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Balanced Vertically Integrated Sustainability Business Model for Reducing Hunger and Income-Poverty in the Shortest Time Possible

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Abstract

This multi-part paper is an outcome of research in sustainability engineering and the subject of on-going research toward sustainability management systems, sustainable development control improvement, execution effectiveness enhancement, and concept demonstration in Africa. This part of the paper is based on a mixture of hard enterprise *meta* data analysis and subjective opinion. Our efforts have been directed towards a comprehensive and holistic sustainable development approach, a Sectoral Balanced Vertically Integrated Economy-Transformation-Enterprises (SBVI-ETE). The purpose of this paper is threefold. First, to prompt discussions and sharing of ideas and experiences on SBVI-ETE along with Entrepreneurial Practices (EP) and Participatory Action Research and Learning (PARL) methods.

Second, to urge research and demonstration on SBVI-ETE directed at sustainable development and poverty alleviation in sub-Saharan Africa. And third, to suggest that PARL along with EP (particularly value networking) is an approach that enables credible sustainable development research outcomes deliverable to the communities and industries by academia in a highly relevant manner. Hence, this paper defines holistic sustainable development; describes comprehensive and holistic sustainable development approach, and a university-supported SBVI-ETE-based solution to poverty; identifies potential key partners; presents a SBVI-ETE sustainability business model comprising of a portfolio of sustainable development initiatives along with associating business unit competitive strategy; and presents expected outputs and outcomes.

Introduction

Poverty problem-solving approaches are global continual processes in which every stakeholder must wholeheartedly participate if the Millennium Development Goals are to be timely achieved and sustained. The challenges fundamental to poverty problem-solving approaches are complex, enormous and dynamic. They are also embedded in *culture*, *environment*, *resources* and *structure* contexts. To date, solutions to poverty have included macroeconomic structural adjustment/ stabilization, environmental

improvements and microeconomic enterprises creation and/or strengthening. Used independently, experience to date casts doubt on the ability of anyone of these solutions to attaining and sustaining Sustainable Development (SD) and poverty reduction. While macroeconomic structural adjustment and environmental improvements have marginal track records, micro-economic enterprise-based solutions are yet to be done on a massive-enough-scale to have widespread effects. Also, they are complicated by the inability to define an "optimal mix" of the organization/management aspects that will enable the attainment and maintenance of sustainable progress. Such "mix," in terms of organizational attributes, includes *culture* (e.g., values and vision), *environment* (e.g., markets and policies), *structure* (e.g., strategy and regulation) and *resources* (e.g., capital and technology).

This means there is no blueprint for sustainable progress or high performance. Nevertheless, logically there is a minimum attributes mix and performance requirement that would reduce income-poverty in the shortest time possible. Odeyale and Kostoff (1994) have examined and proposed the relationship between the attributes listed above with respect to performance. In order to 1) specify development initiatives' objectives, outputs and outcomes; 2) develop policies, programs, and plans; and 3) identify resources to implement the plans, achieve and sustain set outcomes, a holistic or systems approach may be necessary and required. Also required may be university-supported Sectoral Balanced Vertically Integrated Economy-Transformation-Enterprises (SBVI-ETE) along with Entrepreneurial Practices (EP) and Participatory Action Research and Learning (PARL) methods. The aim of this paper is not an attempt to provide a blueprint for enterprise-based solutions to poverty, rather, it is to trigger 1) discussions and sharing of ideas and experiences on the hypothesis[1]: A development strategy that results in sustainable development and poverty reduction in the shortest time possible adapts SBVI-ETE along with EP and PARL methods; 2) urge research and demonstration on SBVI-ETE directed at poverty alleviation; and 3) suggest that EP along with PARL is an approach that enables obtaining credible SD research outcomes. The next paper will deal with sustainability management theoretical model development.

Holistic Sustainable Development

Sociology professors are the "makers" of social changes innovators, instigators and social entrepreneurs in the public and private sectors. These "transformer-creators" are under pressure particularly in resource-rich yet abjectly poor sub-Saharan Africa, to deliver development initiatives relevant to the needs of the community and industry, including birthing initiatives that lead to SD and poverty alleviation.

[1] For a clear presentation and understanding of this hypothesis, Cassava Industrialization in Nigeria (CIN) will be used herein as an example for the SBVI-ETE approach. CIN is a presidential initiative seeking to generate US$5 billion in export revenue annually. Using this example is done in response to the call for "…an efficient and well-integrated production and marketing system, to assure a steady supply of cassava products of stable, high quality standards and appropriate price, and specific properties required by domestic industries and export markets." by the Director, FAO Plant Production and Protection Division; and in anticipation of development strategy studies and SD approach demonstrations in Nigeria, in the immediate future and beyond. Reported data from the feasibility studies commissioned by the Federal Government of Nigeria to enhance the Nigeria Cassava Industry are herein used.

However, many appear to be ignoring this urgent call, preferring instead to concentrate on research that is not directly relevant to the needs of the community and industry to satisfy their publication requirements. So, Africa's current economic, environmental and social conditions could be argued as evidences of the irrelevancy of their academic research and research methodologies with respect to SD. The term SD has been widely used in business, environmental, scientific, and social development and growth publications since it was first defined in the Bruntland Commission's *Our Common Future* in 1987. SD in that context "seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future". The Brundtland Commission's key concepts for sustainability include:

- Today's needs should not [compromise] the ability of future generations to meet their needs.
- A direct link exists between the economy and environment.
- The needs of the poor in all nations must be met.
- In order for our environment to be protected, the economic conditions of the world's poor must be improved.
- In all our actions, we must consider the impact upon future generations.

SD promotes citizen engagement by supporting civic proactive actions and local self-reliance. Through collaboration, SD sets common values and shared goals by integrating sustainable economic development, equity, and environment protection into its activities. In the light of this value-integration, and the fact that economies typically develop by shifting resources from agricultural, mining and oil (primary sector) to manufacturing (secondary sector), and eventually into the services (tertiary sector), holistic SD ($_{h}$SD) is herein defined as a sectoral balanced vertical integration of interdependent enterprises that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. For any integrated development initiative, e.g., the CIN example, the interdependent economy-transformation-projects, graphically depicted with feedback loops in Figure 1, may involve all economy sectors and many industrial sectors. The industrial sectors may include agricultural, light industry (e.g., agro-food and textile), heavy industry (e.g., iron & steel, machine-building, and machine tools), infrastructure (e.g., electric power and telecommunication), high technology (e.g., electronic and information/ knowledge systems), and services (e.g., financial institutions, markets development and customs operations). Vertical integration is a method of avoiding hold-up problems. Thus, the SBVI-ETE approach is a learning- and partnership-based approach designed to reduce the *costs* and *time* of development processes, and ensure the *sustainability* of the development processes and resulting outcomes.

Comprehensive and Holistic Sustainable Development Approach

The SD problem of the poor is an inclusive problem whose solutions require stakeholders' participation at all levels. On the state level, solutions to poverty may include a better educational system, work-force training, economic development efforts, and lending a helping hand to less fortunate neighbors. On the national/international level, currently utilized approaches include:

- Macroeconomic structural adjustment/stabilization: debt relief, increased aid, new trade rules, market/trade liberalization.
- Growth-fostering Environment: good governance, privatization, deregulation, transparency, property protections.
- Microeconomic enterprise creation: micro-finance, Bottom of the Pyramid (BOP), SD.

Again, used independently, experience to date casts doubt on the ability of anyone of the listed solutions to attaining and sustaining poverty reduction. The challenges then are the design, implementation and maintenance of a comprehensive and holistic SD approach that captures the synergies among and between economy sector transformation projects. For an industrial sector, or fractions thereof, this would involve the absorption of several initiatives involving all the aspects of shifting resources from the primary economy sector to the secondary economy sector, and eventually into the tertiary economy sector into a single comprehensive and holistic SD Initiative (SDI) portfolio. At the heart of such an approach is the necessary engagement of local, national and international stakeholders in competitiveness partnership depicted in Figure 2.

