

**Food and Food Security**

- The first we eat determines how healthy we are. Our food choices have not only a direct impact on our health but also on the health of our planet. The majority of the food we eat is produced in other countries, and the management of natural resources such as water and land is often beyond our control.

- The production of food is a complex process that involves many steps. From the selection of the seeds to the harvesting of the crops, each step has an impact on the final product and the environment.

- The food we eat is not only a source of nutrition but also a reflection of our cultural heritage and a way of life. Understanding the history and traditions of our food can help us appreciate the importance of local food systems.

**Malaysian Food Sources**

- Examining the top sources of dietary constraints that should be reduced is especially helpful for identifying targets for changes in the marketplace and food environment.

  - Level 1: Fish, poultry, meat and legumes (Good source of protein, iron and B vitamins.鱼、鸡肉、肉类, and beans have high protein content which provides energy, 12% of daily energy. A great source of vitamin and minerals and dairy that. Dairy foods provide many benefits that can improve health and lower the risk of chronic diseases. They are a great source of vitamin A, calcium, and lean protein. Choose your protein source from dairy such as milk, cheese, and yogurt. fish, poultry contain more omega 3.

  - Level 2: Fruits and vegetables (Good source of fibers, minerals and vitamins, which help maintain immunity. Fruit and vegetables are rich in antioxidants and vitamins that help protect against disease. Choose your vegetables including carrot, broccoli, spinach, and sweet potatoes. green vegetables such as broccoli, kale, and collard greens can help improve bone health.

  - Fruits: Choose your fruits such as apples, mangoes, oranges, and bananas. Fruits are a great source of vitamin C.

**Fostering a system that nurtures sustainability**

- By doing our best to diversify what we eat, we not only better serve our bodies, but also the environment and oceans.

- Today, supermarkets carry what consumers request and, by extension, food producers supply that food. But when, for example, consumers demand a wide selection of produce year-round—even when local growing seasons do not support it—availability—food must be imported from far away places, which increases the carbon footprint of our meals.

- In Malaysia, there are hundreds of available commercial agro-products, yet we normally eat only some of these products. If consumers requested for new products, we would be participating in a more sustainable relationship with the our ecosystem.

- This will encourage agro industries, food distributors, and supermarkets alike to use all the possible resources available in our food system and the environment.

**National Key Economic Areas (NKEA) - 4 areas in Agriculture**

- **1. Integrated Aquaculture Farming**
  - Availability of Task Kempen in Tanjungpinang and Task Pengara in Serdang for large scale aquaculture (1,000 ha available area for cage farming)
  - Availability of large area and suitable soil along the coastal of East Coast Economic Region (ECER)
  - Availability of suitable land and good quality of fresh water for large scale breeding and commercial freshwater fish farming
  - Availability of existing aquaculture activities including grow out and processing

- **2. Integrated Shrimp Farming**
  - Potential for export driven and high demand ice fish with a focus to Hong Kong and China market (including fish seed and marketable size table fish)
  - Leveraging on marine fish capture from deep sea fishing in South China Sea for processing
  - Cheaper labour cost and availability of human resources in East Coast especially in the agriculture and aquaculture sector
  - Domestically improved quality fish broodstock (statistically, disease free & resistant, high growth rates)
  - Reduced fish fry / fingerling import (particularly marine fish fry)

- **3. Development of Dairy Clusters**
  - Low self sufficiency level (2% SSL) i.e. fresh milk consumptions.
  - High dependency on import create an opportunity for business entry.
  - Availability of large area for Dairy Clusters inclusive of area for pastures and fodder
  - Availability of green feed from the existing agriculture activities in East Coast Economic Region (ECER) as a fodder to the dairy cattle (e.g. pineapple, cassava, peddy, oil palm)
  - Present development of "Jon Industrial Tenus" in ICICI particularly in Muaradun (Shah, Kaib, Besar, Terah Mersoh & Jeramakang)
  - Dairy business could generate double benefit i.e. milk and meat production (plus by product such as organic fertilization which have a huge demand in East Coast)
International Seminar on Promoting Local Resources for Food and Health, 12-13 October, 2015, Bengkulu, Indonesia

