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Determinants of repatriation among African professionals as perceived by pre and post-graduated scholars from Sub-Saharan Africa: An empirical analysis

Nxumalo, Nozipho Nomachule, Ph.D.
The Ohio State University, 1991

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DETERMINANTS OF REPATRIATION AMONG AFRICAN PROFESSIONALS AS PERCEIVED BY PRE AND POST-GRADUATED SCHOLARS FROM SUB-SAHARAN AFRICA: AN EMPIRICAL ANALYSIS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in the Graduate School of The Ohio State University

By

Nozipho Nomachule Nxumalo, B.A., M.A.

* * * * *

The Ohio State University

1991

Dissertation Committee: Approved by
Virgil E Blanke
Robert A. Agunga
Kevin D. Arnold

Advisor
College of Education
DEDICATION

To my beloved parents for instilling values of education in me, my husband and children for love and support, and to God be the Glory!
ACKNOWLEDGEMENTS

What an honor to find time in the hustle and bustle of academia, just to recognize individuals without whose support and encouragement, this Dissertation would not have been accomplished.

To Dr. Virgil E. Blanke, my major advisor. Words fail me to express my sincere gratitude to him for guiding me and supporting me from start to finish in my academic voyage. "May God bless you." I will always be grateful.

To Dr. Robert Agunga, for his timely advise in shaping the content of this study from its inception, and for pushing me to probe questions beyond my imagination.

To Dr. Kevin Arnold, for his expertise in quantitative analysis, and patience in walking me through the statistics maze, and finding time in his tight schedule just for me!

To Fred A. Ruland, for spending countless hours helping me with the SPSS statistical program for my data analysis. "I appreciate you Fred!"

Last but not least, my sincere gratitude goes to individuals who supported my educational endeavors in many ways: Mrs. Majorie Cooper; Pastor & Mrs C.E. Dudley; Mr. & Mrs James and Khosi Nxumalo; Mr. & Mrs. Terry and Christina Shields; Mr. & Mrs. Joseph and Elizabeth Ciolek; and Mr. & Mrs. James and Linda Sanders. "You have all been wonderful!"
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FIELDS OF STUDY

Major Field : Education

Minor Field : Quantitative Research Methodology
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1.1 Definition of Terms

The following terms will be used throughout this study.

**Brain-drain Syndrome (BDS)** or transfer of human technology - a movement of high quality personnel from a developing country to a developed or technologically advanced country.

**Brain-drain Reversal (BDR)** is the re-deployment of high quality personnel from a technologically advanced country to a developing country.

**Foreign Student**: Anyone who is enrolled in courses of instruction at institutions of higher learning in the United States who is not a citizen or an immigrant (permanent resident).

**F-1 Student Visa** is a permit granted to a *bona fide* student who satisfies requirements for pursuing a full degree program at a United States academic institution. An F-1 student enters the United States for a temporary stay solely to study.

**Human Technology** is highly trained manpower.

**J-1 Visa** is a permit granted to students sponsored by other governments, or non-governmental organizations, or agencies approved for sponsorship by the U.S. Secretary of State for Exchange Visitors.

**Repatriation** is a decisive act of returning to source country of citizenship after completion of academic pursuits in the United States.
Non-sponsored Student is a foreign student whose educational pursuits are not funded by home government or bilateral agency. They are funded with personal and family resources (self-supporting).

Non-structural Factors refer to conditions which are not governed by formal rules and guidelines. They are left at the discretion of an individual to decide the course of action.

Proactive Interference means devising strategies to prevent brain-drain before it occurs.

Reactive Interference refers to the adoption of policy initiatives to curtail brain-drain after it has begun.

Source Country is the country of citizenship in Sub-Saharan Africa, where the student is ordinarily domiciled.

Sponsored Student is a foreign student whose educational pursuits are funded by home government or bilateral agency approved by the U.S. Secretary of State for Student Exchange.

Structural Factors refer to conditions which are governed by formal rules and guidelines - bureaucratic or cultural ethos - which are not readily alterable.

Sub-Saharan Africa is the geographical region South of the Sahara Desert in Africa.
CHAPTER I
INTRODUCTION

1.2 Overview of the Problem

This inquiry focuses on brain-drain of qualified human resources from Sub-Saharan Africa (SSA) as a constraint to Africa's development. Scholars on African development have expounded on economic instability as contributing to slow development in Africa. Little has been done to examine the transfer of skilled human technology from SSA as deleterious to Africa's development. The reason for this neglect lies in the existing controversial views concerning African brain-drain. Bilateral agencies, such as the World Bank (1990) and International Organization for Migration (1990) concur that skilled manpower is essential for the implementation of development operations and that, brain-drain inter alia, deprives SSA of such indigenous expertise. Alternatively, Das (1974) does not think brain-drain is problematic in Africa, and labels such a concern as an "emotional nationalistic nonsense." Such studies have overlooked the fact that some American educated African scholars may return home but later re-exit back to the United States or other countries abroad.

This study examines empirically the attitudes among pre- and post-graduated African professionals (APs) toward repatriation and re-integration in SSA. This inquiry
explicates: (1) the desire to contribute to home country-development "sense of national-interest" or patriotism; and (2) desire for professional-development "personal-interest", (3) if they are mutually exclusive aspirations to repatriation decisions among pre and post-graduated scholars in African economies; and (4) the "re-exit" phenomenon whether it explains a change in the APs' sense of mission, or mirrors anticipated re-integration problems in African economies. The end sought examines relationships among factors perceived by APs to encourage or discourage brain-drain reversal (BDR), patriotic sentiments, and returnability- intent (propensity to return to SSA versus intent to stay in the U.S.). The investigation attempts to come up with a predictive model that could be utilized by African policy makers for intervention initiatives toward achieving optimal participation of African scholars in the development of Africa.

1.2.1 Development Problem in SSA

This section addresses whether brain-drain needs to be a concern for the developing SSA economies. To put the brain-drain syndrome in context, it is necessary to give a notable background of the development condition in SSA.

The goal of development is to improve the quality of life of the vast majority of people in Third World countries (Boakari, 1981). But, after more than 40 years of intensive international development efforts, through programs and projects, the people are worse off than they were before.
Reports from international donor agencies, such as the World Bank (1989) pronounce a state of crisis in SSA: "Africans are as poor today as they were 30 years ago" (p. 1).

A cursory examination of some indices that determine the quality of life, such as literacy rate, and population per physician, suggests that development is stagnant in SSA (see Table 1). Sub-Saharan economies have a comparatively much higher population per physician and nurse ratio, far lower life expectancy, high adult literacy, and low daily calorie intake per capita, and are dependent on food aid-cereals than ex-colonial countries. Further analysis of the development indices reveal disheartening outcomes (see Table 2). The percentages of age group in education at all levels - primary, secondary and higher or tertiary education - are far too small in SSA economies as compared to developed countries (DCs). In particular, the gaps at secondary and tertiary levels is astronomical. Given the preceding conditions in "developing" SSA, it is evident that African countries lag behind ex-colonial countries, such as Portugal, United Kingdom, and France in highly trained manpower. While the U.S. is not part of ex-colonial countries, it plays a major role in assisting, inter alia, with the development of human technology in Third World countries.

Furthermore, based on the notion of modernization, as a process of "change in the direction of narrowing the technical, scientific, and normative gaps between
<table>
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<th>Life expectancy at birth (years)</th>
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Notes: Portugal, United Kingdom, France & U.S. are included for comparison. The first three are ex-colonial countries. Source of data: World Development Indicators (1990) Drafted by World Bank.
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Notes: Portugal, United Kingdom, France & U.S. are included for comparison. The first three are ex-colonial countries. Source of data: World Development Indicators (1990). Drafted by World Bank.
industrialized and Third World countries" (Mazrui 1980, p.92),
the comparative analysis attests to the popular sentiment that
development in SSA seems a distant dream! But, why is
development failing in African economies?

Scholars who have examined the constraints of the
development operation in SSA suggest that the phenomenon is
complex and cannot be addressed in one simplistic theoretical
construct (Osia, 1990). Explanations that have been presented
by development scholars allude to external penetration, such
as: (a) Development in Africa has been an interdependent
relationship, not a one sided act of "good will" but an
immensely profitable expedition for the DCs (Buchanan, 1964);
(b) Direct colonization, by Europe fragmented and under­
developed Africa, leaving it as a field of raw materials to
feed the industry pipe-line of DCs (Rodney, 1974); and (c)
Development in Africa has been mechanistic rather than
holistic, that is, it started with the production of goods
rather than the training of indigenous people to produce the
goods. As such, human technological skills, which are central
to sustaining the development operation, lagged behind
industrialization (Hope, 1984). Some critics, however,
attribute the failure of development in SSA to internal
mismanagement, such as, corruption among African bourgeoisie -
who amass Africa's resources for themselves without the due
consideration for the majority of the people, or the future
While there is a dialectic tension between internally and externally assigned conditions, there seems to be a "growing consensus" among contemporary development scholars that poor management is central to the failure of most development programs and projects in SSA (Agunga, 1990). Effective management for development, inter alia, depends on the capacity of (a) society to analyze, adapt, initiate and manage change; (b) government and institutions to respond quickly and decisively to the rapidly changing global economic environment; and (c) expertise to articulate, analyze, and implement the region's goals (World Bank, 1990). Such expertise, according to Ake (1973) and Mtewa (1990) are fruits of research and publication. While research is a viable tool for effective management and central to developing policy, the World Bank notes that, for the most part in African economies, "public issues are inadequately analyzed; little relevant and timely research is done by universities and policy institutions; data sources are generally inadequate or unreliable; and high-level officials in key ministries are sometimes poorly trained and equipped" (p.3).

With the preceding scenario in full view, Boakari (1980) adds that some successful pilot project operations staffed by foreign experts tend to collapse soon after the experts depart. Agunga (1990) reports that World Bank projects and programs in the past decade have failed due mainly to management incompetence. For instance, over 75 percent of the
project operations have suffered managerial constraints, as compared to 20 percent fiscal related problems and 14 percent that have been attributed to political environment related constraints (Agunga, 1990). The discourse that failure of development operations in SSA emanates from deficiencies in management capabilities, is adopted, thus, as a basic premise for this study.

International donor agencies, such as the International Organization for Migration (IOM, 1990) and the World Bank (1990) concur that the region needs intellectual capabilities to shape policies and implement development operations effectively. Thus, the challenge for the new development decade of the 1990's is to devise strategies toward helping SSA to move from the contemporary skills deficiency crisis to building a reservoir of indigenous expertise for sustainable development in the future. The Bank concludes that the "dearth of these indigenous capacities [expertise] and the weakness of local institutions in Sub-Saharan Africa have resulted, in numerous cases, in flawed policy processes which, in turn have led to severely negative effects on development" (World Bank 1990, p. 3).

In the African Charter for Popular Participation in Development and Transformation (Arusha, 1990, p.38), Professor Kighoma Malima, who is the Minister of State, Office of the President of the United Republic of Tanzania, asserts that "effective people's participation ... is the only way of
accelerating sustainable development and transformation for Africa." Throughout the past three development decades, however, policy makers and foreign donors have neglected examining the value of participation of indigenous professionals in advancing development in SSA. Instead, they have relied on imported skills or technical assistance (The Committee for International Migration of Talent (1970). The latter has observed that African economies tend to be "large employers and net importers of skills" (p. 11).

In the present decade, the continuity of technical assistance is seemingly threatened by global political trends, such as the latest political romance between the Western bloc and the Eastern bloc. The thawing of the "cold war" may have several implications or effects on aid recipients of the less developed countries (LDCs), Africa in particular (Hockenos and Hunter, 1990). First, the Western response to competition for available aid-dollar may be skewed in favor of Eastern Europe over Africa because of ancestral linkages with the West (Hockenos and Hunter, 1990). Second, now that the artificial political barrier between Communism and Democracy, or between the East and the West, is defused, fear of Communist expansionism may no longer pose a major threat (Agunga, 1990). Thus, the potential supply of technical assistance to LDCs to promote the ideological and political stance of the Western donors may subsequently freeze (Hope, 1984).

Evans (1990) reports that the World Bank is turning its
focus to Eastern Europe, "The multi-laterals are already scrambling to get expertise and money flowing into Eastern Europe. The World Bank plans to double the number of professionals dedicated to the region ... in technical assistance projects" (p. 3). Other funding agencies, such as the International Finance Corporation (IFC) and the European Bank for Reconstruction and Development (EBRD) admit that they are not proficient in the transformation of social change. What they are good at is what the Eastern European countries are looking for - capital intensive, energy, and promoting foreign investment in joint ventures (Evans, 1990).

It can be anticipated, therefore, that the generous availability of technical assistance Africa has enjoyed in the three development decades may shrink in the near future. These trends imply that (1) dependence on technical assistance may not be profitable in the long run; (2) while foreign aid in the form of technical assistance may be a necessary factor, it is not a sufficient condition to sustain African development; and (3) that policy initiatives toward self-reliance seem a sound alternative for sustainable growth of African economies, as articulated in the Lagos Plan of Action, 1980). The action towards collective accelerated self-reliant development; improvement of human resource planning; development and utilization of personnel at all levels of operations and service, express unequivocally the determination of African states to achieve control and self-
sustainable development.