Undoubtedly, the challenges of competitiveness partnership may be overwhelming with steps including initiative identification and understanding; participant identification and recruitment; convening (particularly securing funds and identifying an effective convener); process design; initiative definition, description and analysis; identification and evaluation of alternative solutions; decision-making and problem-solving; approval of agreements; implementation, evaluation and maintenance; and continual improvement. Nevertheless, it is feasible. A similar framework is being used by the UNDP's Growing Sustainable Business (GSB) for Poverty Reduction Programme to introduce GSB in Ethiopia, Tanzania, Madagascar, Kenya, Zambia, El Salvador, and Serbia & Montenegro. The GSB links "private sector investments and local development priorities through the development of new, cutting edge business models that engage a range of local partners. The GSB facilitates 'enterprise solutions', where profit and incentives justify real investment and where financial sustainability is embedded in the design." However, usually, the engaged "range of local partners" are involved in non-interdependent enterprises. An example is the Global Compact and Growing Sustainable Business Initiative in Kenya which is comprised of three business cases including pyrethrum production, nutritional drink, and village phone; without the strengthening of relevant *Infrastructure* enterprises.

That is, they are "stove-piped" enterprises development, yet related by some shared-element requiring some form of low-level relationship. The substance of this shared-element may vary widely from situation to interest to values to "lives." In the case of the GSB initiatives, the participants may have been brought together by a situation, an interest, or values at best, with some form of relationship. But, the "life" or sustainability of one enterprise in the implemented set usually may not depend on the other(s). Also, effectively and efficiently managing the enterprises in the set individually may not necessarily mean that "fixing problems" in one economy or industrial sector will not create problems in the same or other

sectors. But if the whole as well as the parts are focused upon, as in balanced vertical integration or strategic management, then chances are the benefits of SD and knowledge and learning will be maximized. In other words, if the enterprises in GSB's range of projects were interdependent, i.e., balanced and vertically integrated, then the desired results and impacts would be rapidly maximized and more widespread.

More specific to the SBVI-ETE approach using the CIN example, additional challenges may include:

- Limited capitalization, small size of land-holdings, declining soil fertility and unsustainable land use practices leading to low productivity.
- Youth migration to major cities and farmers aging, leading to land and farming occupation abandonment.
- Lack of basic business, technical and marketing skills, availability of communications, power and transportation, and storage and processing problems leading to harvest spoilage.
- High cost of technology transfer, lack of human and physical capital investment, lack of market access and lack of export production (due to lack of capital and technology) leading to persisting hunger and poverty.

The complexity, comprehensiveness and resource requirements of the SBVI-ETE approach necessitate the support of indigenous universities, collaborative actions of stakeholders, development and maintenance of growth-fostering environment by the government, and use of PARL methods along with PE. These complexity and comprehensiveness are summarized in the *Supply-Chain Structure* sub-sections of the SBVI-Sustainability Business Model section below.

University-Supported Sbvi-Ete Approach to Sd and Poverty Alleviation

Education has an essential role to play in empowering and motivating entities to participate in SD and poverty alleviation. It has been described as "the greatest resource" in this endeavor. The Brundtland Report (1987)[4] argues that "the world's teachers ... have a crucial role to play" in helping to bring about the "the extensive social changes" needed with respect to SD and poverty alleviation through social entrepreneurship. Furthermore, according to UNCED (1992), "Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues.... It is critical for achieving environmental and ethical awareness, values and attitudes, skills and [behavior] consistent with sustainable development and for effective public participation in decision-making." Further still, D'Urso (1990) describes the environmental crisis and educational responses to it as "curiously neglected by socio-cultural theorists of education" and urges them to strike "beyond the bounds of current educational concerns" to establish environmental education as "a new and vitally important discourse".

Yet, for far too long, tertiary institutions' developed capacity, network of linkages and partnerships remain unutilized or underutilized for SD and poverty alleviation. And, Micro, Small and Medium Enterprises

(MSMEs) have business development services needs including: 1) basic business and technical skills, 2) access to improved technology, 3) information/knowledge map (market, prices, technical and legal, etc), 4) access to market, and 5) service delivery professional and institutional capacity building. All these needs (and more) can be met through the mechanisms of a tertiary institution. To foster meeting these needs and addressing associated issues, the implementation and maintenance of a university-supported SBVI-ETE approach is herein proposed. Specifically, it will foster meeting the needs of providing MSMEs business-development services to 1) strengthen the sustainable growth paths of resource-rich African countries and ensure that the growth is distributed equitably; 2) induce horizontal and vertical economic diversifications; 3) support infrastructure developments and/or improvements; and 4) strengthen SDI's objectives, particularly, bringing developed nations' extension services and micro-enterprise skills and knowledge to:

- Participating tertiary institutions
- Jobless university/polytechnic graduates
- Under-skilled and unemployed adults
- Other community members lacking the adequate resources needed to secure and maintain skilled jobs with which to support themselves and their families
- Local, state and federal agencies

It will also give participating tertiary institutions the opportunity of earning attractive revenue as equity-holders to build up their capital base. Few universities in resource-rich African nations, if any, are fully and genuinely exploring this social entrepreneurship approach. With the notions of value creation taken from Jean Baptiste Say, innovation and change agents from Joseph Schumpeter, pursuit of opportunity from Peter Drucker, and resourcefulness from Howard Stevenson, Gregory Dees (2001) defines social entrepreneurs as playing the role of change agents in the social sector by:

- Adopting a mission to create and sustain social value (not just private value),
- Recognizing and relentlessly pursuing new opportunities to serve that mission,
- Engaging in a process of continuous innovation, adaptation, and learning,
- Acting boldly without being limited by resources currently in hand, and
- Exhibiting heightened accountability to the constituencies served and for the outcomes created.

This definition fits a professional or an institution. In fact, according to Jochen Ropke (1998), 'an entrepreneurial university can mean three things:

1. The university itself, as an organization, becomes entrepreneurial.
2. The members of the university – faculty, students, and employees – are turning themselves somehow into entrepreneurs.

3. The interaction of the university with the environment, the “structural coupling” between university and region, follows entrepreneurial patterns.’

“The university is one of the world’s most durable institutions. It must pass now a complex new test [particularly in Africa]. The new quality of international competition changes the role and function of universities and research systems dramatically. If these [universities] do not become agents of innovation, entrepreneurial universities, they hamper regional and national development and international competitiveness.” Whether a professional or an institution, Nigeria, and other sub-Saharan African nations, needs entrepreneurs and business leaders to solve its development and poverty alleviation challenges. However, the “creation of an entrepreneurial culture in a university environment [to train these leaders] is a complex task that requires the efforts of many dedicated individuals. These individuals are located in industry, academe, and government, and often are only loosely coordinated in their activities with one another.” A demonstrable university-supported SDI portfolio, that will bring these individuals together in a competitiveness partnership, is presented under the SBVI Sustainability Business Model section below.