Development of Dairy Clusters

- Existing facilities in Muadzam Shah Cattle Research & Innovation Centre could contribute to the availability of local breed stock, technology and training for human capital.
- Existing higher educational involvement such as Universiti Malaya Kelantan (UMK) as a Centre of Excellence (CoE) for ECE projects and availability of experts for veterinary advisory.
- Inline with the state Livestock Industry Development Policy which is actively promoted for investors.
- High demand from halal market and linked to the development of Gambang and Pasir Mas Halal Park.

Integrated Cattle Cluster Development for High-end Products

- High demand of starch imports growing at 20% per annum over the last ten years for food processing & biotech companies amounting to 207,000 tons valued at RM217 million in 2009.
- Diversified high-end products e.g. Amino acid (L. Methionine for feed supplement), biopolymer, caramel, maltodextrin, ethanol and MSG.
- Production of amino acid as protein supplement will reduce the feed cost in Malaysia (poultry & aquaculture).
- Project linked and support private investment in Kerteh Polymer Park as source of feedstock (investment worth of RM1.5 Billion).
- Project will generate green energy such as biogas production from waste produced in primary processing (starch).

Development of Cashew Nut Cluster

- Project will benefit large number of smallholders as sensitive farmers and processors.
- Availability of large area for Cashew Plantations in East Coast for commercial planting.
- Potential involvement with existing plantation player in East Coast such as Felda, Fonek, Rantei and State-owned Plantation Companies to maximize their potential to plant Cashew.
- Reforestation fromCashew processing waste as raw for feed cashew benefit livestock industry in East Coast such as Dairy Co-operative in Muadzam, Kuala Besar and Tawau as well as Goat & Sheep Cluster in Pulau, Kuala Besar and Sabah Sela.
- Opportunities to increase utilisation on the land in East Coast.

Goat & Sheep business could generate multiple benefit i.e. meat, hide and organic fertiliser, genetic material which have a huge demand in East Coast.
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Social Entrepreneurship

- Although, social entrepreneurship was initially defined as a process of pursuing innovative solutions to social problems (Thompson, 2002), however, the process provides a wide business opportunities.
- Basically, a social entrepreneur will identify the social problems and will try to solve the problem which will create benefits to the society. In solving the problem, social entrepreneurs will harness the entrepreneurship skills.
- Research activities at Universities – source of knowledge and know how for the society to manage their local agroresources for the food industries.
- The society (specifically the agrarian community) will be the source of raw materials as raw materials for the existing food industries and the development of new products.

Mas Production of Agro Resources Important Consideration: Environment

Agricultural wastes – global problem

Environmental Impact

Recycling of wastes

Disadvantages (cost intensive, unsafe, requires treatment, high energy requirement, environmentally)

Biological method (Value added for Economic development)

Community and Local Food Resources

- Working together for community change
- Demand for local food in rural communities is growing sustainable local food systems need to have strong community support to build and maintain the infrastructure needed to bring food from farm to fork.
- Resources to support rural communities just beginning to build their community food systems as as those whose local food systems are already strong. Resources are intended for farmers and producers, community organizations, and extension educators but may interest anyone in community and local foods.
some potential products for commercialization