1.2.2 Education as a Key Problem

Given the preceding global development trends, and impetus for self-reliance, it sounds plausible to assert that the trust for sustainable development of Africa lies in the availability of a critical pool of indigenous qualified manpower - people who possess expertise to conduct research, interpret it, formulate policies, and implement programs essential to the needs and growth of SSA. The World Bank has established that the research activities and data output in African research centers are not up to par, and that, this lowers the capability of African economies to respond proactively to global changes in the economic and political environment.

An important argument is that such sophisticated skills to advance research capabilities can be obtained through higher education and training endeavors. This assertion is founded on the belief that (1) education plays the role of filtering efficient human resources from labor in general (Hamanda & Bhagwati, 1975) and (2) higher education provides a mechanism for attaining the requisite skills needed for sustainable development and self-reliance in SSA (Magagula, 1990). African scholars affirm that "Africans cannot rely on others to research and solve their problems. It is unlikely that other people can research and solve African problems
satisfactorily since they have values and interests that Africans do not necessarily share. Unless Africans define their problems and devise solutions for their problems, Africa cannot overcome her stagnation" (Mtewa, 1990, p. 102). Mtewa further reports that research done in technologically advanced countries that has some relevance to the needs of developing economies, such as SSA, is only one percent.

A closer look at the pre and post-independence educational trends, however, reveals a dire need for the increase of qualified manpower levels in SSA. A World Bank Report (1981) notes the following educational problems that prevailed in African economies before independence (1) African countries had less than five percent of their school going age population receiving high school education. (2) East African countries combined, that is for a population of over 22 million, there were less than 99 university graduates. (3) Zambia had approximately 1,000 High School graduates and 100 university graduates; and (4) Zaire reached independence without a single indigenous engineer, lawyer or doctor. The percentages of age group in education at primary, secondary, and tertiary levels are unequivocally smaller in SSA as compared to DCs (see Table 2). Furthermore, the percentage representation of students in the educational hierarchy (tertiary level) is disproportionately lower and more pronounced in SSA than in DCs. For instance, in Zimbabwe, where participation at the elementary level in 1965 was over
100 percent, two decades later - 1987, less than 50 percent were enrolled in secondary level, and less than 5 percent participated in college education. Thus, these educational trends depict a classic pyramid, or "bottle-neck" pattern of development. African scholars, who have examined the images of early education in Africa, reveal that the educational mechanism failed to build a reservoir of critical skills or produce competent leadership (Machyo, 1967). Mungazi (1990) asserts that educational philosophy or ethos in SSA has been driven by "commercial interests fortified by economic prosperity fueled by cheap labor" (p. 5).

Following the independence tide, African governments, responded favorably to the challenge of increasing educational aspirations. According to Nokuri (1990) African government demonstrate this response by (1) allocating a larger percentage of the national budgets to education, up to 20 percent; (2) increasing the number of universities from one, before independence to four after independence in countries such as Nigeria and Ghana; and by (3) increasing the number of African nationals who study in universities abroad. The Institute of International Education (IIE) reports a dramatic increase of African students enrollment in the United States from 1,234 in 1954/55 to 28,450 in 1987 (Open Doors, 1987/88). The number of university graduates in SSA has grown from 1,200 in the eve of independence (1960's) to over 70,000 in 1983 (World Bank, 1989).
Notwithstanding the increased production of university graduates and a relatively large share of national budgets allocated to tertiary education, African economies are experiencing a startling shortage of highly skilled human resource (Southern African Development Coordination Conference - SADCC reports, 1987/88; 1990). If this skills deficiency continues unresolved, it will adversely impact SSA's ability to manage effectively its development in the future (Agunga, 1990; Lee, 1989; World Bank, 1990).

1.2.3 The Brain-drain Problem

The high level skills deficiency situation is further compounded by transfer of qualified African manpower from SSA to countries abroad, or brain-drain syndrome (Logan, 1987). Brain-drain tends to be selective in that it captures the most capable cadre of expertise (Hamanda & Bhagwati, 1975). For instance, African economies have lost over 80,000 of highly trained manpower, through selective brain-drain (World Bank 1989). Selective brain-drain, thus, deprives Africa of the utilization of its most needed category of manpower in SSA's development operations.

The concept of brain-drain, in the context of SSA, can be viewed in two ways: traditional and non-traditional patterns of transfer of manpower. The traditional method of brain-drain constitutes internal and territorial brain-drain (Ricca, 1989; Todaro, 1976); while the non-traditional model involves international brain-drain (Logan, 1987).
Internal Brain-drain is considered an in-country phenomenon, whereby employees from one sector are attracted to another sector - public to private; and rural to urban area. While this mode may create a lopsided skills levels among sectors, it may not adversely affect the overall expertise of the given country (manpower reservoir).

Territorial brain-drain occurs when there is a transfer of labor among countries within the same Sub-Saharan territory. For instance, migrant laborers move from countries such as Malawi, Swaziland, Lesotho and Mozambique to work in the gold mines in South Africa. Traditionally, this mode attracts the semi-skilled or unskilled manpower and does not change the composition of manpower. In some cases, personnel such as teachers and nurses transfer to other countries within SSA, (e.g. from Ghana to Nigeria). Mazrui refers to the latter type as horizontal-brain drain. While this circulation of skilled manpower within SSA may skew development in favor of some parts of the region (by disrupting supplies for the country of exit) it does not alter the brain-power pool of qualified personnel in the collective regional territory of SSA. Instead, "inter-regional skills exchange" among countries within the same SSA territory is enriched (World Bank, 1990). This is supported by the growing efforts of regionalism in Africa, such as, the cooperation of front-line states (Southern African Development Cooperation Conference - SADCC) to reduce economic dependency on South Africa (Lee,
Non-traditional or international brain-drain is selective in nature. It encompasses the transfer of expertise from developing to developed countries (Logan, 1987). The World Bank (1989) reports that African economies have lost 80,000 highly trained personnel, who did not return to Africa after completion of their educational pursuits in Europe and the United States.

International brain-drain (1) absorbs the "critical mass" of skills for which Africa is in dire need (IOM Report, 1990); (2) destabilizes the regional efforts toward expertise self-sufficiency (Lee, 1989); (3) devalues the leadership capacity or expert power of SSA economies (Kamanda, 1990); and thus (4) jeopardizes the development goal of improving the quality of life for Africans.

Of the two types of brain-drain, the non-traditional mode or selective brain-drain is of serious concern to African development. It is essential to highlight that these scholars exit from Africa in two ways: (a) those who exit to study abroad and do not return to SSA; and (b) those who study abroad, return to SSA, but subsequently re-exit back to the United States or other industrialized nations. Both forms leave deleterious consequences. They are, therefore, the foci of the study.

1.3 Statement of the Problem

The notable background of this study has established that
the main constraint to sustainable development in Africa is the issue of international or selective brain-drain. Development agencies and scholars have articulated, unequivocally, the need for efficient implementation of development operations in SSA. If the best minds of Africa fail to go back home, then the problems articulated will continue to prevail. A starting point towards addressing Africa's development problem, therefore, would be examining the issue of brain-drain reversal (BDR) among African professionals (APs).

Traditionally, students from DCs have been motivated by a quest to amass Western technological acumen and to plant back this expertise in the advancement of their source countries (Liu, 1985). Liu has observed a shift in the patriotic sentiments, as a basis for choice of field of studies abroad among contemporary foreign scholars. Liu's study, however, is based on Chinese intellectuals. Clarification is necessary as to whether the prevailing brain-drain among African nationals manifests a shift in their desire to develop the source country (traditional sense of mission) given their (1) past history of colonization and deprivation; (2) present state of independence and localization policy; and (3) push for regionalism, impetus for self-reliance and popular participation, alluded to before. [Such themes are drawn from an array of African development reports, such as, the African Charter for Popular
Participation in Development and Transformation: African Development Coordination Conference (SADCC); Lagos Plan of Action; World Bank and various fora and conferences on African development].

There is a need, therefore, to examine brain-drain, from scholars' perspective, if the lack of repatriation among APs depicts a decrease in their commitment to the development of SSA, (internal attributes) or it mirrors structural problems in their integration back home, (external attributes). Furthermore, if Liu's suggestion of shift in sense of mission among contemporary scholars from the developing countries is valid and equally applicable to African nationals, it should be possible to establish (a) whether the propensity to return to SSA, after completion of educational pursuits in the U.S., is associated with the shift in patriotic sentiments toward homeland and (b) factors facilitating this attitude change among African scholars.

Presently, controversy exists among reasons attributed to African brain-drain. Informal discussions with American students suggest that scholars from Africa are driven by 'individual traits,' such as quest for Western life-style. Discussions with some African nationals indicate that 'structural constraints' such as occupational culture, ethnic preferences in the allocation of opportunities for career advancement, global corruption, under-utilization of local expertise versus preference for imported skills and related
socio-political order under which scholars operate in home country, contribute to the repatriation decision. Roberts (1986) identifies social responsibility to one's family to influence the plans to return among Liberian students, while Apraku (1990) did not find family-ties to be important. Das (1971) observes the decision to return as influenced by personal advancement more than narrow national-interests. Chukunta, (1976) on the contrary, perceives 'patriotism' to be central to repatriation among Nigerian students.

Studies examining international exchange of scholars, such as Das (1971, 1974) have failed to recognize the connection of African brain-drain to Africa's development. Although there have been some studies on brain-drain in Africa, they tend to focus on a single country, area or ethnic group and, thus, limit global generalization to SSA territory. While there are some APs who repatriate to SSA, but bounce back to the U.S., no study has investigated this phenomenon. Samples have not included the perceptions of both pre and post-graduated APs in the context of BDR.

There is a need for a comprehensive study to test these traditional views among pre and post-graduated APs from SSA. Furthermore, a sophisticated instrument on African BDR is necessary to provide African policy makers, development scholars, and agencies who are interested in international development with empirical data for formulating redeployment initiatives. Specifically, a predictive model is not
available for making useful judgement about proactive intervention to facilitate BDR.

This study, therefore, evaluates and extends factors that may discourage American educated APs from returning to SSA, and encourage outflow among APs who returned to SSA, and subsequently re-exited back to the U.S., or other Western countries. It will contribute, thus, to the existing theoretical base on the reverse transfer of human technology, as it relates to African economies, and make recommendations to policy makers.

The specific research questions of this study are:

(1) What factors influence the decision of some professionals from SSA to repatriate to source country?

(2) What factors influence others to remain abroad, or to subsequently re-exit back to the United States?

(3) What relationships exist among the factors perceived as encouragers of BDR, patriotic sentiments, and the returnability-intent - propensity to repatriate to source country, stay or re-exit back to the U.S?

(4) Do these relationships predict reversal of brain-drain among African scholars?

Reverse transfer among African scholars follows two patterns of departure: (a) a familiar pattern is non-return after completion of their academic pursuits abroad, and (b) a new phenomenon of re-exiting back to the U.S. or other countries abroad, after a decisive initial return to source
country in SSA.

This investigation, therefore, is directed at discovering the configuration of association among the perceived determinants of the brain-drain syndrome and decisions to return or stay in the U.S., as perceived by African professionals (APs). Secondary questions, thus, are: Is lack of repatriation among African scholars (in the two ways articulated above) associated with external-structural conditions, such as, socio-political dynamics in the re-integration of African scholars that facilitate personal and academic advancement? Is lack of repatriation associated with internal attributes, such as, the desire to contribute to the national development (patriotic sentiments) versus traditional responsibility to the extended family (home-ties)? Is the intent to stay or re-exit back to the U.S. associated with conditions pulling them from the U.S., such as, quest for American life-style, versus conditions pushing them from the home country? It is not clear where these attitudes start, whether APs disengage from home by coming to study in the U.S., or are alienated when they return home, thus take a reverse turn and re-exit back to the U.S. or other countries abroad. Answers to the questions, aforementioned, therefore, would provide a predictive model for useful decisions in proactive interventions toward reversal of brain-drain, as it relates to African economies of SSA.
1.4 Significance of the Study

Policy makers in SSA, such as Southern African Development Coordination Conference (SADCC, 1987/1988) and donor agencies such as the World Bank (1989, 1990) have expressed concern about the progressive paucity of highly trained indigenous human resource with management capabilities, both in the public and private sectors in the region. SADCC Report (1987/1988), World Bank (1989, 1990), and the International Commission for Migration (1990) have noted that skilled manpower technology is essential for sustainable development of SSA.

The International Organization for Migration (IOM) and the World Bank suggest an adverse linkage between the brain-drain syndrome (BDS) and national and international efforts to increase the pool of qualified manpower in African economies. The dearth of skilled personnel constitutes a major constraint to the implementation of development operations in SSA (SADCC Report, 1987/1988). Scholars underscore the notion that limited management capacity is a prime factor for the high "failure rate" of development projects (Agunga, 1990), and that development programs are as effective as the manpower who implement them (Apraku, 1990). For the most part, Africa is simply not competitive in an increasingly competitive world (World Bank 1989, p.3).

Africa, therefore, needs all its professionals for sustainable development. For SSA to be better equipped to
play a "competitive and productive role in global economy in the 1990s and beyond, the region will need the intellectual and management capacity to shape policies and implement them effectively" (World Bank, 1990, p.3). As such, APs who remain abroad, after completion of their educational pursuits, are an "untapped" indigenous human technology. The premise is based on the notion that selective brain-drain is counter productive to the development efforts in SSA, and is thus, a prime concern of this inquiry.