Potential Key Partners

- World Bank is herein used to refer to any of the lending or insurance arms of the World Bank group, including the International Bank Reconstruction and Development, the International Development Association, the International Finance Corporation, and the Multilateral Investment Guarantee Agency.
- Federal Ministry of Finance/Nigerian Investment Promotion Council
- Olabisi Onabanjo University, Ago-Iwoye
- Obafemi Awolowo University, Ile-Ife
- The University of Ibadan, Ibadan
- Federal University of Technology, Akure
- Yaba College of Technology, Lagos
- Federal Polytechnic, Ilaro
- Federal Polytechnic, Ede
- Ibadan Polytechnic, Ibadan
- Crown Agents USA, Washington, DC USA
- Sustainability Engineering & Research, Inc, Pasadena, MD USA
- Learning Right Technologies, San Jose, CA USA
- United Nations Development Programme, Abuja, Nigeria
- National Association of Small & Medium Enterprise in Nigeria
- International Institute of Tropical Agriculture
- Administrative & Management Company Services

- The Nigerian Economic Summit Group Ltd/Gte

Sectoral Balanced Vertically Integrated Sustainability Business Model

Business model is the method and process of doing business. As indicated earlier, the business models supported by the GSB Programme are models where the goals and objectives of a development initiative are linked to business goals and used as missions by several "stove-piped" businesses/projects. The SBVI-ETE approach, also supportable by the GSB Programme, is a business model where the goals and objectives of a SDI portfolio are linked to entrepreneurial goals and used as missions for a set of interdependent enterprises. All enterprises need a variety of inputs in the form of appropriate raw materials and services to attain maximum performance potential – enterprises can no longer compete solely as individual entities. A non-optimal mix of inputs may result in non-attainment of the maximum performance potential. Unlike in the "stove-piped" projects-model, in the SBVI-ETE (interdependent) business model, the product(s) of one business case is/are the raw material(s) or required service(s) of the subsequent business cases. Thus, the SBVI-ETE business model is comprised of a mixture of networked supply- and value-chains; while the "stove-piped" business models are comprised of a collection of isolated value-chains.

Again, this is not an attempt to provide a blueprint for SD and poverty alleviation. Nevertheless, a SBVI-ETE-based SDI portfolio example is summarized below using seven business model components to exemplify what a GSB-supported SDI portfolio can look like. Among the Strategic Business Units (SBUs) within the same SDI portfolio, the commonality and similarity of the business model components would make the SBVI-ETE an approach that 1) enables credible SD research and demonstration outcomes deliverable to the community and industry by academia in a highly relevant manner, and 2) is a learning- and partnership-based approach that reduces the *costs* and *time* of development processes, and ensures the *sustainability* of the development processes and resulting outcomes.

The SDI portfolio below features ten interdependent cassava-related economy and industrial sectors SBUs. It may be necessary to create new SBUs or companies. However, since this SDI is not on a corporate level but on a sectoral/national level, the preference is that the capacity of existing SBUs/companies (MSMEs) is upgraded and strengthened, then utilized for the required SDI portfolio activities. A SBU may be an entire company or a division of a large corporation. As long as it formulates its own business level strategy and has separate goals and objectives from the parent company. It should be noted that in this SDI portfolio example, all the ten SBUs are directly related (balanced, and vertically integrated) and with the advantage of MSMEs capacity building, strengthening and utilization through PARL along with PE. For this portfolio, the most important constraints to productivity and (corporate and national level) competitiveness in Nigeria are electricity, computer, telecommunication, finance and customs services, see Figure 3. These are collectively called *Infrastructure*-SBUs.

“The United Nations and other development partners have recognized that, without large-scale, profit-driven projects, widespread reduction of poverty cannot be achieved”. If large-scale enterprise-solutions to poverty were to produce sustainable positive outcomes, the applied method must be holistic or systems approach in nature, such as the SBVI-ETE approach herein presented. Based on a logical sequence of business process progression, the SBUs comprising the SBVI-ETE-based SDI portfolio example, i.e., the cassava economy SBVI sustainability business model, are summarized as follows:

1. Micro, Small & Medium Enterprise (MSME) Development Service Center (EDSC) SDI Unit to provide business development/incubation services, including comprehensive extension services and value networking assistance, to MSMEs.
    a. Value Proposition: In all the economy sectors and across Nigeria, MSMEs are confronted with challenges including low productivity, lack of access to capital and technology, poor investment climate, weak infrastructures, and lack of access to business development services. These and other factors lead to low competitiveness of MSMEs. A sustainable solution to these problems is the establishment and operation of performance-based EDSCs supported by a consortium of indigenous tertiary institutions. These EDSCs will support MSMEs with service-fees based on a percentage of each served MSMEs’ annual revenue, say 10%, for a period of four-five years. The value of this solution to the MSMEs will be the services procured and serviced through PARL methods including business/technical assistance, referral information, project assistance, workforce development, incentive management, regulatory information and compliance assistance, proprietary assistance, credit and market access, and property assistance.
    b. Market Segment: Nigeria has unsatisfied markets for business development / incubation services as listed above. With respect to SBVI-ETE, the target market segments will be the CIN dependent-MSMEs in all economy sectors within participating states or zones. See Figure 1.
    c. Value-Chain Structure: This SBU’s position in the value-chain structure is that of support activities concerning individual, institutional and MSMEs capacity-building, strengthening, and utilization relating to procurement, human resource management, technology development, and infrastructure (e.g., finance, planning, quality control, general senior management). It will use PARL methods for continual learning and improvement. Part of the values created by this SBU in the value-chain structure will be captured through publications, lessons learned and earned revenue or as equity-holder in participating MSMEs.
    d. Supply-Chain Structure: With respect to the university-supported SBVI-ETE-based SDI portfolio management, SBU-1 is the “input-layer” of the supply/value chain structures. See Figure 3. The outputs of the SBU-1 will impact every SBU in the portfolio if a (*culture*, *environment*, *resources*, and *structure*) trigger level is reached for respective

SBU. Uniquely, its outputs contribute to the inputs of the *Infrastructure*-SBUs (network layer-2) and *Sectoral*-SBUs (network layer-3). The network relationship and PARL methods will allow the EDSC to have access to current, relevant and reliable information for effective and efficient customer service and continual improvement.

e. Revenue Generation & Margins: Revenues will be generated through fee-based MSMEs support, equity-holding, and/or intellectual property lease. It is expected that the costs of service provision will be minimal because students, staff and professors of participating tertiary institutions will be the professional and/or institutional service-providers. Since the salaries of the service-providers will be high enough to ensure motivated, well managed and well paid workforce, the profit margins will be high, say, in the 50s percentage or higher.

f. Position in the Value Network: At present, no significant business development/ incubation services value network exist in Nigeria. There are no program and/or professional standards to evaluate subject matters. Nevertheless, since this SBU will be supported by a consortium of tertiary institutions, resources and opportunity for networking and strategic alliance will be available. On the national level, membership in the competitiveness partnership will enable large-scale businesses offering "standard" services; thus lowering the costs of service provision. This SBU will be able to offer its customers great value both by means of low prices and benefits. Therefore, there will be no competitors.

g. Competitive Strategy: To develop a sustainable competitive advantage, in addition to being a member of the competitiveness partnership, this SBU will use the consortium's research faculty to continually identify MSMEs' reigning issues, problems, constraints, capacities and opportunities pertinent to the states or zones in focus. The competitive advantage will be in a broad range of market and industry. The scope of this SBU will be broad while the degree of service differentiation will be low. Therefore, the *cost leadership* competitive strategy will be adapted. The participating MSMEs will have a competitive advantage of PARL-based matching of training programs with capacity/skills needs and requirements of industry over non-participating MSMEs.