Industrial agro-biotech: Enzyme production via SSF

Enzymatic improvement of PKC as animal feeds

Fermentation

Production of yeast extract powder as food ingredient

Advantages of the fermentation in controlled prototype system:
1. Capability of controlling fermentation process parameters
2. Shorter fermentation time from 8 to 20 months
3. High-quality and nontoxic end-products
4. Process does not affect nutritional and sensory qualities of products
5. Potential for industrial scale of fermentation products
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Basic components of biotech/agribusiness

a. People
- Motivated people, with commitment, skill and knowledge
- Driving entrepreneur is often a founding scientist with a good idea
- Successful scientific entrepreneurs

b. Attitudes and culture
- Academic sciences focus on subject, commercial science on object
- Commercial science (developing science and state of the art equipment)
- Real opportunity for career development and financial gain from inventions

c. Strategy (strategic questions)
- Company’s specific aim
- First product based on new science driven product
- Development program: skills and fund
- Company competitive advantage
Do not confuse “strategy” and “mission statement

Competitive advantage

You do something better than your competitors – Excellence
1. You own the intellectual property of products – powerful argument patent an idea, process or invention
2. Equip with necessary tools – Eg. Cell lines, gene clones or even production equipment (a good tool one that inherently cannot be duplicated)
3. Skills – powerful competitive weapon (intellectual capital)
4. Resources or financial capability of the company
5. First to do it – opportunity and set a company to exploit it
6. Competitive intelligence – future perspective

Investment in Agro-biotechnology business

- Put agribusiness ideas to be realized – investment (investors)
- Different type of investors depending on the stage of the company
- Investors (not only as a source of money) but help with issues such as employment contracts, location, funding for expensive equipment, securing intellectual property and discussion with related parties.

Seed funding
- Develop idea to company
- To acquire key patents, create corporate entity, plan business plan, hiring expertise/professional

Private Funding
- Product development

Product vs service vs technology

A key aspect of your strategy is how your company is going to make money

Goals:
1. Product company (invent, develop, sell or licence products)
2. Tools company (develop tools or technologies for others to develop products (biotech – technology platforms, eg. genomics or combinatorial chemistry)
3. Solution providers – Integration of tools and merger an acquisition of companies

Success
Define criteria for success, commercial goals, shape strategy

Criteria:
1. Achievement of milestones
2. First product in Phase II clinical trials
3. Signing a major collaboration with a renowned pharmaceutical company
4. Gain initial investor an Internal Rate of Return (IRR) of > 10% (measure of financial success)
5. Profitable based on sales of products

The business plan

Tactical planning carried out by a team to bring scientific, product development, business and financial skills
- Identify science that can go to business

Considerations:
1. What, who and where – science can do, manage
2. Who will own the intellectual property?
3. Who will manage the development programme?
4. What are the key milestones?
5. Identify company competitive advantage
6. Financial status and funding
7. Market potential
8. What happen if it doesn’t work?

Nature of successful agribusiness: Important requisites

1. Clear objectives: objectives forethought should be realistic and clearly defined, objectives are destination points for an agribusiness
2. Planning: pre-determined line of action, Planning is a proposal based on past experience and present trends for future actions (analysis of problems and finding solutions)
3. Sound organization: harmonies combination of manpower, machine material, money management etc. (organization – systematic combination of various related parts for achieving defined objectives in effective manner)
4. Research: “produce what the consumer wants” – market research (method for production, improving quality of products and product development)
5. Finance: agribusiness should estimate financial requirement and management for the enterprise
6. Proper plant location, layout and size: availability of infrastructure-facilities, availability of inputs, skill labour and market distant

CONCLUSION

- Malaise/intolerant, primarily agriculture-based economy (conventional agriculture)
- Agro-biotechnology: knowledge-based economy
- Revolutionize agriculture: commercial and export oriented agribusiness
- High productivity for local and global markets
- Private sector involvement – joint venture to give impacts to socio-economy of the population
- Employment opportunities, building economy base for better standard of living
- Impacts on food processing, horticulture, seed business etc.
- Constraints: land use for agriculture, poor cold storage, downstream facilities, transport
- Enhanced farmer-industry cooperation and contract farming system
- Establishment of agri-industrial complexes and facilities, cold storage and infrastructure amenities, information technology and agro-climatic and agribusiness centres.

Thank you
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