Paradoxically, while the Sub-Saharan region experiences a drastic shortage of strategic manpower, outflow of transfer of human technology continues unabated (Logan, 1978). The African brain-drain has captured the attention of the local and international media (Times of Swaziland, 1988, 1990; Star Tribune, 1990). While thousands of African scholars trained abroad have not repatriated to source countries (World Bank, 1989), over 100,000 technical experts have been integrated in the Sub-Saharan work force; and the cost incurred is estimated at $4 billion a year (World Bank 1990). While there is a need of human technology trained in the West, Africa consumes what it does not produce (technical experts) and produces what it does not consume (indigenous professionals via selective brain-drain syndrome).

The rationale, in this context, is based on the notion that the emigrant professionals are a viable technology which possesses an integrated perspective of its country. While
they have cumulative knowledge of their source country's development process, as perceived from within (emic conceptualization), they also possess an objective viewpoint of the process as understood from an external angle (etic conceptualization). If some professionals do not repatriate after completion of their studies abroad, policy makers from the Sub-Saharan region need to be concerned and committed to do something about selective brain-drain in their constituencies. Furthermore, the IOM has expressed an interest in potential factors that may frustrate the efforts of international donors and national governments in reversing the "brain-drain syndrome" (BDS) among African scholars.

If this study can identify specific factors that may encourage brain-drain reversal (propensity to repatriate) among APs versus the competing push to remain abroad BDS then, it will have (a) contributed an alternative model that could be used towards increasing the reservoir or critical pool of qualified manpower central to sustainable development in Africa, and (b) provided essential data that can help African policy makers to prevent brain-drain in their constituencies (policy and practice). This study will also contribute to knowledge base towards the transfer of human technology (theoretical contribution).

1.5 Purpose of the Study

The general focus of this study is to examine factors that may discourage African scholars from returning to their
source countries after completion of their academic pursuits abroad, and if there is an association among these factors and the propensity to repatriate among APs.

The objective of the study is four-fold:

(1) To examine empirically the attitudes of pre-graduated APs, to establish if they intend to return to source countries subsequent to completion of their academic pursuit in the U.S. [Develop a comprehensive questionnaire to test traditional views toward African brain-drain].

(2) To identify specific factors associated with the decision of pre and post-graduated APs to (a) repatriate to source countries, and (b) stay or re-exit back to the U.S. [Examine if there is an association among conditions identified by APs to encourage BDR, patriotic sentiments, and returnability-intent, or propensity to repatriate].

There is a need to determine the point at which the decision to exit starts. It is not clear whether APs become alienated from the source country (a) before coming to study in the U.S.; (b) while in the U.S., or (c) after they have returned to SSA (pull and push factors). Furthermore, clarification is necessary to determine whether BDR is associated with psychological attributes (internal forces) or structural attributes (external forces) in the integration of African scholars. [Develop a predictive model to guide in making strategic decisions toward intervention initiatives].

(3) This study will disclose a model predicting
repatriation among African scholars.

(4) To extend the theoretical base of knowledge on reverse transfer of human technology as it relates to African economies, and recommend policy alternatives to facilitate re-deployment and re-integration of returning APs. [Generate data from objective outcomes and vital characteristics from the frequency distribution of the demographic data].

1.6 Assumptions

The assumptions in this study are that (1) African students who come to study in the U.S. are in the country solely for the purpose of study; (2) Patriotism is high among Africans, especially following independence; (3) APs have a desire to contribute toward the development of their countries; (4) The APs possess the essential information that may increase their propensity to repatriate to source countries, or stay abroad.

Pre-graduated African students and the re-entry professionals are dealt with as possessing the same orientations. Based on Bandura's (1989) social learning perspective, although pre-graduated professionals may not have been integrated in the work force in Africa and in the U.S., they are able to make choices vicariously. That is, without going through trial and error processes, they have been observing other APs at home and abroad. For these reasons, they are considered as professionals in training.
1.7 Limitations

This study is limited to pre-graduated students from SSA studying in the U.S. institutions of higher learning. Both graduate and undergraduate students are studied. Two year colleges or community college levels are excluded, since F.1 visa students are normally approved by the Immigration and Naturalization Service (INS) to study in a four year accredited degree program. Sponsored students possessing J.1 visas, in most cases, are enrolled in advanced degrees and are not likely to be represented in two year colleges.

Due to the high cost of travelling to Africa and constraint in time, overseas educated APs who are working in Africa are not studied. However, those who initially repatriated to SSA and latter re-exited back to the U.S. are studied as a secondary population.

The design in this study is an ex post facto method of inquiry. The limitation of this design emanates from dealing with self-selected or intact groups. The researcher lacks the ability to randomly assign subjects into groups and amount of control over the independent variable or variables (Ary, Jacobs & Razavieh, 1985). In social science research, the outcome may not emanate from a single factor (Campbell & Stanley, 1963).

These limitations, however, are minimized by (1) identifying all possible alternatives or rival explanations for the variance in the dependent variable – propensity to return to SSA, in the context of this study; and
applying robust statistics, such as correlation and regression analysis and semi-partial correlations. On one hand, the challenge of ex-post facto design, in the context of this study, is to identify the various combinations of influences and motives that are the principal determinants of a decision to repatriate to SSA. On the other hand, quasi-experimental designs can be more valid or useful than true-experimental designs in the area of external validity, due to "more real world" conditions in which they take place (Campbell & Stanely, 1963). Data outcomes that have representation of the real world have potential utility in the formation of policy initiatives (Dunn, 1981).

1.8. Order of the Dissertation

CHAPTER I Introduction

This is the problem identification and literature review to amplify the problem and its discussion.

CHAPTER II Review of Related Literature

This includes sound theoretical paradigms relating to the transfer of human technology and outlines empirical findings from principal studies. (For the practical value of this study to SSA, the researcher interjects a cross-sectional information from interviews with (1) African scholars; (2) Government officials - Diplomatic Corps from Africa in Washington D.C. and (3) the International Organization for Migration (IOM) also in Washington D.C. The last provides general assistance for resettlement of nationals from Africa.
CHAPTER III Methodology and Instrumentation

This section includes studying students, or pre-graduated African professionals (PAPs) as a primary sample; surveying of re-entry African professionals (RAPs), as a secondary sample; and designing two instruments. Instrument-I, measures encouragers and discouragers of BDR. Instrument-II, part A measures propensity to repatriate to SSA; and part B to measures patriotism (pro-homeland sentiment versus foreign land sentiment).

The instrument's content validity has been established by a panel of experts. Reliability of the measurement was established by Cronbach's coefficient alpha, for internal consistency. Data collection procedures are detailed in this section.

CHAPTER IV Analysis of the Results and Conclusion

The findings of this investigation are outlined in this section. The statistical procedures employed in analyzing the data are: Multiple Correlation analysis to establish relationships among the variables and step-wise backward elimination procedures.

A computerized statistical package (SPSS) for social science research would be used to analyze the data.

CHAPTER V Discussion and Recommendations.

Recommendations to African policy makers and suggestions for future research have been provided in this section.
CHAPTER II
REVIEW OF RELATED LITERATURE

2.0 Introduction

This study examines factors that are associated with brain-drain reversal (BDR) - the decision to repatriate to one's source country, as perceived by African professionals (APs) from Sub-Saharan Africa (SSA). Some studies on determinants of brain-drain syndrome (BDS) have employed philosophical explanations, while others have used empirical approaches. For practical significance of the data to SSA economies, the present analysis presents a synergy between both paradigms. This section addresses the global theoretical frameworks and observations explaining the phenomenon of the transfer and integration of human technology. The implications are drawn within the context of factors that may facilitate repatriation and re-integration of APs or deter BDR of scholars from SSA. The theoretical process for development and procedures for the instrumentation are addressed in the methodology section in Chapter Three.

2.0 Global Perspectives Toward BDR

There are different schools of thought on the perception of transfer of human technology and factors that may motivate the propensity of migrant professionals to repatriate to a
source country, or remain abroad. The conceptual framework is arranged in three phases: Phase I of the analysis explicates motivational theories as they relate to the higher order versus lower order dimensions associated with the decision to repatriate versus stay in the U.S. Phase II explores the national versus cosmopolitan orthodoxy as pull and push factors in the decision to repatriate, stay or re-exit back to the U.S. Phase III highlights the controversy between internal versus external determinants of BDR. [These phases are crucial for comprehensive item development and instrument design relevant to this study].

2.1 Phase I Literature Related to Motivational Theories

Selected theories of motivation are drawn from the works of Abraham Maslow (1954) and Victor Vroom (1964). While such traditional theories were written for specific occupational settings, they give fundamental insights to human behavior and patterns of motivation processes. When applied in the context of African brain-drain, Maslow's motivational need theory suggests that failure to return home among African scholars may be an attempt to satisfy unmet higher level needs - desire to be all that one is capable of becoming.

Onwudiwe (1990) on the contrary, suggests that departure among Africans is driven by an attempt to satisfy basic or social needs - push to provide for extended family needs (lower level needs). Onwudiwe argues that:

The frustration is that many skilled Africans must leave
home for their extended families to live even though they should stay home for their countries to move forward [develop]. In most cases, African scholars are the only social security, unemployment benefit, college financial aid and medical insurance their relatives have. (Onwudiwe, then posess a question) Who comes first: Your family or your country? (p. 33).

While Maslow's hierarchial needs are incremental, Onwudiwe's scenario seems to suggest that the desire to develop one's country (national-interests) versus providing for one's family needs (personal interests) may be parallel needs or mutually exclusive motivators among some African scholars.

According to Vroom's motivational theory, three conditions need to be satisfied in facilitating BDR. These are (a) valance - the intensity or propensity of the desire to return to one's source country; (b) expectancy - APs' estimate that their efforts to return home will result in a successful contribution to the performance in national development of the source country; and (c) instrumentality the perceived probability that returning to SSA will be rewarded. The implication of motivational theories seem to suggest that brain-drain is a need issue and that valance to returning home or staying abroad among APs is contingent to the perceived fulfillment of given desires and expectations, both occupational self-esteem (higher order needs) and social needs
2.2 Phase II Literature Related to Cosmopolitan versus the Nationalist Orthodoxy as Pull and Push Factors.

Some schools view transfer of human technology as beneficial to source country, or not entirely pathological. Others perceive brain-drain as a substantial loss to source country and distortion to internal development. The configuration of perspectives, thus, have dovetailed to two polarized paradigms: (a) the cosmopolitan or international exchange perspective and (2) the nationalist or development perspective (Adams, 1968).

2.2.1 Cosmopolitan Orthodoxy

The cosmopolitan, or international exchange theory perceives migrant professionals as "economic refugees" (Ricca, 1989), and favors the mobility of human technology (Adams, 1968; Das, 1974). This approach legitimizes the transfer of skills from less developed countries (LDCs) to technologically advanced countries, or TACs as (a) free market exchange of international labor, (b) individual freedom to transfer to horizons or regions where their skills are more marketable (Grubel & Scott, 1977); and (c) mobility when competencies will be highly facilitated, productivity fiscally compensated, and skills will be of comparable worth (Das, 1971; Johnson, 1965; Ricca, 1989).

The cosmopolitan orthodoxy, thus, contends that studying
abroad for foreign students is an integral component of the strategy of advanced economies to help improve the quality of life in developing countries (American Council on Education, 1982).

For instance, the United States' "open door policy" has facilitated international educational exchange by welcoming foreign students irrespective of (a) their education being supported by their source governments; and (b) regardless of the state of political relations between those countries and the United States (American Council of Education: Report on Foreign Students and International Policy 1982). The Institute of International Education (IIE) reports a burgeoning foreign student enrollment in the United States, from 34,232 in 1954/55 to 356,190 in 1987/88. The IIE estimates that 80 percent of the foreign students come from the developing counties; and that African students' enrolment in the United States has dramatically increased from 1,234 in 1954/55 to 28,450 in 1987/88 (Open doors, 1978/88). Policy makers from developing economies are concerned, nonetheless, about the return ratios of their nationals after completion of their academic pursuits in DCs (Lien, 1987). Because of the cosmopolitan approach, the concern for international brain-drain is justified in terms of substantially high non-return rates of foreign students. That is, countries which depict relatively small numbers of non-returning trainee-professionals are not readily perceived as assailed by drain,
or paucity of qualified human resource (Das, 1974). Patinkin (1968) on the contrary, estimates that 10 to 15 percent of professionals who remain abroad justifies the concern for international brain-drain. Even smaller proportions of emigrant professionals can be of meaningful importance to economies in dire need of highly trained human resource, such as SSA (Glaser & Habers, 1978; SADCC, 1987/99; World Bank, 1989).

Preliminary criticisms of the cosmopolitan perspective are that, while non-return numbers are important, they are not themselves substantially adequate in explaining the dynamics underlying (1) the lack of repatriation of professionals (Patinkin, 1968); and (2) the value of immigrant professionals in the source country’s development (Myers, 1972). Myers suggests a need for developing countries to probe beyond "counting and beyond simple ratios to a system of valuing migrants and their contribution (p. 358). Myers’ thesis is that the perceived value attached to the migrant professional may be a dominant predictor for attracting professionals to return or repatriate to source countries.