2. Electric Power SDI Unit – renewable energy preferred: mini-hydroelectric power using latest technology for power generation, transmission and distribution. The output of this SBU will be the source of electric power for all other SBUs in this SDI portfolio.

    a. Value Proposition: Electricity is required for economic growth and development. A significant portion of rural Nigeria still lacks electricity. Even in urban areas where service is available, supply is unreliable and poor in quality. A sustainable solution to this problem is mini-hydroelectric power generation, transmission and distribution supported by a consortium of indigenous tertiary institutions. Service-fees will be based on electric

power usage by serviced MSMEs, government (contract sales), and residential customers. The value of this solution to its customers will include high productivity and increased capacity acquired through PARL implementation, monitoring and evaluation. The value to the community will include positive impact on education, health and welfare.

b. Market Segment: The target market segments will include farmers, government agencies, householders, industrial, and commercial users within participating states or zones.
c. Value-Chain Structure: This SBU's position in the value-chain structure is that of primary activities including electricity generation and distribution. This SBU will use PARL methods for continual learning and improvement. Part of the values created by this SBU will be captured through revenue earnings and PARL.
d. Supply-Chain Structure: With respect to the university-supported SBVI-ETE-based SDI portfolio management, SBU-2 is electric power supply of the *Infrastructure*-SBUs (Layer-2) of the supply chain structure. The inputs of the SBU-2 are from SBU-1, other *Infrastructure*-SBUs and itself. Its outputs contribute to the inputs of the *Sectoral*-SBUs layer (Layer-3) of the supply chain structure. Through the PARL methods and the network relationship including collaborative planning with "inputs providing" and "outputs receiving" SBUs, this SBU will have access to current, relevant and reliable information for effective and efficient customer service and continual improvement.
e. Revenue Generation & Margins: Revenues will be generated through electric power supply to farmers, government agencies, householders, industrial, and commercial users. It is expected that the costs of generation and service provision will be minimal because students, staff and professors of participating tertiary institutions will represent a significant fraction of this SBU's human resource. Since the salaries of the employees will be high enough to ensure motivated, well managed and well paid workforce, the profit margins will be high, say, in the 40s percentage or higher.
f. Position in the Value Network: This SBU will be in the position to provide a steady supply of stable, high quality and appropriately priced electric power required for SD and livelihood improvements. Being supported by a consortium of tertiary institutions, resources and opportunity for low costs of production will be available; thus there will be no competitors. Because of the availability of necessary information/knowledge and skills, the SBU will be able to deliver more value to its markets and community.
g. Competitive Strategy: In a SBVI-ETE framework, this SBU will be a member of the competitiveness partnership for the SDI portfolio. Additionally, it will use the consortium's research faculty to continually identify electric power generation, transmission and distribution reigning issues, problems, constraints, capacities and opportunities pertinent to the three economy sectors and the states or zones in focus. The competitive advantage will be in a broad range of market and industry. The scope of this SBU will be

narrow while the degree of service differentiation will be low. Therefore, the *cost focus* competitive strategy will be adapted. Participating MSMEs will have a competitive advantage of PARL-based capacity building, strengthening and utilization, and market-reach over non-participation MSMEs.

3. Computers & Accessories SDI Unit – medium- to high-end performance for the academe, engineers/scientists, research and management professionals. Functionality of the computer, preferably dockable laptop, would include finger-print/signature-pad and Wi-Fi-enabled.
    a. Value Proposition: Nigeria has a low level of computer usage. This makes communication and rapid data/information exchange difficult, if not impossible. To advance information technology and computerization capabilities, sustainable solutions will include capacity building for students and professionals and participating computer supply/services firms. These firms will be supported by the EDSCs with the service-fees based on a percentage of the computer firms' annual revenue. The value of this solution to the students, professionals and MSMEs will include high productivity and capacity strengthening acquired through PARL implementation, monitoring and evaluation.
    b. Market Segment: The target market segments will include the MSMEs, academe and government agencies within participating states or zones.
    c. Value-Chain Structure: This SBU's position in the value-chain structure is that of primary activities including computer manufacturing, marketing and sales, and service. This SBU will use PARL methods for capacity strengthening and continual learning and improvement. Part of the values created by this SBU will be captured through revenue earnings and PARL.
    d. Supply-Chain Structure: With respect to the university-supported SBVI-ETE-based SDI portfolio management, SBU-3 is computerization unit of the *Infrastructure*-SBUs (Layer-2) of the supply chain structure. The inputs of the SBU-3 are from SBU-1, other *Infrastructure*-SBUs and itself. Its outputs contribute to the inputs of the *Sectoral*-SBUs layer (Layer-3) of the supply chain structure. Through the PARL methods and the network relationship including collaborative planning with inputs providing and outputs receiving SBUs, this SBU will have access to current, relevant and reliable information for effective and efficient customer service and continual improvement.
    e. Revenue Generation & Margins: Revenues will be generated through computer and accessories supply to the MSMEs, students, professors/researchers and government agencies. It is expected that the costs of production and service provision will be minimal because students, staff and professors will represent a significant fraction of this SBU's human resource. Since the salary of the employees will be high enough to ensure motivated, well managed and well paid workforce, the profit margins will be high, say, in the 40s percentage or higher.

f. Position in the Value Network: This SBU will be in the position to provide medium- to high-end wireless computer required for SD related rapid communication and data/ information exchange. Being supported by a consortium of tertiary institutions, resources and opportunity for low costs of production and distribution will be available. Therefore, there will be no competitors. Because of the availability of necessary information/knowledge and skills, this SBU will be able to deliver more value to its markets and community.

g. Competitive Strategy: As a SBU in the SDI portfolio, this SBU will be a member of the competitiveness partnership. Additionally, it will use the consortium's research faculty to continually identify computer, data management systems and communication reigning issues, problems, constraints, capacities and opportunities pertinent to the three economy sectors. The competitive advantage will be in a broad range of market and industry. The scope of this SBU will be narrow while the degree of product differentiation will be low. Therefore, the *cost focus* competitive strategy will be adapted. Participating companies will have over non-participating companies a competitive advantage of PARL-based capacity building, strengthening and utilization, and increased in productivity and income, thus income-poverty alleviation for their employees.

4. Telecommunication SDI Unit – wireless mesh network firms capable of VoIP and broadband Internet access that will provide both phone and Internet services to the stakeholders of the SDI portfolio, and eventually to government agencies, farmers, householders, industrial and commercial users.

    a. Value Proposition: In Nigeria, Information and Communication Technologies (ICT) are confronted with constraints including lack of infrastructure, absence of ICT policy or lack of its implementation, few trained or skilled ICT personnel, poor knowledge of ICT at all levels from suppliers to users, as well as financial constraints. Thus, there remains a "digital divide" excluding the nation from the benefits of ICT as an enabling tool. Sustainable solutions to these problems will include capacity building for students and professionals and comprehensive capacity building and strengthening to existing wireless Internet Service Providers (ISPs). These firms will be supported by the EDSCs with the service-fees based on a percentage of the ISPs' annual revenue. The value of this solution will include high productivity in sectors including banking, air travel, software development, health care provision, rapid communication, information/knowledge exchange, research, distance learning, and teacher education.

    b. Market Segment: The target market segments will include the MSMEs, academe and government agencies within participating states or zones.

    c. Value-Chain Structure: This SBU's position in the value-chain structure is that of support activities concerning communication and data/information access. This SBU will use

PARL methods for continual learning and improvement. Part of the values created by this SBU will be captured through revenue earnings and capacity building and strengthening.

d. Supply-Chain Structure: With respect to the university-supported SBVI-ETE-based SDI portfolio, SBU-4 is the telecommunication unit of the *Infrastructure*-SBUs (Layer-2) of the supply chain structure. The inputs of the SBU-4 are from SBU-1, other *Infrastructure*-SBUs and itself. Its outputs contribute to the inputs of the *Sectoral*-SBUs layer (Layer-3) of the supply chain structure. Through the PARL methods and the network relationship including collaborative planning with inputs providing and outputs receiving SBUs, this SBU will have access to current, relevant and reliable information for effective and efficient customer service and continual improvement.

e. Revenue Generation & Margins: Revenues will be generated through wireless ISP and telephone services provision to the MSMEs, students, professors/researchers and government agencies. It is expected that the costs of services provision will be minimal because students, staff and professors will represent a significant fraction of this SBU's human resource. Since the salaries of the employees will be high enough to ensure motivated, well managed and well paid workforce, the profit margins will be high, say, in the 50s percentage or higher.

f. Position in the Value Network: Currently in Nigeria, SD related data collection, rapid communication and data/information exchange are substandard. Since this SBU will be supported by a consortium of tertiary institutions, resources availability would result in low costs of services provision. Therefore, there will be no competitors. Because of the availability of necessary information/knowledge and skills, this SBU will be able to deliver more value to its markets and community.

g. Competitive Strategy: To develop a sustainable competitive advantage, in addition to membership of the competitiveness partnership, this SBU will use the consortium's research faculty to continually identify wireless Internet services and tele-communication reigning issues, problems, constraints, capacities and opportunities pertinent to the three economy sectors. The competitive advantage will be in a broad range of market and industry. The scope of this SBU will be broad while the degree of service differentiation will be high. Therefore, the *differentiation* competitive strategy will be adapted. Participating companies will have a competitive advantage of PARL-based capacity building, strengthening and utilization over non-participating companies.