Badhoo and Baksh (1981) quoting the discourse of the exponents of international exchange, report that:

International circulation of human capital is a beneficial process, since it reflects the international market for specialized human capital, which will automatically flow into uses where its contribution is
the greatest. Thus, although the home country suffers a certain loss, there is a net benefit to the world and ultimately, to the developing countries. That is, DCs would not have been able to effectively utilize their immigrants' talents - they are more productive in the country of immigration. (p. 17-18).

Logan (1989) asserts that the outflow of qualified manpower from SSA relieves unemployment by providing alternative employment avenues abroad, if the economy cannot absorb any more professional manpower. The cosmopolitan paradigm thus assumes that international mobility has a mutual benefit to developed and developing economies. A crucial criticism toward the cosmopolitan orthodoxy, however, is that contrary to the international view that the global world community (developing economies in particular) stand to benefit from the international exchange of expertise, it is the developed countries that benefit most, and not the developing countries (Boodhoo and Baksh, 1981). This critical premise is founded on several observations.

First, while the cosmopolitan paradigm rationalizes that developing countries may not effectively re-integrate or absorb its immigrant talents (professionals), some developing economies such as SSA depend on imported personnel, or technical experts from DCs (World Bank, 1989). Imported skills from DCs drain the fiscal power of African economies by over $3 billion (World Bank, 1989). Apraku (1990) asserts
that brain-drain of indigenous expertise distorts internal economic development, when "professionals of similar skills and experience are hired from outside to replenish the gap, at many times the cost of hiring the locals" (p. 11).

Second, Ward (1971) asserts that:

Colonial government personnel have been replaced by neo-colonial agents of technical assistance, a number of whom undertake assignments of dubious value to the host nation. Some, in fact, may occupy positions which qualified Africans could hold, and thereby lend credence to the notion held in certain quarters that technical assistance is not aimed at real independence, but rather to seek to perpetuate dependence. (p. 32-33).

Furthermore, African policy makers seem to doubt expatriates' effectiveness in transferring skills, or training of their local counterparts so that they are self-reliant (Supplement to Financial Mail, 1988, p. 28). Kuper (1969) asserts that an expatriate is designed to "work himself out of a job." However, due to fringe benefits, higher status and related incentives, expatriates tend to prolong and perpetuate their stay in Africa. Contrary to the cosmopolitan perspective, Machyo's (1967) typology cited below, seems to suggest that dependence on expatriate personnel is counterproductive to sustainable development of SSA and may not serve the best interest of the developing countries, for the most part. Machyo articulated three types of expatriates: Type-
1, those whose intent is to genuinely contribute to the development of Africa. Type-2, those who come to Africa to build their credentials - that is, they pursue research or "personal interest" by using the African universities as mere "stepping-stones"; and Type-3, those who come to Africa with a paternalistic attitude to advise and influence the national economic and political direction while indirectly pushing their own hidden agendas. Machyo concludes that the majority of expatriates in SSA are of Type-2.

Epitomizing conceptual behavior principles that can be drawn from the international exchange perspective, in the context of SSA economies, it can be assumed that APs are "economic refugees" and will be motivated to repatriate home only (a) when they perceive lucrative economic conditions back home and (b) when they perceive that their expertise will be re-integrated, appreciated, and monetarily rewarded.

Alternatively, the cosmopolitan paradigm overlooks (1) the link between brain-drain or "loss" of local expertise and distortion in sustainable internal development; (2) addressing non-pecuniary dynamics that may contribute to selective transfer of human technology; (3) articulating a mechanism for combating that part of brain-drain that should be justifiably be checked (Adams, 1968, p.5); and (4) differentiating the reasons why some professionals migrate while others return, or stay put under the same economic conditions.

There is a need, therefore, to explore a theoretical
framework that transcends pecuniary parameters and incorporates non-pecuniary dynamics in order to fully understand why some APs repatriate home, others remain abroad, while still others may return home but re-exit or bounce back to DCs.

2.2.2 Nationalist Orthodoxy

The nationalist perspective presents an alternative view to the international "Laissez-faire" toward the transfer of human technology. This paradigm postulates that (a) highly skilled human technology is expensive to produce (Adams, 1968); (b) brain-drain of professionals distorts development of a critical reservoir of indigenous expertise from where qualified labor could be drawn (Glaser & Habers, 1978); (c) immigrant professionals are "development patriots", or viable instruments for sustainable development and self-reliance, and (d) qualified human capital from LDCs need to be productively protected from "uncompromising" international market exchange of human technology (Adams, 1968).

Government officials from SSA embassies in the United States, and officials of the International Organization for Migration (IOM) and the World Bank (1989) express concern toward brain-drain, or lack of repatriation of APs educated abroad. According to Grubel and Scott (1977), the issue of brain-drain has all but disappeared from the public and governmental discussions among European nations, while outflow of professionals from SSA is serious enough to have been
reported nationally and internationally, (see Minneapolis Star Tribune (1990); Times of Swaziland, 1988; 1990; World Bank, 1989).

Advocacy toward BDR, in the context of the nationalist perspectives, is based on several assumptions. First, there is a shortage of skilled manpower in the source country, and there is a dire need to increase the reservoir of indigenous skilled human resource. Countries which experience a surplus of highly qualified manpower perceive an outflow of professionals as a relief more than deprivation (Hamada & Bagwati, 1975); countries experiencing paucity of indigenous expertise perceive an outflow of human technology, or lack of repatriation of overseas educated nationals, as a loss, or retardation, and distortion of sustainable development, rather a relief.

Second, the nationalist advocacy assumes that expenses for educating the migrant professionals are borne by national governments, or bilateral agencies; and that migration for education leads to emigration of the educated (Myers, 1972). Statistics from the IIE (Open-doors 1987/88), however, reflect an overwhelming majority of non-sponsored foreign students (see Table 3). Over 80 percent are funded with personal, family resources, U.S. universities and colleges, and/or employment. Less than 10 percent are funded by home governments; less than 2 percent are sponsored by bilateral agencies, and not more than 6 percent receive financial
<table>
<thead>
<tr>
<th>Source of Income</th>
<th>1987/88</th>
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<th>1987/88</th>
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<th>% Change</th>
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<td>Numbers</td>
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<tr>
<td>Personal Family</td>
<td>64.3</td>
<td>224,950</td>
<td>64.5</td>
<td>229,730</td>
<td>2.1</td>
</tr>
<tr>
<td>U.S. Colleges/Univ.</td>
<td>15.1</td>
<td>52,880</td>
<td>17.1</td>
<td>60,870</td>
<td>15.1</td>
</tr>
<tr>
<td>Home Government</td>
<td>10.1</td>
<td>35,030</td>
<td>8.7</td>
<td>30,950</td>
<td>-11.6</td>
</tr>
<tr>
<td>U.S. Private Sponsors</td>
<td>2.7</td>
<td>9,340</td>
<td>2.8</td>
<td>9,920</td>
<td>-13.0</td>
</tr>
<tr>
<td>Foreign Private-Sponsor</td>
<td>2.9</td>
<td>9,980</td>
<td>2.8</td>
<td>6,860</td>
<td>6.2</td>
</tr>
<tr>
<td>U.S. Government</td>
<td>1.6</td>
<td>8,650</td>
<td>2.1</td>
<td>7,630</td>
<td>-11.8</td>
</tr>
<tr>
<td>Current Employment</td>
<td>0.9</td>
<td>5,500</td>
<td>1.5</td>
<td>5,430</td>
<td>-1.3</td>
</tr>
<tr>
<td>Other</td>
<td>0.9</td>
<td>3,280</td>
<td>0.8</td>
<td>2,990</td>
<td>-8.8</td>
</tr>
</tbody>
</table>

support from private and foreign sponsors. The data imply that (1) African economies stand to gain from the reversal of brain-drain, or repatriation of non-sponsored APs; and (2) propensity to return is low among non-sponsored professionals or when APs anticipate their skills not to be re-integrated, or fully utilized, or valued back home.

Third, the nationalist orthodoxy assumes that patriotic sentiments, among migrant professionals from SSA, are relatively high following (a) independence, and (b) a push for compliance with the "localization policy," or Africanization of managerial and administrative assignments in government and non-governmental sectors (Harbison, 1970). These assumptions are based on the notion that the political and bureaucratic ethos that prevailed in the colonial or pre-independence era were geared toward the exclusion rather than integration of indigenous expertise (Mazrui & Tandon, 1967; Mungazi, 1983). Ricca (1989) affirms that the criteria employed for selecting candidates to study abroad were not based on merited intelligence, but were a compensatory favor for being subservient and non-threatening to the status quo. Based on such processes, not many Africans had higher education and only a handful were educated abroad.

Informal conversation with some African students and scholars at The Ohio State University, however, suggests that "nepotism" or allocation of opportunities based on extended family relations or ethnic affiliations is rampant in some
African countries. On one hand, Africans in general, express the feeling that they experience discrimination in the U.S. employment market; on the other hand, they acknowledge that the U.S. provides many opportunities for professional advancement. It is not clear, therefore, if the level of patriotic sentiments is still high among African professionals, now that most African economies have been independent almost three decades.

Harbison (1968) has indicated that "as supply and demand factors come into balance, if patriotism weakens, a brain-drain problem would arise among talented Africans" (p.436). There is a need, therefore, for studies investigating the determinants of BDR among African scholars to consider patriotism as an important element that may influence the APs' decision - propensity to repatriate SSA, or remain abroad.

Furthermore, some African nations, such as Kenya, Tanzania, and Swaziland maintain a "bonding policy" that obliges government sponsored nationals to return home to serve after completion of their training abroad (Mazrui & Tandon, 1967). Government scholarships are awarded to students whose fields are in line or compatible with the national development plan (Harbison, 1970). This information suggests that non-sponsored students, who perceive their academic field to be irrelevant or inconsistent with the development needs in a source country may be reluctant to return to SSA, fearing the probability of not being re-integrated in the main stream
economy. Alternatively, government sponsored students may accept a scholarship just to come to the U.S. without commitment to the field for which the scholarship was awarded and subsequently change the major concentration (Useem & Useem, 1955). Perhaps, some students may complete the field, return home in compliance with the "bonding policy" while their hearts remain abroad, or may re-exit back to the U.S. For instance, a case study of brain-drain among British Guyana nationals affirms that some Guyana intellectuals disclosed their intention to re-exit to the United Kingdom (Badhoo & Baksh, 1981).

The implication of this observation is that studies on BDR need to go beyond examining factors encouraging repatriation, to include those that encourage professionals to re-exit when they have taken decisive action of returning to source countries.

Furthermore, the nationalist advocacy does not articulate adequately (1) what motivates the non-sponsored nationals to return home, who are otherwise not obligated by the "bonding policy" or the demands of the national development plan; (2) what constrains the sponsored national from repatriating to SSA; and (3) what factors pushing some returning APs to bounce back to the U.S.

2.2.3 Multi-purpose Paradigm

The multi-purpose approach represents an eclectic approach toward determinants that may influence repatriation
decision among APs.

The genesis of the multi-purpose perspective is drawn from career counselling and life planning literature (Tiedman & Tiedman, 1984; Zunker, 1986). It is chronicled from several premises. First, the decision to return or remain abroad is a complex and dynamic process that encompasses an interplay of internal and external forces (Zunker, 1986). According to Zunker, internal forces are individual psychological attributes, such as, personal aspirations and experiences, cultural values, career and academic interests; while external forces are environmental attributes, such as, economic, socio-political milieu. The interplay among these forces, according to Zunker, explain why individuals faced with the same decision (to repatriate) may take different paths (return home or stay abroad). Second, the transfer of human technology is part of career development, its pursuit and practice; and involves the whole notion of one's "self-expression" and striving for "affirmation" of who one is or "ego-identity" (Tiedman & Tiedman, 1884). Zunker, quoting Tiedman and Ohara asserts:

Society and individual continuously strive toward a common goal. The individual is striving to integrate within society [within a career]. If the uniqueness of the individual [expressed self] finds congruence with the uniqueness of the world of work, integration, synthesis, success and satisfaction will follow. If integration is
not reached, the individual may adapt to a career environment or simply withdraw and begin a new search for eventual integration. (p. 32).

Departure from a certain setting, thus, may be influenced by both the external and internal attributes (Zunker, 1986). Although Zunker studies were conducted in a different context than the intent of this study, their notion of an individual's search for career affirmation and integration in the environment seems applicable to this study. In the context of BDR among migrant APs, the propensity to repatriate may be influenced by a perceived degree of compatibility between internal forces (APs' personal preferences, patriotism, academic and career aspirations, cultural values) and perceived external forces (conducive economic, socio-political climate and infrastructure for academic and career advancement).

The preceding theoretical perspective implies that if perceptual attitudes of APs are analyzed, then (a) factors perceived to encourage BDR or integration of returning professionals can be verified; (b) external barriers associated with BDS can be identified; and (c) internal or psychological traits associated with migration decision (propensity to repatriate, stay abroad, or re-exit to the U.S.) can be ascertained.
2.3 **Phase III Literature related to Internal and External factors**

Some studies on potential deterrents to BDR allude to internal attributes, while others suggest external forces as contributing to non-return of some scholars to source countries. Liu (1985) observed that BDR among contemporary Chinese professionals BDR was influenced more by self-interests than national interest to plant back newly acquired skills from DCs to the advancement of development in their country, contrary to the traditional sentiments among earlier professionals.