5. Financial SDI Unit – institutions providing banking and non-banking services including commercial, savings & loan, cooperative, microfinance, credit, investment, development, finance and mortgage. Currently in Nigeria, finding financial institutions that take equity interest in enterprises is difficult, if not impossible.

a. Value Proposition: In Nigeria, the financial institutions are confronted with problems including fraudulent practices, weak institutional capacity, weak capital base, inconsistent policies and roles, monetary instability, substandard credit rating and business information services, lack of related education and training, and ill-motivated, ill-managed and underpaid workforce. A sustainable solution to these problems is the provision of comprehensive capacity building and strengthening to existing and participating financial institutions. Service-compensations will be based on equity agreement or loan-rate. The value of this solution to the customers will be the services procured and serviced through the PARL methods including banking and non-banking services.
b. Market Segment: The target market segments will be MSMEs in all the economy sectors within participating states or zones.
c. Value-Chain Structure: This SBU's position in the value-chain structure is that of support activities concerning banking and financial services. It will use PARL methods for continual learning and improvement. Part of the values created by this SBU in the value-chain structure will be captured through revenue earnings and capacity building and strengthening.
d. Supply-Chain Structure: With respect to the university-supported SBVI-ETE-based SDI portfolio, SBU-5 is the financial unit of the *Infrastructure*-SBUs (Layer-2) of the supply chain structure. The inputs of the SBU-5 are from SBU-1, other *Infrastructure*-SBUs and itself. Its outputs contribute to the inputs of the *Sectoral*-SBUs layer (Layer-3) of the supply chain structure. Through the PARL methods and the network relationship including collaborative planning with inputs providing and outputs receiving SBUs, this SBU will have access to current, relevant and reliable information for effective and efficient customer service and continual improvement.
e. Revenue Generation & Margins: Revenues will be generated through financial services provision to the MSMEs. It is expected that the costs of services provision will be minimal because students, staff and professors of participating tertiary institutions will represent a significant fraction of this SBU's human resource. Since the salaries of the employees will be high enough to ensure motivated, well managed and well paid workforce, the profit margins will be high, say, in the 50s percentage or higher.
f. Position in the Value Network: Currently in Nigeria, financial institutions related services are substandard to those of developed nations. This SBU will be in the position to provide development banking and non-banking financial services. Being supported by a consortium of tertiary institutions, resources and opportunity for low costs of services provision will be available. Therefore, there will be no competitors. Because of the availability of necessary information/knowledge and skills, this SBU will be able to deliver more value to its markets and community.

g. Competitive Strategy: To develop a sustainable competitive advantage, this SBU will use the consortium's research faculty to continually identify financial services reigning issues, problems, constraints, capacities and opportunities pertinent to the three economy sectors. The competitive advantage will be in a broad range of market and industry. The scope of this SBU will be broad while the degree of service differentiation will be low. Therefore, the *cost leadership* competitive strategy will be adapted. Participating financial institutions will have over non-participating institutions a competitive advantage of PARL-based capacity building, strengthening and utilization, and increased productivity.

6. Customs Services SDI Unit – Customs Modernization – using public-private partnership to foster the framework of standards of the World Customs Organization (WCO) to secure and facilitate global trade.
    a. Value Proposition: Weak and inefficient customs procedures have significant negative effects at both the national and corporate level. On the national level, the experienced problems may include smuggling, corruption, customs valuation and tax collection. On the corporate level, problems may include slow and unpredictable goods delivery and direct costs in terms of rent payments and the compliance with strenuous customs procedures. These challenges may lead to lost business opportunities and foreign investments. Sustainable solutions to these problems include customs modernization. Service-fees will be based on usage by serviced MSMEs. The value of this solution will be the services including referral information, project assistance, workforce development, regulatory information and coordination, and capacity building, strengthening and utilization.
    b. Market Segment: The target market segments will be MSMEs involved in import/ export activities in all economy sectors within participating states or zones.
    c. Value-Chain Structure: This SBU's position in the value-chain structure is that of corporate and national capacity-building, strengthening, and utilization. It will use PARL methods for continual learning and improvement. Part of the values created by this SBU will be captured through earned revenue.
    d. Supply Chain Structure: SBU-6 is the import/export activities of the *Infrastructure*-SBUs (Layer-2) of the supply chain structure. The inputs of the SBU-6 are from SBU-1, other *Infrastructure*-SBUs and itself. Its outputs contribute to the inputs of the *Sectoral*-SBUs layer (Layer-3) of the supply chain structure. Through the PARL methods and the network relationship including collaborative planning with "inputs providing" and "outputs receiving" SBUs, this SBU will have access to current, relevant and reliable information for effective and efficient customer service and continual improvement.
    e. Revenue Generation & Margins: Revenues will be generated through fee-based customs services support of MSMEs. It is expected that the costs of service provision will be

minimal because students, staff and professors will be the service providers. Since the salaries of the service providers will be high enough to ensure motivated, well managed and well paid workforce, the profit margins will be high, say, in the 40s percentage and higher.

f. Position in the Value Network: This SBU will be in the position of providing customs-friendly services to the MSMEs. Being supported by a consortium of tertiary institutions, resources, networking and strategic alliance opportunities are available that will lead to low costs of service provision, Therefore, there will be no competitors. In this position and in collaboration with public and private entities, the delivery of more value to the students, staff, professors and MSMEs will be significantly fostered.

g. Competitive Strategy: To develop a sustainable competitive advantage, this SBU will use the consortium's research faculty to continually identify customs services reigning issues, problems, constraints, capacities and opportunities pertinent to the states or zones in focus. The competitive advantage will be in a narrow range of market and industry. The scope of this SBU will be narrow while the degree of service differentiation will be low. Therefore, the *cost focus* competitive strategy will be adapted. Participating tertiary institutions will have over non-participating institutions a competitive advantage of PARL-based matching of training programs with capacity/skills needs and requirements of industry.

7. Cassava Production SDI Unit – cultivation of cassava by Smallholder Farmers (SFs) with a potential of becoming commercial cassava growers. This SBU will provide the raw material or source of services for other SBUs in the CIN SDI portfolio, and MSMEs in the region.
    a. Value Proposition: SFs are confronted with challenges including financially and technically inadequate extension services; high costs of agrochemicals, seeds and labor; inadequate information/knowledge dissemination; inadequate private sector marketing; aging farmer population and youth exodus; unsustainable land use practices; small size of land holdings; declining soil fertility; and inadequate export/ import regulations and their enforcement. Sustainable solutions to these problems include capacity building and strengthening for farmers, university extension services and financial institutions, and farm expansion comprehensive assistance. The value of these solutions will be consistent high quality and high volume cassava producing; and capacity strengthening and utilization through PARL implementation, monitoring and evaluation.
    b. Market Segment: SFs within participating states or zones.
    c. Value-Chain Structure: The position of this SBU in the value-chain structure is that of primary activities concerning consistent high quality and high volume cassava production. It will use PARL methods for continual learning and improvement. Part of the

values created by this SBU will be captured through revenue earnings and capacity building and strengthening.

d. Supply-Chain Structure: SBU-7 is the raw material source of the *Sectoral*-SBUs in Layer-3 of the supply-chain structure. It receives supporting inputs from all *Infrastructure*-SBUs (Layer-2) and the EDSC (Layer-1). Its outputs contribute to the inputs of SBUs 8 and 10, and to SDI performance evaluation node/layer. Through the PARL methods and the network relationship including collaborative planning with "inputs providing" and "outputs receiving" SBUs, this SBU will have access to current, relevant and reliable information for effective and efficient customer service and continual improvement.

e. Revenue Generation & Margins: Revenues will be generated through contract sales of cassava tubers, and cassava leaves and stems. It is expected that the costs of production will be minimal because farm technologies will be shared by SFs. Since 1) high-yielding cassava varieties will be used, 2) revenues will be through contract sales, and 3) the production costs, and expenses are expected to be low, the profit margins will be high, say, in the 60s percentage or higher.

f. Position in the Value Network: This BSU will be supported by the extension services of a consortium of tertiary institutions. Therefore, resources and opportunity for networking and strategic alliance will be readily available. This will put the SBU in the position to produce and supply consistent high quality and high volume cassava at the appropriate price and of specific properties required by the domestic industries and export markets. Thus, there will be no competitors. Because of the availability of necessary information/knowledge, and access to various resources, the SBU will be able to deliver more value to its markets and community.

g. Competitive Strategy: To develop a sustainable competitive advantage, this SBU will use the consortium's research faculty to continually identify cassava production and contract sourcing reigning issues, problems, constraints, capacities and opportunities pertinent to its industries. The competitive advantage will be in a narrow range of market and industry. The scope of this SBU will be narrow while the degree of service differentiation will be low. Therefore, the *cost focus* competitive strategy will be adapted. Participating smallholder cassava farmers will have a competitive advantage of PARL-based capacity building, strengthening and utilization, and increased in productivity and income, over non-participating farmers.

8. Cassava Sourcing SDI Unit – to provide sourcing and logistics management services to SBU-7 to ensure consistent supply of quality raw material, and prevent post-harvest losses.

    a. Value Proposition: Sourcing a reliable stream of good quality cassava roots is a challenge in Nigeria. Problems relating to cassava roots are serious deterrent to CIN. Sustainable solutions to these *fulfillment* problems include ownership of cassava farms

by processors, and the establishment and maintenance of strategic partnership with SFs, creating communication channels for production assistance, and critical information and operational improvements. Service-fees will be based on percent of delivered cassava by serviced SFs. The value of this solution to the SFs will include farm-size expansion, high productivity and "no" post-harvest losses, and to the processors, it will include consistent quality and supply of raw material; and for all, capacity building and strengthening through PARL implementation, monitoring and evaluation.

b. Market Segment: SFs within participating states or zones.

c. Value-Chain Structure: This SBU's position in the value-chain structure is that of support activities concerning procurement, i.e., sourcing and negotiating with cassava SFs. This SBU will use PARL methods for continual learning and improvement. Part of the values created by this SBU will be captured through revenue earnings and capacity building and strengthening.

d. Supply Chain Structure: SBU-8 is the procurement unit of the *Sectoral*-SBUs in Layer-3 of the supply-chain structure. It receives supporting inputs from all *Infrastructure*-SBUs (Layer-2), SBU-1 (Layer-1) and SBU-7 (Layer-3). Its outputs contribute to the inputs of SBU-10 and to SDI performance evaluation node/layer. Through the PARL methods and the network relationship including collaborative planning with "inputs providing" and "outputs receiving" SBUs, this SBU will have access to current, relevant and reliable information for effective and efficient customer service and continual improvement.

e. Revenue Generation & Margins: Revenues will be generated through cassava commercial scale production and quality control assistance to SFs. It is expected that the costs of service provision will be minimal because students, staff and professors will represent a significant fraction of this SBU's human resource. Since the earnings of the employees will be high enough to ensure motivated, well managed and well paid workforce, the profit margins will be high, say, in the 50s percentage or higher.

f. Position in the Value Network: Currently in Nigeria, there are no quality standards for cassava as an industrial raw material. This SBU will be in a position to ensure the production of quality and steady supply of cassava. Being supported by a consortium of tertiary institutions, resources and opportunity for low costs of procurement will be available. Therefore, there will be no competitors. Because of the availability of necessary information/knowledge and skills, this SBU will be able to deliver more value to its markets and community.

g. Competitive Strategy: To develop a sustainable competitive advantage, this SBU will use the consortium's research faculty to continually identify sourcing reigning issues, problems, constraints, capacities and opportunities pertinent to the cassava industrial and agribusiness sectors. The competitive advantage will be in a narrow range of market and industry. The scope of this SBU will be narrow while the degree of service

differentiation will be low. Therefore, the *cost focus* competitive strategy will be adapted. Participating hydro-electric power companies will have over non-participating companies a competitive advantage of PARL-based capacity building, strengthening and utilization, and increased in productivity and income, thus income-poverty alleviation for their employees.

9. Cassava Markets Developing SDI Unit – spotlight participating SFs and cassava processors, and aid them and supporting enterprises in reaching national, continental and international markets for the expansion and maintenance of trade markets.
    a. Value Proposition: Cassava is a marginalized crop because it is burdened with the stigma of being an inferior, low-protein food that is uncompetitive with the glamour crops such as imported rice and wheat. When the price of cassava is compared to those of maize, yam, sorghum and millet, cassava price is usually lowest. Currently in Nigeria, limited or no supply-chain exists for cassava-based products' use as primary sources of raw materials for agro-industries. A sustainable solution to this stigmatism is value-addition through cassava processing into quality, standards and supply consistent industrial raw materials such as flour and starch. The value of this solution will be the Cassava-based Products (CBPs) that offer reduced post-harvest losses, industrial raw materials costs and the importation of wheat flour; and foster improved competitiveness and PARL implementation, monitoring and evaluation.
    b. Market Segment: Cassava starch can be easily substituted for corn starch. Therefore, in addition to food ingredients production, the target market segments will include textile, pharmaceutical, paper, plywood, confectionary, and soft drinks industries countrywide.
    c. Value-Chain Structure: This SBU's position in the value-chain structure is that of primary activities concerning CBPs marketing and markets development. It will use PARL methods for continual learning and improvement. Part of the values created by this SBU will be captured through revenue earnings and capacity building and strengthening.
    d. Supply-Chain Structure: SBU-9 is the market development unit of the *Sectoral*-SBUs in Layer-3 of the supply-chain structure. It receives supporting inputs from all *Infrastructure*-SBUs (Layer-2) and SBU-1 (Layer-1). Its outputs contribute to the inputs of SBU-10 and to SDI performance evaluation node/layer. Through the PARL methods and the network relationship including collaborative planning with "inputs providing" and "outputs receiving" SBUs, this SBU will have access to current, relevant and reliable information for effective and efficient customer service and continual improvement.
    e. Revenue Generation & Margins: Revenues will be generated through CBPs market development services. It is expected that the costs of services will be minimal because students, staff and professors will represent a significant fraction of this SBU's human resources. Since the earnings of the employees will be high enough to ensure motivated,

well managed and well paid workforce, the profit margins will be high, say, in the 50s percentage or higher.

f. Position in the Value Network: Being supported by a consortium of tertiary institutions, resources, networking and strategic alliance opportunities will be available leading to low service costs. Therefore, there will be no competitors. This will significantly foster the delivery of more value to the community.

g. Competitive Strategy: To develop a sustainable competitive advantage, this SBU will use the consortium's research faculty to continually identify CBPs markets and markets development reigning issues, problems, constraints, capacities and opportunities. The competitive advantage will be in a narrow range of market and industry. The scope of this SBU will be narrow while the degree of service differentiation will be low. Therefore, the *cost focus* competitive strategy will be adapted. Participants will have over non-participants a competitive advantage of PARL-based capacity building, strengthening and utilization, reduced production costs and increased in productivity and income.