There is a need to examine whether the lack of repatriation, among American educated APs, can be attributed to the lack of patriotism or sense of mission to develop source countries, or to structural conditions in the integration of African scholars. This section represents an interface of plausible internal and external dynamics that are associated with (a) repatriation among pre-graduated African scholars studying in the U.S.; as well as, (b) the outflow of African scholars who return to SSA, but somehow bounce back to the U.S. Comprehensive research on BDR, in the context of African economies, is sparse and tends to focus on a single country, area, or ethnic group, and therefore, lack generalization to SSA territory.

2.3.1 **Internal Dynamics Facilitating BDR Among APs**

Grinberg and Grinberg (1989) recognize that individual,
or psychological attributes influence migration patterns. They identify two types of migrant individuals: (a) ocnophiles and (b) philobatics. Ocnophiles are presumed to value a strong family bond and are motivated by a need to be in "constant" contact with familiar places and people; while philobatics, on the contrary, are presumed to avoid ties and seek adventure, or pleasure of forming new relationships, or emotions. Robert's (1986) study of Liberian nationals affirms that "home-ties" are a motivating ingredient in the decision to repatriate to source country. In the context of this study, APs who are ocnophilic may exhibit strong pro-homeland sentiments. According to Bolinti (1959) and Grinberg, et al, ocnophiles are rooted in their places of origin and may emigrate, or re-exit with difficulty. Philobatics, otherwise have a proclivity to emigrate, or re-exit in pursuit of "uncharted horizons."

African historians, Machyo (1969) and Madhubuti (1973) suggest that pro-Western life-style may discourage BDS among APs. Machyo asserts that African education means becoming Europeanized - "Black Englishman or Frenchman" in that the curriculum lacks indigenous flavor or emphasis on African heroes but idealizes Western modes and culture. Such curricula produce intellectuals who are out of touch with realities of African society (e.g. who know more about Shakespeare than they know about Nkrumah). Psychological implications of this argument are that (a) the root of BDS
may lie in the desire for Western life style inculcated from elementary education; (b) coming to the U.S. for some Africans may be a fulfillment of a long cherished but distant "dream" of being part of the mainstream Western culture; and (c) now that their academic pursuits have accorded them that passage, these scholars may not let that realization go - staying abroad keeps the dream alive!

Other internal attributes that are cited as important in determining the decision of APs to return to source country, or delay returning are (a) age, (b) ordinal position in the family, (c) financial responsibility to the family, and (d) patriotism.

Age has been identified as an important determinant (Useem and Useem, 1955; Grinberg and Grinberg, 1989; and Glaser and Habers, 1978). Younger individuals tended to stay abroad and not return (Useem and Useem (1955). Chukunta (1976) found age not a significant determinant of BDR, and that regardless of age students who identified themselves as "patriotic" were not likely to delay returning home.

Chukunta (1976) studied Nigerian students and found that students, who deemed themselves as bearers of financial responsibility over their families, nuclear, or extended familial ties, were more likely to delay repatriation to their country. Furthermore, Chukunta identified that the ordinal birth position in the family influences students' migration decision. First born were more likely to return early while
later-born students tended to delay, or stay-on abroad.

These preceding studies have several implications for the present study. First, normative societal expectations (values or embedded ethos in the African culture, such as, one's obligation towards the extended family) needs to be considered in determining the sense of mission of contemporary APs. Second, the ordinal position status and family responsibilities may overlap with patriotic sentiments. It may be difficult to say whether APs' propensity to repatriate home is motivated by (a) their obligation to their countries' development or (b) personal responsibility to family, or both.

For instance, Tom Valentine (1990), an official from the Intergovernmental Organization for Migration (IOM), acknowledged the existence of this ambiguity. Valentine, observes:

American educated Africans are constrained by pre-conceived attitudes of government officials and family members in home countries. The majority think that people living in developed nations have unlimited access to money and power. Extra-ordinary demands are placed on returning professions without offers of fiscal or emotional support. Consequently, many professionals find themselves returning to the world once again (re-exit), because they prefer anonymity of expatriate life over the incentive reality of home.
Alternatively, Chukunta (1976) observed that students who identified themselves as "patriotic" were more likely to return to Nigeria. Patinkin (1968) endorses that deficiency in patriotic sentiments may trigger, or fuel a cycle of BDS among Africans. Some African scholars contend that the decision to migrate "itself" is an "entrepreneurial decision." It is motivated by risks for economic ventures, rather than "patriotism" (Apraku, 1990).

Useem and Useem (1955) compared the characteristics of foreign students trained in Western countries and observed that American educated students (AES) depicted different characteristics from the British educated students (BES). The AES tend to be open and sensitive to being accepted, or "liked," while BES tended to be snobbish and not concerned about being liked, or accepted. Comparatively, the AES were more pragmatic, optimistic, risk taking and valued the dignity of work - "work ethic." The BES were more cautious, thrifty and tended to call "work assistants," while AES would call for more supplies, or see themselves as poorly supplied at work. The AES pride themselves in being trained in a technologically advanced country, or "super power," while perception of the British as "superior stock" disappeared among the BES.

Useem and Useem further observe that before going to train abroad both streams had different notions about their host countries. The AES tend to be idealistic about Americans, while BES tend to be antagonistic toward the
British. According to Useem, et al, approximately 80 percent of the students trained abroad tend to re-adjust their sentiment, or images: "Losing much of their antagonism toward the British and becoming more realistic toward Americans" (e.g. the BES are more astonished to see the British being human in Britain; while the AES were taken aback to find Americans snobbish in India) p. 154.

While Useem and Useem's study may be old and compares Indian intellectuals educated in Britain and the U.S., it touches on areas that have crucial implications for the integration of returning American educated APs. That is, APs are not limited by sentiments toward their homeland only, but also seem to embrace, and adopt the values in their host countries. On account of the American corporate values, work ethic, optimism and risk taking, APs may delay repatriation if they perceive that they will be (a) under-utilized at home, or not integrated in positions of power; and (b) perceive lack of facilities, and poorly equipped infrastructure for career development back home. Furthermore, they may be ambivalent to return home, or may re-exit to the U.S. if they perceive, or experience a "spirit of animosity and pettiness" among the old, or senior personnel at home - the latter has been emphasized by APs in informal discussions. At the same time if APs experience discrimination, or estrangement here in the U.S. their sentimental value of the U.S. may diminish and may be more inclined not to delay repatriation to their
homeland. Alternatively, they may enjoy staying-on here in the U.S. simple because they "like" Americans and their way of life, while they may be turned-off by stifling bureaucratic ethos prevailing at home.

Furthermore, Useem and Useem's study seems to suggest that American trained APs may prefer to work in more autonomous institutions - private sectors or non-governmental (NGOs) and academic realm, where the work ethic, efficiency, productivity, risk taking and creativity are maximized and compensated. Mazrui and Tendon (1967) observed a risk of disparity in East and West African government sectors in the allocation of position of power in favor of the locally educated personnel over those trained abroad - "been-to's." The been-to's may gravitate to the private sector. This bifurcation could result from the fact that African governments' scholarships go, overwhelmingly, to students studying in local universities. Furthermore, since the government, in African economies, is the main source of employment for the educated (U.S.AID, 1989 report), it seems logical to assume that preponderate government preference would lean toward professionals trained locally, or those who may conform to the status quo. Based on Useem and Useem's (1955) observation of characteristics of those trained abroad, American trained APs may be low in the totem pole. Thus, they may delay repatriation if they are ambivalent about being re-integrated in the main stream economy, regardless of how
high their patriotism, or desire to contribute in the development of the source country.

2.3.2 External Dynamics Facilitating BDR Among APs

Three decades ago, or in the eve of independence era in SSA, it was much simpler to assign external constraints toward BDR among APs to the hegemonic colonial regime, which provided less participation and integration of indigenous scholars in political and economic development of SSA. Ricca (1986) reports that "departure from the homeland was regarded as the road to emancipation" (p. 13). Ricca asserts, however, that:

Migration today still bears the indelible imprints of the colonial era. From the beginning of the colonial period to the end of the nineteenth century, the major powers focused their efforts on modernizing certain countries, ... the resulting imbalance in development is the main cause of population movement even today. (p. 13).

Ricca observes that rural migration flow to urban areas is propelled, to a greater part, by a quest or probability of finding better job opportunities that stem from the disparity between rural and urban wages. While Ricca's observations are based on patterns of traditional brain-drain (in-country transfer of manpower), they are consistent with Sours' (1971) observation of international, or non-traditional brain-drain. Sours supports the perspective that the transfer of human technology is enhanced by the global disparity, or "systematic
disequilibrium" between the peripheral LDCs, or satellite states, and TAC, or central powers.

Reports on current status of economic climate in SSA suggest that SSA is experiencing economic stagnation due to escalating external debts from $6 billion in 1970 to $134 billion in 1988 (World Bank, 1989); lower exports, and higher debt service payments - estimated at $24 billion per year (African Recovery, 1990). The International Monetary Fund (IMF) has recommended austerity measures resulting in stringent national budgets, which threaten the infrastructure for academic and professional advancement, employment opportunities even among the highly skilled, and availability of social conditions for quality of life (African Studies Association - News Letter, 1990; Bradshaw & Tshandu, 1990).

Logan (1987) contends that re-integration of returning professionals is contingent on the expanding economy of the source countries. Logan conceptualizes expanding economy as the ability of the source country to absorb professional manpower. An expanding economy is able to re-integrate returning professionals; while re-integration of returning highly skilled personnel in the mainstream economy may be difficult for deteriorating economies (Logan, 1987). Migrant labor tends to surpass the absorption capacity (Ricca, 1989).

Both Logan and Ricca suggest that if returning professionals perceive a high probability of being re-integrated in meaningful assignments, and their contributions
fiscally compensated, BDR would be enhanced. The implication of this discourse is that if professionals from SSA perceive their economies to be expanding, their propensity to repatriate would be high. On the contrary, if SSA absorption power is perceived to be stagnant, or deteriorating, their propensity to delay repatriation will be high.

The current policy environment in SSA has mixed perceptions to African scholars resident abroad. While African countries recognize the scarcity of qualified indigenous human technology as critical to sustainable development and a need to replenish these skills, no profound talks or structural transformation toward re-cycling or redeployment of African scholars has taken place. This observation is drawn from the reports of African development organizations, such as SADCC:

It will be necessary to complement our skills with the skills that are available in the world market. There will, therefore, be a need for conditions and arrangements sufficient both to attract the desired inflow of appropriate skills from outside and to retain them (emphasis mine). Imported skills must be managed in such a way as not only to ensure continued operation, but more importantly as inputs into the production of indigenous skills. (SADCC, 1990, p. 15).

The World Bank has observed that despite the educational
training of a generation of Africans in economics, Ministers of Finance and Planning still choose expatriates to undertake policy analysis. Many governments lack confidence in local specialists (p. 181). While expatriates have been integrated in SSA's public sectors as senior policy advisors to governments, senior managers of operational agencies and senior technical professionals, technical assistance is poorly managed (World Bank, 1989). According to the World Bank: "Recipient governments rarely have reliable data on the numbers, composition of the technical assistants working in their countries. Nor do they have clear policy governing the use and eventually phasing out of technical assistants linked to long-term plan for public sector manpower developments" (p. 182).

Machyo (1967) and Ward (1971) have identified perpetual dependence of SSA economies on imported skills as neocolonialism and counter productive to sustainable development. The Supplement to Financial Mail (1988, p.28) has challenged the success of expatriate input in transferring, or alleged training of the local counter-parts in SSA, as ineffective and exerting undue costs -- approximately $4 billion a year (World Bank, 1990). The Bank concludes: "Technical assistance not only reflects short supplies of certain African specialists, but the inability of institutions, especially in the public sector to attract and retain qualified national" (p. 181). African economies, thus, seem to express a
proclivity to the legendary dependence on imported skills or expatriate personnel despite strong criticism, or alleged ineffectiveness and cost of this option. This preceding discourse, thus, suggest that African scholars may choose to delay returning to SSA, if they are ambivalent, or anticipate that their skills will be not be appreciated, utilized or reintegrated in meaningful development process, regardless of patriotic feelings towards SSA.

Informal discussions with some African students and Scholars at The Ohio State indicate that political factors may outweigh economic concerns. For instance, these scholars cite political instability, rigidity toward political pluralism, intolerance for opposition with political decisions, nepotism and corruption in their source countries, as contributing to BDS of APs in SSA, more than bureaucratic or fixed levels of emolument for entry professionals. Studies seem to affirm that the political and policy environment around which scholars operate may be a major determinant in the APs' decision to return home or stay abroad (Apraku, 1990; Kamanda, 1990; Magagula, 1990).

Huang, (1988) also suggests that individuals are not limited to pecuniary factors in their decision to exit or delay returning to source country. These studies imply a need for the analysis of the political environment in SSA that may inhibit BDR among APs, or encourage APs to re-exit to the U.S.

The Chronicle for Higher Education (1990 p. 1, 40)
reports the current status of the political milieu surrounding academic arena in SSA. There seems to be a growing conflict between government officials and the academic institutions. Campus-based pro-democratic drives have mushroomed in SSA universities, such as Ghana, the Ivory Coast, Kenya, Lesotho, Mozambique; Sierra Leone, Swaziland, Togo, Zaire, Zambia and Zimbabwe. These countries are calling for political pluralism and academic freedom. The report observes: "Where government officials themselves have been moving toward multi-party systems, they have asked university experts to help in the transition (e.g. Mozambique, Angola and Ethiopia) In other countries, however, student and faculty political involvement has not been well received" (p. 40)

The outcome of these confrontations is that students are detained, universities closed, and scholars exit to seek political asylum in other countries. The report added: "African governments, faced with growing pressure for reform have reacted in varying ways, but often with direct implication for their universities (p. 40). Galston, professor of public affairs at the University of Maryland, analyzing the adverse relationship between politicians and scholars, asserts: "while politicians deeply mistrust intellectuals, they also need them" (Chronicle of Higher Education, 1990, 28, p.B5).