10. Cassava Processing Plant SDI Unit – to make high quality food ingredient (e.g., enhanced-*gari* and *fufu*), and flour and starch for bakeries and industries engaged in, say, confectionaries, noodles, soft drinks, plywood and paperboard manufacturing.

    a. Value Proposition: Cassava must be processed immediately after it is taken from the ground because it is highly perishable. Spoiling starts within 48 to 72 hours after harvest, and rapidly become of little value for consumption or industrial applications. Being 70% water, cassava transportation to the market and/or processing plant is both difficult and very costly. Sustainable solutions to these problems include the placement of a processing plant near large cassava farms and commercial scale processing of cassava into quality, standards and supply consistent food ingredients (nutrients-fortified-gari) and industrial raw materials (flour and starch). The value of this solution will be cassava processing that offers SFs ready markets for their produce, reduce post-harvest losses, and reduce importation of non-cassava flour and starch for use in industries; and capacity building and strengthening through PARL implementation, monitoring and evaluation.

    b. Market Segment: Nigeria, along with sub-Saharan Africa, has unsatisfied markets for all CBPs including food and nutritional ingredients (e.g., gari, fufu and lafun), animal feeds (e.g., chips, leaves, and pellets), and industrial raw materials (e.g., flour, and starch). The target market segments will include the food ingredients and industrial raw materials sectors in Nigeria and sub-Saharan Africa.

    c. Value-Chain Structure: This SBU's position in the value-chain structure is that of primary activities concerning operations, inbound/outbound logistics, and marketing and sales. It will use PARL methods for continual learning and improvement. Part of the values

created by this SBU will be captured through revenue earnings and capacity building and strengthening.

d. Supply Chain Structure: SBU-10 is the cap-stone processing unit of the SDI portfolio and the *Sectoral*-SBUs in Layer-3 of the supply-chain structure. It receives supporting inputs from all *Infrastructure*-SBUs (Layer-2) and SBU-1 (Layer-1), and *fulfillment* and *logistics* inputs from SBUs 7, 8 and 9. Its only one obvious output contributes to SDI portfolio performance evaluation node/layer. Through the PARL methods and the network relationship including collaborative planning with "inputs providing" and "outputs receiving" SBUs, this SBU will have access to current, relevant and reliable information for effective and efficient customer service and continual improvement.
e. Revenue Generation & Margins: Revenues will be generated through products sales and distribution. It is expected that the production costs will be minimal because students, staff and professors will represent a significant fraction of this SBU's human resource. Since the salaries of the employees will be high enough to ensure motivated, well managed and well paid workforce, the profit margins will be high, say, in the 60s percentage or higher.
f. Position in the Value Network: At this juncture, there are no commercial scale cassava processing plants with international standards in Nigeria. Being supported by a consortium of tertiary institutions, resources, networking and strategic alliance opportunities will be available leading to low production costs, Therefore, there will be no competitors. Being in this position and in collaboration with public and private entities will significantly foster the delivery of more value to the MSMEs.
g. Competitive Strategy: To develop a sustainable competitive advantage, this SBU will use the consortium's research faculty to continually identify cassava processing reigning issues, problems, constraints, capacities and opportunities. That is, the competitive advantage will be in a broad range of market and industry. The scope of this SBU will be broad while the degree of product differentiation will be high. Therefore, the *differentiation* competitive strategy will be adapted. Participating cassava processing plants will have over non-participating plants a competitive advantage of PARL-based capacity building, strengthening and utilization, and increased in productivity and income, thus income-poverty alleviation for their employees.

For the set of SBUs in this SDI portfolio, the degree of product/service differentiation is low for eight SBUs and high for only two SBUs. This is an indication of the competitive strength, and potential market share of the SBUs in the portfolio. The SDI portfolio management approach is an extension of Peter Drucker's (1998) Management's New Paradigms, which is a concept of business relationships extending beyond traditional enterprise and sector boundaries, and organizing entire business processes and outcomes throughout a supply/value chain of multiple SBUs across all three economy sectors, see Figure

1. This form of inter-organizational supply/value network may be a new form of organization for developing nations. However, with the complicated SBU-relationships depicted in Figure 3, the network structure fits neither “market” nor “hierarchy” categories. Empirically and theoretically, it is not clear what kind of performance and performance impacts different supply/ value network structure, and Economy Sector Layer variation would have on competitiveness partnerships and SD efforts. In trying to answer these and relevant SD questions, a starting point would be the use of the model presented in this paper to conduct performance evaluation of UNDP’s on-going GSBs.

Expected Outputs and Outcomes for the Sdi Portfolio

MSMEs support initiative is an essential tool for SD and poverty alleviation. In this support initiative, the heart of this tool is PARL which is a Process and Outcome Management (PrOuM) framework. Therefore, as used here, outputs and outcomes are results indicative of the impacts anticipated with respect to the inputs and activities to be undertaken. Outputs are the more immediate, concrete results which, though important, are not likely to produce lasting change to entities’ thinking, actions and/or state; outcomes are changes more likely to be sustainable. Expected outcomes include:

- Stakeholder-communities will strengthen their individual (attitude, behavior, knowledge, practice including ethics, skills, etc) and organizational capacities for agro-enterprises development and growth research, training, teaching, extension, advocacy, networking, communication and dissemination.
- Stakeholder-communities will strengthen their capacities for the management of the above functions, leading to improved individual and organizational performance.
- Stakeholder-communities will be able to express their views about university-supported SBVI and PrOuM, link them to their practices, and communicate more effectively about their work and issues with others.
- Stakeholder-communities will be able to work together with community members and participating and non-participating stakeholders to identify relevant agro-enterprise development and growth challenges and solutions; and will be able to decide how best to facilitate the planning, execution and assessment of agro-enterprises development and growth initiatives.
- Participating communities will learn from their experiences and will be able to share them with other communities and stakeholders.
- Participating academia will gain a better understanding of and practical experience with a variety of locally adapted effective individual and organizational capacity-building and/or strengthening strategies, allowing more selection in terms of the choice of future initiatives and provision of better support.

In the function and spirit of SD concepts, more specific numeric projections, identified in the table below, will be discussed further in a full proposal.

OUTPUT	OUTCOME
▪ No. of individual and institutional training sessions ▪ No. of individuals and MSM enterprises trained ▪ No. of MSM enterprises incubated ▪ No. of reports, papers & manuals published ▪ No. of contributions to local bylaws & policy formulations ▪ No. of White Papers directed at legislation drafts	▪ % Increase in Knowledge over base-line ▪ % Increase in farmers' capacity ▪ % Increase in institutional capacity ▪ % Increase in MSM enterprises capacity ▪ % Increase in public issue awareness & knowledge ▪ % Increase in public-private partnership
▪ No. of irrigations & drainages built ▪ No. of farmers assisted with finance/material/technology ▪ No. of MSM enterprises assisted with finance ▪ No. of MSM enterprises assisted with material/technology ▪ No. of jobless graduates retrained and/or employed	▪ % Increase in farmer productivity ▪ % Increase in MSM enterprises productivity ▪ % Reduction in farming occupation abandonment ▪ % Reduction in post-harvest spoilage ▪ % Reduction in hunger and poverty