**Summary**

In sum, questions pertaining to the relative factors
attributing to repatriation of African scholars still remain a controversy.

The underlying theme that has been drawn from the preceding analyses seem to suggest that African scholars prefer more to be home than to stay in foreign countries; but they may not repatriate home or may return to the U.S., not because of a decline in their sense of mission to develop Africa (patriotism); but due to external conditions (structural conditions), around which they operate, political milieu in particular. Das (1974) challenges the idea that national interests motivate APs and endorses the view that APs are motivated by self-interests.

Grienberg and Grinberg assert that scholars seem to be gratified most by non-pecuniary factors - by ability to exist in an unconstrained academic milieu. Lack of repatriation among some Africa scholars may emanate from frustrated aspirations and not a lack of a sense of mission (Zunker, 1986). The latter premise is based on Zunker's notion of career development - individuals as continually searching for affirmation of inner-self (ego-identity). Grinberg and Grinberg (1989) define inner-identity as a struggle for self-preservation (not based on race), free of prejudice that undermines the intellect (p. 129-130). According to Zunker, dissonance (ego-crisis) occurs among APs if re-integration (acceptance) is not realized. They may adapt to the environment (return and stay in Africa), or simply withdraw.
and begin a new search for eventual integration (re-exiting back to the U.S.).

First, it could be anticipated, therefore that, as the career environment, economic order and socio-political milieu in SSA, are perceived by APs as conducive or complimentary to the individual AP's aspirations (inner identity), propensity to repatriate to SSA would be high. Alternatively, the APs' interest to stay in the U.S., or to re-exit back to the U.S. may be high, when African scholars experience a dissonance— incongruence between the APs' personal aspirations and patriotism (internal dynamics), and the perceived career environment, economic, and socio-political milieu in SSA (external dynamics).

Second, the orientation that APs are needed at home for the sustainable development of SSA seems important; but patriotic sentiments alone are not a substantially adequate condition to activate their interest to return to source country (Onwudiwe, 1990). Familial considerations seem equally important to some APs.

Third, economic factors seem important in facilitating BDR (Logan, 1987; Ricca, 1989). Apraku (1990) perceive socio-political dynamics in SSA as more important to repatriation decision. For instance, while the Hlophe Commission had recommended monetary incentives, such as "professional allowances" for the Civil Service in Swaziland, brain drain continued unabated (Times of Swaziland, 1988; 1990). The APs
may delay repatriation to SSA, or return home but come back to the U.S. when they perceive an unempowering socio-political milieu around which they operate (Apraku, 1990; Kamanda, 1990), even in the face of economic incentives.

Last, Das (1974) suggests repatriation may be enhanced by adverse conditions from the U.S. According to Das, Africans face social discrimination here in the U.S., to which Black Americans are subjected in the workplace. The latter implies that some APs may return home not because they are pulled by favorable conditions from home; but due to unfavorable conditions pushing them from the U.S., such as discrimination and under-utilization of their skills.

A practical application of the preceding discourse is the development of an instrument to test these assertions. The present inquiry needs to clarify if these attitudes predict returnability-intent among APs and where these attitudes start. Do APs disengage from SSA while studying in the U.S., or after returning home, and thus, bounce back to the U.S.? Specifically, which factors would predict the AP's decision to repatriate to source country, stay or re-exit back to the U.S.?

The literature review, in this chapter suggests that if APs' attitudes toward BDR and patriotic-sentiments among the contemporary African scholars can be measured, the APs' orientation toward sense of mission versus self-interest can be labelled and verified (Liu, 1985). Second, the attitudes
among APs may be influenced by some characteristics such as 'sponsorship' (IIE: Open-Doors 1987/88), ordinal birth order - first born versus later born APs (Chukunta, 1976). Third, some conditions in the U.S. that may influence plans to repatriate. The preceding arguments, thus, suggest that the decision to repatriate, stay abroad, or re-exit, among APs may involve a set of complex variables: pecuniary and non-pecuniary attributes, internal and external forces and pull and push factors from the U.S., each of which need not be excluded in the analysis of the determinants of BDR of professionals from the developing countries, SSA in particular. These items are detailed in the instrumentation (see Appendix A).
3.0 Introduction

The study was correlational in nature and was designed to gather empirical data concerning the relationships among selected variables.

The main objective of this inquiry was to examine the attitudes of American educated pre and post-graduated APs BDR, so as to determine factors contributing most to their decision or propensity to repatriate home, stay or re-exit back to the U.S. or other countries abroad.

Other aims of this investigation were mainly (a) to yield results that are generalizable to the population of African scholars in the U.S., as delineated in Chapter I; (b) to attempt to develop a predictive model that could be available for making useful judgement about intervention initiatives to maximize BDR; and (c) to contribute theoretical framework to existing knowledge about transfer of human technology, as it relates to African economies.

An instrument with four parts was developed to measure the variables (see appendix A). The main variables were factors encouraging BDR; patriotic sentiments; and returnability-intent.

Multiple regression analysis was used to explain the
relationships and to account for extraneous variables and competing hypotheses. Regression analysis was used to test other variables. Details of the theoretical model used are highlighted later in this chapter, under the data analysis section.

The demographic data were used as descriptive statistics to define the characteristics of the sample. The outcome of this analysis are outlined in Chapter IV - results and conclusion section. Discussion and recommendations are detailed in Chapter V.

3.1 Hypotheses

The following hypotheses were tested at a .05 level of significance:

1. There will be a significant association between factors identified as "encouragers" of brain-drain reversal (BDR), patriotic sentiments (PS), and returnability-intent (RI) propensity to repatriate among African Professionals (APs).

2. There will be no significant association between factors identified as "encouragers" of BDR, patriotic sentiments (PS), and returnability intent (RI) of APs.

The inquiry was particularly interested in the relationships among the following variables:

**Main Variables** (1) propensity to repatriate to SSA, versus stay in the U.S. (returnability-intent), (2) patriotic sentiments toward homeland versus pro-sentiments toward U.S.
among APs; and (3) attitudes toward encouragers versus discouragers of BDR.

The variable, encourager vs discourager of BDR, is determined by eight selected constructs. The construct, patriotism is presented patriotic sentiments toward homeland versus foreign-land. The construct returnability-intent, is determined by the propensity to repatriate versus stay in the U.S. The constructs are outlined below (see figure 1). The content of the questionnaire is detailed in appendix A.

3.2 Definition of Variables

Attitudes: Thurstone (1928) defines attitude as "the sum total of a man's inclinations and feelings, preconceived notions, ideas, fears, threats, and convictions about any specified topic" (p. 531). Muller (1986) restates Thurstone's definition of attitude as (a) affect for or against, (b) evaluation of, (c) like or dislike of, or (d) positiveness or negativeness toward and a psychological object" (p.3).

Nunnally (1970) adds that attitudes concern feelings about a particular target - social or physical objects, people, social institutions, government policies and others. Attitudes were operationalized as a broad array of opinion statements representing the entire universe of feelings, fears, beliefs, values and opinions about the object BDR - repatriation and integration among APs. These attitudes were measured by (1) scores on the Likert Scale and (2) Osgood Scale.
Table 4  
An Outline of Constructs: Sub-scales and Variables

1. **Returnability Intent**:  
   (Dependent Variable)  
   
   Scores on the Semantic Differential Scale = Q69 to Q86.  
   (Propensity to return to SSA vs stay in U.S.).

2. **Patriotism**:  
   (Independent Variable)  
   
   Scores on Semantic Differential Scale = Q51 to Q68.  
   (Sentiments pro-homeland vs U.S.).

3. **Attitudes toward Repatriation**:  
   (Independent Variable)  
   
   Scores on the Likert Scale = Q1 to Q51.  
   (Encouragers vs Discouragers, Sub-Scales see below):

**Sub-scales on the Likert Scale:**

- **Professional development**  
  (PROFDEV) Represented by Q5 Q9 Q12 Q16 Q26 Q29 Q43

- **Ties with extended Family**  
  (HOME-TIE) Represented by Q3 Q31 Q34 Q47

- **Re-integration Prospects**  
  (RELY) Represented by Q15 Q25 Q27 Q28 Q36 Q48

- **Global Socio-political Dynamics**  
  (DYNAM) Represented by Q13 Q20 Q40 Q45

- **Occupational Climate**  
  (CULTURE) Represented by Q2 Q7 Q21 Q30 Q35

- **Economic Rewards**  
  (REWARD) Represented by Q1 Q8 Q14 Q17 Q18 Q24 Q33 Q38 Q49

- **Quest for American Life-style**  
  (US-PULL) Represented by Q6 Q10 Q23 Q32 Q37 Q39 Q41 Q44 Q46

- **Under-Utilization in the U.S.**  
  (US-PUSH) Represented by Q4 Q11 Q22 Q42 Q50
- Semantic Differential Scale. The Likert Scale measures the strength of belief component of the attitude (Fishbein, 1976). Osgood's Scale measures the evaluative dimension or deeper meaning of belief component of the attitude.

**Encouragers:** The American Heritage Dictionary defines the construct "encourager" as an "incentive" that provides support and inspiration for one to continue in a course of action. In this study, the construct, "encouragers," was constitutively defined as factors such as political, economic and social factors, as well as individual attributes that are believed to inspire the African students' desire to return to their home countries after completion of academic pursuits in the United States. Encouragers were operationalized as a high score on a Likert scale (eight composite sub-scales) that measured the perceptions toward factors facilitating BDR or re-integration of APs.

**Discouragers:** The American Heritage Dictionary defines the construct "discourager" as a "deterrent" that deprives one of confidence, hope and spirit to engage in a course of action. In this study, "discouragers" were constitutively defined as factors such as political, economic and social factors that are believed to inhibit students' desire to return to their home countries after completion of academic pursuits in the United States. Discouragers were operationalized as a low score on a Likert scale that measured the perceptions of APs toward factors facilitating re-integration of APs. The
construct encouragers versus discouragers were determined by eight composite sub-scales, cited in figure I above.

**Patriotism:** The American Heritage Dictionary defines Patriotism as "love and devotion for one's country." Patriotism was operationally defined as nationalist orientation manifested by pro-home land sentiments in the Semantic Differential Scale. Alternatively, low patriotism would be manifested by pro-foreign land sentiments, or international orientation. To minimize confounding competing sentiments, the scale from its conception was designed to in a way that these sentiments could be measured independently.

**Returnability-intent:** The American Heritage Dictionary defines "returnability" as an act of going or coming back to an earlier condition, or place. Intent was defined as a state of mind operative at the time of action, and a state of "having the mind fastened to some "purpose". In this study the variable, "returnability-intent," represented self-expressed propensity of APs toward repatriation to source country, or to stay abroad after completion of academic pursuits in the U.S. It was assumed that such covert responses may manifest an intended reality to repatriate to source country; or an intended action to remain abroad. In order to identify confounding intentions to return vs stay, the instrument from its conception was designed in a way that the declared intentions could be independently tested.
3.3 Population and Sample

The target population under study consists of pre and post-graduated professionals from Sub-Saharan Africa (SSA) in the United States. Pre-graduated professionals refer to African students who are enrolled in the United States institutions of higher learning. Post-graduated African professionals represent those who repatriated to source countries in SSA, after completion of their academic pursuits in the U.S., but who later returned (re-exited) back to the U.S.

It was anticipated that it would be difficult to obtain an accurate, up-to-date, and centralized frame of all African students in the United States institutions of higher learning. As such, the probability sample that has been appropriate for this study was a multi-staged random cluster sampling.

According to Ary, Jacob, and Razavieh (1985), cluster sampling is the most convenient method when (a) it is impossible and/or difficult to list "all members" of a target population and select a sample among them; (b) when the sample under study is "scattered" all around the nation; (c) when "cost" of conducting such a study would be very expensive otherwise; and (d) when the subjects are "nested in naturally occurring clusters," such as schools, colleges or universities. Furthermore, Ary, Jacob, and Razavieh (1985) advise that "once a cluster is selected, all the members of
the cluster must be included in the sample." p. 144. Consistent with the above aims multi-staged random sampling was utilized.

3.2 Sample Selection Procedures

To ensure that the sample was representative of APs enrolled in institutions of higher learning here in the U.S., a sample of 30 colleges and universities nation-wide was randomly selected, using a table of random numbers, from a list of 1158 colleges and universities with African students enrollment. The list of institutions was obtained from the Institute of International Education (IIE) in New York. Of the 30 institutions, 12 outlyers were dropped from the sample (list of prospective schools). An institution was arbitrarily considered an outlier when it had less than seven African students enrollment or disproportionately high number of African students represented in one University. The final cluster of institutions sampled consisted of 18 schools with a minimum of 7 African students enrollment, a maximum of 70 African students, and a sample of 404 potential respondents.

A special sampling procedure was created and applied to the secondary sample, using informal networks. This technique is "spider-web cluster." There is no registry that list the APs who repatriated to Africa, but re-exited to the United States. The names were compiled using the "spider-web" cluster created to meet this need. This procedure utilizes existing informal networks, such as heads of departments,
Deans and Alumni offices in different universities and colleges, to furnish names and addresses of graduated APs they know, who returned to Africa after completion of their studies, but bounced back to the US. Some individuals were also requested to furnish names and addresses of other colleagues who fall in the same category as themselves. A sample of 71 African scholars who fitted the described category were generated. All members of the selected clusters were sampled. The entire sample of potential respondents, thus, totalled at 475. According to a table of suggested sample estimates developed by Krejcie & Morgan (1970), a sample of 379 APs was needed to be drawn from a target population of about 28,000 African scholars [based on 1987/88 statistics]. Krejcie and Morgan advise that such a sample would yield a margin of error of plus or minus five percent and the risk of the actual margin of error exceeding that value one in twenty.

Sample Size

The actual number of respondents in this study was 187, broken down as follows: primary sample of n = 147 pre-graduated professionals (African students) and the secondary sample consists of n = 40 re-entry professionals (African scholars who repatriated to source country, but subsequently returned back to the United States). To achieve a bottom minimum of 60 percent minimum response rate, as suggested by Dillman (1978), a sample of as low as 200 pre-graduated APs
would have been sufficient (200 x .60 = 120). According to Gooding (1990 personal conversation) a sample with n = 120 allows for an error factor of 1/6 of the standard deviation at an 0.05 confidence level. Cohen and Cohen (1983) estimate that a sample size of n = 120 is sufficient to accomplish statistical power of .92, or probability to reject the null hypothesis where the conventional medium $r = .30$ at .05 level of significance. Cohen and Cohen suggest, however, that as the sample size increases, power increases, and the higher the power, the greater the magnitude of the effect in the population (departure from the null hypothesis) p.59. Based on the preceding discourse the sample of (n = 187) in this study was representative of the target population of APs (Cohen & Cohen, 1983; Krejcie & Morgan, 1970).

3.4 Instrumentation

A comprehensive instrument, with four parts, was developed to establish the relationship among factors perceived by APs to encourage or discourage brain-drain reversal (BDR), patriotic-sentiments and returnability-intent (propensity to repatriate to SSA), as delineated below.

3.4.1 INSTRUMENT-I is an attitude scale, and is composed of 50 questions (items: Q.1 - Q.50) subjectively rated on a 1 to 6 summated Likert scale, (see appendix A Part I). This scale consists of a series of attitudinal statements to which the respondents responded in terms of their attitude on neutral
items that are approximately equal in their degree to encourage or discourage repatriation to source country.

The level of encouragement is arranged in a continuum, from extremely discouraging to extremely encouraging. The lowest possible score is 50 and the highest possible score is 300. The factors examined were pecuniary and non-pecuniary in nature. The Likert instrument, thus, measured the "affective domain" - the extent to which the African professionals perceived the pecuniary and non-pecuniary factors as encouraging or discouraging BDR. The format of the instrument to measure encouragers of BDS vs BDR has been adopted from Van Tilburgs' model of encouragers and discouragers. Although the latter was designed for a different context, the format has been useful to this study.

3.4.2 INSTRUMENT-II is a summated Semantic Differential Scale with two sub-scales measuring two constructs: (1) "returnability - intent" or propensity to repatriate to SSA, and (2) patriotic sentiments, (See appendix A, Part II). According to Mueller (1986), Semantic Differential Scales, as attitude measurement techniques (a) consist of paired adjectives that are "loaded" highly on the evaluation dimension; (b) elicit self-reported attitudes; and (c) yield a deeper meaning of the feelings. The technique locates concepts within a semantic space. It is based on the notion that three factors account for a substantial portion of the attitudes toward concept. These factors are (a)
"evaluative domain" which has to do with good-bad, valuable-worthless, etc.; (b) "potency" which has to do with strong-weak, heavy-light, etc., and (c) "activity" has to do with fast-slow, sharp-dull, etc.

Ary, et al (1986) suggest that respondents tend to anticipate what the researcher is searching for, and thus, may lie or yield socially acceptable responses rather than what they really feel or perceive. Semantic Differential is a powerful tool for minimizing this tendency. It forces respondents to focus, and to concentrate on their feelings rather than on the intentions of the researcher. Thus, it elicits consistency of responses.

The Semantic Differential Sub-Scales consisted of 4 categories in a triangular relationship between bipolar adjectives situated at the ends of 1-7 rating scale, and had two sections:

Section-I measured the level of patriotic sentiments or attachment toward the "homeland" versus attachment toward the "foreign land." Categories 1 and 2 (items: Q.51 - Q.68) represented sentiments about returning to source country versus staying in foreign country. A high score represented positive feelings toward repatriating to the source country and negative feelings toward remaining in the foreign country. Conversely, a low score denoted negative sentiments, or feelings, toward returning to the home country and positive sentiments toward staying in the foreign country.
Section-II consisted of categories 3 and 4 (items: Q.69 - Q.86) represented behavioral objectives to determine intensity of self-reported plans to return to home country, or stay in the foreign country. The lower end of the scale measured definite intent about returning to source country while the upper end represented definite plans, or intent about staying in the foreign country. The items in both scales were designed at an interval level and closed-ended format. The individuals’ scores on the two instruments, Likert scale and the Semantic Differential, were correlated to determine if there was a relationship between the respondents’ score on encouragers or discouragers of brain-drain reversal vs brain-drain syndrome, sentiments and the returnability intent as measured by the score in the Semantic Differential scale. (3) According to Mueller (1985) Semantic Differential as an attitude measurement technique has substantially high reliability (test-retest and internal-consistency coefficients around .90) and (b) it would correlate very highly with attitude instruments, such as the Likert-scale. Part III of the instrument consisted of selected characteristics (items: Q.87 - Q.100) for statistical analysis of the data. Part IV consisted of three open-ended questions which would be analyzed qualitatively, based on the guidelines delineated by Gable and Rogers (1987, p. 14). These questions were included to (a) stimulate APs’ free thoughts, (b) clarify and confirm their position, and
(c) solicit suggestions for recommendations to policy makers and potential solutions to the problem as perceived by APs from SSA. For confirmability and accuracy of the results, according to Lincoln and Guba (1985), the researcher may overlap quantitative and qualitative methods. Dunn (1981) counsels that data outcomes generated from the "real world" have potential utility for policy consideration - one of the expected outcomes of this study.

3.5 Validity

The instrumentation constructs that were tested in this study are outlined in Figure 1. The items were sorted as guided by the extensive review of the literature and cross-sectional interviews with African scholars and officials in African Embassies, Washington, D.C.

An exploratory factor analysis to validate the clusters of the sub-scales was not feasible in this study, due to relatively small sample size. Psychometric theory (Nunnally, 1967) recommends 10 observation for every item, and that when the prescribed rule of thumb (10:1 ratio) is violated, solutions may not be stable. In such a case "factor analysis can take great advantage of chance and what appears to be factor are only artifacts because of sampling error" p.257. A sample of n = 500 was needed to accomplish this procedure. Validation of the instrument was limited to Content validity.

Content validity for the instrumentation was established by a panel of experts. The panel of experts was composed of
8 people drawn from members of faculty at Ohio State University who were (1) African professionals from sub-Saharan Africa, or (2) Administrators in the Office of International Students and Scholars, and related status. Two of the eight experts were doctoral students from Africa. The 8 members were considered experts since all had vast experience in working with international students affairs and are knowledgeable of man-power development issues in Third World countries or developing countries (DCs), Africa in particular, in the context of brain-drain reversal (BDR) vs brain-drain syndrome (BDS).

The panel was exclusively engaged in the task of testing the content validity of the instrument and was not part of the target population under study. The prospective participants in the panel of experts were contacted by letters requesting them to participate and to serve in this capacity. The copy of the letter and accompanying validation process are outlined in Appendix B. The format of the validation form was adopted from Rennekamp (1987).

3.6 Reliability

Reliability was established by Cronbach Alpha coefficient of internal consistency, using a pilot group of 30 African scholars. The pilot group was drawn from African students from SSA who are enrolled in a Mid-West university. The participants, thus, were similar to the population under study. In this study, overall reliability for the Likert
Scale was $r = .80$ and reliability for the Semantic Differential Scale averaged $r = .85$. The alpha for the sub-scales ranged from .50 to as high as .89. Cronbach's Alpha identified items that could be eliminated to improve reliability of the final form. Nunnally (1967) however, suggested that reliability coefficient alpha for sub-scales around .60 was acceptable at early stages of research. As such, no items were deleted to adjust the final form of the instrument. Negative item correlations were re-coded. Table 5, below, reports the comparison of the coefficients of alpha obtained from the pilot and final samples. The inter-correlation matrices for the items in the sub-scales appear on subsequent pages, following Table 5.

3.7 Data Collection

Data collection, via the mail survey methodology, took place in the Summer of 1991 and was subsequently analyzed and interpreted in the Fall of 1991. The process for data collection in this study adopted, where feasible, strategies for implementing mail surveys developed by Dillman (1982). A preliminary notification of the coming questionnaires was sent to all the randomly selected universities and colleges with African students enrollment.

The institutions were requested to participate in the survey by furnishing names and addresses of all prospective respondents - African students from Sub-Saharan Africa (SSA) currently enrolled in their schools. For diplomacy and
Table 5:
Instrumentation Reliability for the Pilot and Final Sample

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<th>Final n=187</th>
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NB: Reliability was established by Cronbach Alpha for coefficient of internal consistency. Nunnally (1967, p.226) reliability coefficient alpha of .50 or .60 is acceptable in the early stages of research for predictor tests or hypothesized measure of a construct.
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Table 6, Continued...

Subscale 4: REWARDS (10 Items, Alpha = .80)

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Subscale 5: CULTURE (5 Items, Alpha = .64)

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NB: Reliability was established by Cronbach Alpha for coefficient of internal consistency. Nunnally (1967, p. 226) reliability coefficient alpha of .50 or .60 is acceptable in the early stages of research for predictor tests or hypothesized measure of a construct.
protocol considerations, these letters were addressed to International Students Affairs Offices, and counter-signed by Dr. Virgil E. Blanke, (Dissertation Chair) and Dr. John Greisberger, Associate Dean, Office of the International Students and Scholars, at The Ohio State University (See Appendix C).

Furthermore, a copy of the instrument was attached to the preliminary letter to enable the institutions to access gist and nature of the study, so as to make decisive decisions whether to participate or not. All, except three of the institutions contacted, gave positive responses. Some schools responded promptly, while others responded to subsequent telephone follow-ups after the initial contact was made, at definite dead-line intervals of 2 and 3 weeks. The majority of the 18 universities and colleges contacted \( n = 15 \) agreed to participate in the study. Twelve of these agreed under a constricted condition that they would not furnish the physical names of their students, but they in turn, would distribute the questionnaires to the African students enrolled in their schools. They explained that the condition not to provide students names was consistent with standard operating procedures and policy guidelines of the given institutions, toward protecting the confidentiality of the foreign students. Three of the 15 institutions furnished the names of students and three institutions simply did not show interest to participate in this study.
Procedures specified by Dillman to encourage prompt responses, based on the "social exchange theory" were adhered to. Rewards utilized in this study incorporated seven social exchange techniques. Such strategies included (1) assuring the prospective respondents guaranteed confidentiality and anonymity of their personal responses. (2) The format of the questionnaire was arranged in a booklet form and neatly displayed (reduced 79%, on "8 X 11" size). (3) The outer cover had a catchy graphic design and a catchy title. (4) Respondents were given the option to request summary report of the findings of the study. (5) Self-addressed envelopes with postage pre-paid were supplied to enable respondents to return completed questionnaires with no cost on their part. (6) Over and above the conventional English, respondents were thanked using main vernacular languages for Central, South, East, and West Africa; and (7) also, emphasized the utility of the findings in the development of recruitment initiatives and incentive programs to attract indigenous expertise from abroad.

The researcher planned to use the "double-dip" technique suggested by Miller and Smith (1983) for controlling for non-response error. The procedure involves (a) listing and numbering non-respondents (b) drawing a random sample of 10 to 20 percent (c) contacting and getting their response by telephone, and (b) subsequently comparing them statistically with respondents. This procedure was not feasible, however,
due to the prior mentioned constraints - limited individual contact and consideration for maximum anonymity of respondents. The researcher accepted the total of 187 as a moderate response, and considered 50 percent response rate phenomenal in this study, given the constraints delineated earlier, which were compounded by timing of data collection in the summer time among foreign students population, and political sensitivity of the domain under study.

Missing data and nonsense error data were dealt with as suggested by Van Tilburg (AG ED 888 course notes). Van Tilburg advises that (a) partially completed responses (questionnaires that are less than 75% completed) should be discarded; and (b) when respondents forget to complete a particular item, a "mean" of the specific item should be used.

Van Tilburg, thus, suggests that using efficient methods of handling non-response rate and returned data would increase the generalizability of the study to the population of African scholars from the Sub-Saharan region, in the U.S.

3.7 Research Design and Data Analysis

Up till now, a predictive model was not available to make useful judgement about intervention strategies to facilitate brain-drain reversal and maximum popular participation of APs. Much needed to be known about the matrix of factors associated with the decision to repatriate, as it relates to African economies. This study reconciled information generated from
interviews with African scholars, available literature, and African officials to come up with a synthesis of conditions that are associated with the propensity to return home, stay or re-exit back to the U.S.