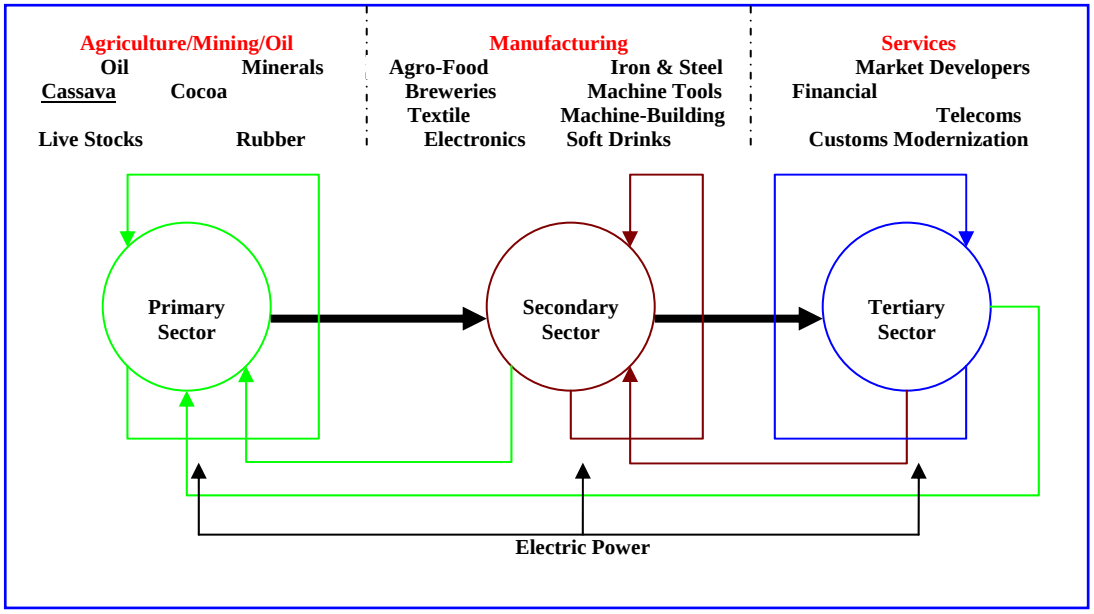

Figure 1: Economy Sector Development Progression & Interrelatedness

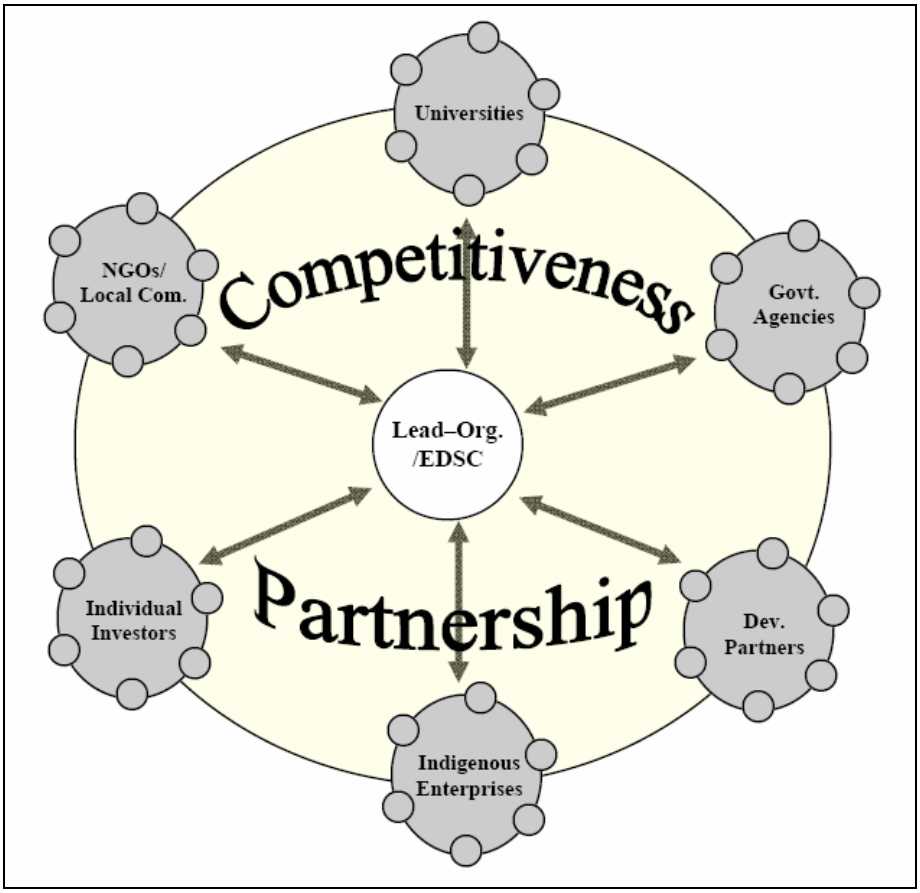

Figure 2: Sustainable Development "Body and Organs**"**

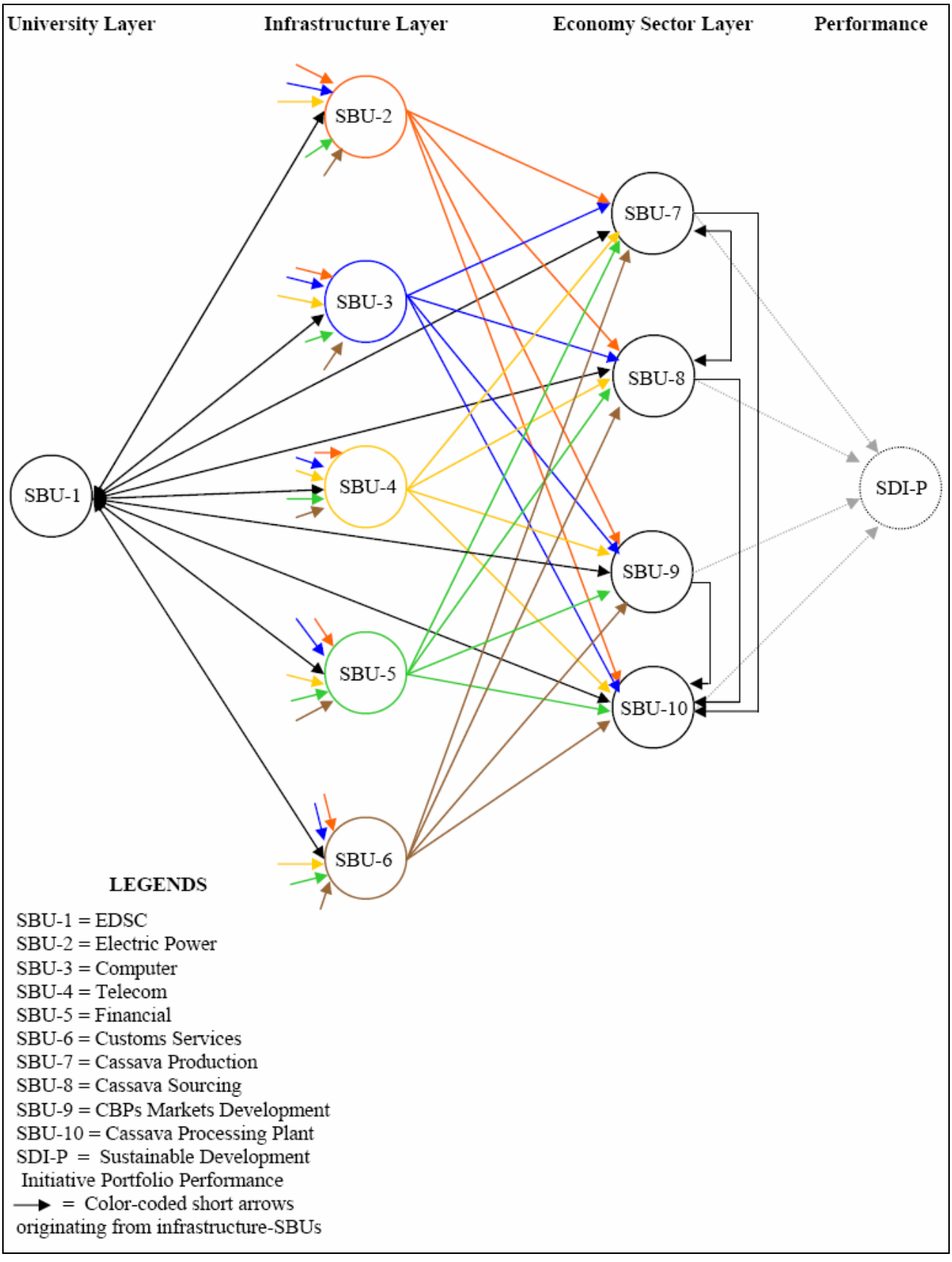

Figure 3: University-Supported SDI Portfolio Supply and Value Network

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