The objective of this investigation were:

(1) To identify specific factors associated with the decision of pre and post-graduated APs to repatriate to source countries.

(2) To identify specific factors associated with the decision to stay or re-exit back to the U.S.

(3) To develop a comprehensive questionnaire to test traditional views toward African brain-drain - items of the instrument are depicted in appendix A.

(4) To develop a predictive model to guide in making strategic decisions toward intervention initiatives, and extend the theoretical knowledge base on reverse transfer of human technology as it relates to African economies, and to recommendations to policy makers.

(5) To generalize the results to the population of African scholars from SSA in the U.S.

The study examined the relationships among conditions identified by APs to encourage BDR, patriotic sentiments, on the dependent variable returnability-intent propensity to repatriate. The attitudes of pre and post-graduated APs were measured to establish if they intend to repatriate to source countries, or stay in the U.S. It was necessary determine the
point at which the decision to exit starts. Literature has not clarified whether APs become alienated from the source country while in the U.S., or after they have returned to SSA and thus subsequently re-exit back to the U.S. (pull and push factors from the U.S versus conditions at home). Furthermore, clarification was necessary to determine whether BDR was associated with individual attributes, such as shift in sense of mission (patriotic sentiments) or structural attributes (external forces in the integration of African scholars in SSA). Such information would facilitate meaningful recommendations.

The end sought was an attempt to develop a predictive model that could be available for making useful judgement about intervention initiatives to maximize BDR; and to contribute theoretical framework to existing knowledge about transfer of human technology, as it relates to African economies.

A predictive research methodology was appropriate for the research questions previously identified. Data were analyzed exclusively with SPSS program for social sciences (WYLBUR computer mainframe). The most difficult challenge of developing predictive models, in social science, has been to accurately partition variance accounted to by variables of interest in the dependent variable when they are highly correlated with each other or when multi-collinearity exists. In this study, the sub-scales in their conception were
designed to minimize this interaction. The declared intentions to return versus to stay in the U.S. can be separated and independently tested. The ordering of the variables for entry in the regression model were not done a priori for two reasons: (a) this study was more interested in the predictive than explanatory emphasis of the variables; and (b) Cohen and Cohen advise that hierarchical strategy, while is more preferable than the simultaneous strategy, the former may not be used when there is no decisive rationale for sequencing the order of factors for entry in the regression equation.

In the light of the preceding discourse, and controversy in literature in terms of the weight of factors contributing to repatriation among APs, a more appropriate procedure for ordering the variables was the step-wise regression analysis - backward procedures. Based on Cohen et al., the latter is a combination of the simultaneous and hierarchical strategies, and it defines variables a posteriori order based on the uniqueness of the variables in the model. The overall problem of this procedure is that the ad hoc order from a set of independent variables in one sample may change in another samples from the same population (Cohen & Cohen, 1983).

Step-wise procedure is designed to approach the maximum variance with minimum number of independent variables in the regression model. The step-wise backward analysis involved three stages: (a) putting in all the 10 independent variables
simultaneously; (b) adding all possible two way interaction variables in model; and (c) removing, by backward elimination the least insignificant interaction terms, one at a time, while retaining the main effects. The goal was to come up with core independent variables that predict best the dependent variable of interest. Inferences to the population were set at an .05 significance levels.

Descriptive statistics were used analyze the demographic data or to define the population.
CHAPTER IV
FINDINGS AND CONCLUSIONS

4.1 Introduction

The main purpose of this inquiry was to examine the attitudes of African scholars toward brain-drain reversal (BDR). The investigation was correlational in nature. The end-sought was to establish if relationships exist among factors perceived by pre- and post-graduated African professionals (APs) to encourage BDR, and their propensity to repatriate home, stay, or re-exit back to the U.S. and other countries abroad.

The study attempted to provide a predictive model African policy makers could utilize in making strategic interventions toward BDR. Interactions were explored and interpreted in the light of unique or underlying theoretical framework for better understanding of the phenomenon of reverse transfer of human technology, as it relates to economies of Sub-Saharan Africa (SSA).

A comprehensive instrument was developed for this study. Part I of the instrument (Likert Scale) yielded eight sets of independent variables (sub-scales) from the construct 'encourager' as a measure of factors encouraging APs to repatriate home, or stay in the U.S. Two independent variables were generated for Part II-A of the instrument, as
assessed by scores on the Semantic Differential Scale to measure theoretical construct 'patriotic sentiments' toward homeland versus favorable sentiments toward U.S. (foreign country). Two dependent variables of interest were propensity to return home, versus intent to stay in the U.S. Part II-B of the Semantic Differential Scale yielded a summated score for the returnability-intent, as declared by the individual respondents.

The twelve sub-scales that were correlated are:

A. RETURNABILITY INTENT (dependent variable)
   1. Propensity to return home was operationalized as summated 'return score' on the Semantic Differential Scale.
   2. Propensity to stay in the U.S was operationalizes as summated 'stay score' on the Semantic Differential Scale.

B. PATRIOTIC SENTIMENTS (independent variable)
   1. Patriotic sentiments toward homeland has been operationalized as summated score (HOMELAND) on the Semantic Differential Scale.
   2. Favorable sentiments toward foreign country (US) has been operationalizes as summated score (FOREIGN) on the Semantic Differential Scale.

C. ENCOURAGERS VERSUS DISCOURAGERS OF BDR (independent variables) were operationalized as scores on eight composite sub-scales on the Likert scale:
1. Ties with extended families in home country.
2. Prospects of being re-integrated in home country.
3. Socio-political dynamics in home country.
4. Economic factors - monetary gains and benefits in home country.
5. Infrastructure determining professional advancement in home country.
6. Occupational culture in home country.
7. Conditions pulling scholars to the U.S.
8. Conditions pushing scholars from the U.S.

The validity of the instrument was determined by a panel of experts, as mentioned in Charter III. Cronbach alpha for coefficient of internal consistency established the reliability of the instrument that was tested on a pilot sample of \( n = 30 \). The results of the reliability coefficient of internal consistency for the pilot and final samples were compared (see table 5, in Chapter III). The coefficients alpha for sub-scales, on both samples, ranged from as low as .50 to as high as .89. According to psychometric theory (Nunnally, 1967), an alpha = .50 or .60 was acceptable in the early stages of research for predictor tests or hypothesized measure of a construct p.226. Item inter-correlation matrix, for final sample were calculated using SPSS. A detailed explanation of the correlation matrix for the composite sub-scales appears later in this section. The results were reported in table 6 in Chapter III.
The objectives of this investigation are;

1. To identify specific factors associated with the decision of pre and post-graduated APs to repatriate to source countries (SSA).
2. To identify specific factors associated with the decision to stay, or re-exit back to the U.S.
3. To establish the relationship among the dependent variable (returnability-intent) and sets of independent variables perceived by scholars to encourage repatriation.
4. To provide a predictive model (quantitative) for making useful decisions toward intervention initiatives, as well as, extend the theoretical base on the transfer of human technology as it relates to African economies.
5. To generalize the results to the population of African scholars from SSA in the U.S. (consistent with the aims articulated in Chapter I - available studies on African brain-drain tend to focus on one area or ethnic group).

The present inquiry tested the following hypotheses at an .05 level of significance.

Hypothesis 1: $R^2 = 0$ in the population.

There will be no association among factors identified as encouragers of BDR, patriotic sentiments (PS), and propensity to repatriate or returnability-intent (RI) among APs.

Hypothesis 2: $R^2$ is not $= 0$ in the population.
There will be an association among factors identified as encouragers of BDR, PS and RI among APs.

Based on the traditional views toward African brain-drain that guided the questions or development of the instrument sub-scales for this study, a table has been prepared to summarize the expected pattern of relationship, in line with hypothesis two (see table 7). The table provided useful guide for comparing the empirical findings of the present investigation with the traditional theoretical outcomes explicated in Chapter II.

4.2 Hypothesis Testing

A predictive methodological research design was used. Data were analyzed exclusively with SPSS program for social sciences. Multiple regression statistical procedures were used to analyze the data. Four stages of statistical analysis were done to answer the objectives of this inquiry, as reported in the subsequent pages.

First stage data analysis was aimed at testing objectives I to III cited previously. The initial analysis involved adding simultaneously ten sets of variables, sub-scales: HOMETIE, DYNAM, RELY, REWARDS, CULTURE, PROFDEF, USPULL, USPUSH, into the multiple regression equation. (A code map for the interpretation of these symbols is outlined in Appendix D). All possible two-way interactions were included into the model so as to discover and interpret significant interactions terms (gain new insights of the BDR phenomenon).
<table>
<thead>
<tr>
<th>Code</th>
<th>Variables in the Equation</th>
<th>$R^2 \neq 0$ Expected Relationship on Variables:</th>
<th>Source of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOMTIE</td>
<td>Bond or responsibility to the extended family in home country.</td>
<td>+ -</td>
<td>Roberts (1986)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grinberg et al. (1989)</td>
</tr>
<tr>
<td>DYNAM</td>
<td>Perceived global socio-political milieu under which scholars operate in home country</td>
<td>+ -</td>
<td>Apraker (1990)</td>
</tr>
<tr>
<td>RELY</td>
<td>Perceived prospects for the re-integration of scholars in home country</td>
<td>+ -</td>
<td>Informal interviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Useem (1955)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Useem (1955)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Informal interviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Machyo (1967)</td>
</tr>
<tr>
<td></td>
<td>Perceived pecuniary attributes for the rewards of skilled manpower in home country (scholars as economic refugees)</td>
<td>+ -</td>
<td>Cosmopolitan theory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ricca (1989)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Logan (1989)</td>
</tr>
<tr>
<td>CULTURE</td>
<td>Perceived occupational culture in home country</td>
<td>+ -</td>
<td>Useem (1955)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Useem (1955)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Informal interviews</td>
</tr>
<tr>
<td>PROFDEV</td>
<td>Perceived infrastructure to facilitate scholarship and career advancement in home country</td>
<td>+ -</td>
<td>Informal interviews</td>
</tr>
<tr>
<td>USPULL</td>
<td>Conditions in the U.S. perceived by scholars to attract them to stay</td>
<td>- +</td>
<td>Das (1974)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Informal interviews</td>
</tr>
</tbody>
</table>
Table 7 Continued...

<table>
<thead>
<tr>
<th>Code</th>
<th>Variables in the Equation</th>
<th>R² ≠ 0</th>
<th>Source of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expected Relationship on Variables:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RETURN STAY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USPUSH</td>
<td>Conditions in the U.S. perceived to encourage scholars to repatriate home</td>
<td>+</td>
<td>Das (1974) Informal interviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>HOMELAND</td>
<td>Self-declared patriotic sentiments toward home country (ocnophiles)</td>
<td>+</td>
<td>Based on nationalist orthodoxy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>Adam (1968)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chukunta (1974)</td>
</tr>
<tr>
<td>FOREIGN</td>
<td>Self-declared favorable sentiments toward foreign country U.S. (philobatics)</td>
<td>-</td>
<td>Adam (1968)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+</td>
<td>Grinberg et al. (1989)</td>
</tr>
</tbody>
</table>

NOTES: (+) = expected relationship on the dependent variables Return and Stay
(-) = expected relationship on the dependent variables Return and Stay
Tables 8 and 9 depict the outcomes of the initial regression analysis for the dependent variables intent to return and intent to stay variables. The omnibus $F$-ratio for both return and stay dependent variables were highly significant at the $p < .0001$ alpha levels. The proportion of variability accounted for by all the independent variables in the initial model for the variable RETURN was $R^2 = .72$, adjusted $R^2 = .61$, with $F(54,134) = 1.19$, $p < .0001$. (The proportion of variance accounted for by the independent variables in the initial model for variable return was 72%).

The omnibus $F$-ratio for the variable STAY was $R^2 = .52$, adjusted $R^2 = .33$, with $F(54,134) = 2.30$, $p < .0001$. (The proportion of variance accounted for by the independent variables on the initial model was 52%). Therefore, the hypothesis 1 (null) that $R^2$ not $= Zero$ in the population was rejected for both dependent variables, and the alternate hypothesis that $R^2 = Zero$ in the population was accepted at .0001 probability level.

It was concluded, thus, that significant relationships exist among factors perceived by scholars to facilitate BDR and their decisions to repatriate to SSA, or stay in the U.S.

One of the aims of this study was to attempt to generalize obtained outcomes to the population of African scholars for reasons articulated in Chapter I. Cohen and Cohen (1983) suggests that the adjusted $R$ or shrunken-$R$ corrected for sample error. $R^2$ sample is a value that is
<table>
<thead>
<tr>
<th></th>
<th>Multiple Regression for Dependent Variable RETURN (Full Model)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multiple R</strong></td>
<td>.85227</td>
</tr>
<tr>
<td><strong>R Square</strong></td>
<td>.72637</td>
</tr>
<tr>
<td><strong>Adjusted R Square</strong></td>
<td>.61148</td>
</tr>
<tr>
<td><strong>Standard Error</strong></td>
<td>.42956</td>
</tr>
</tbody>
</table>

<p>|                      | Analysis of Variance |</p>
<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regression</strong></td>
<td>55</td>
<td>64.16555</td>
<td>1.16665</td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>131</td>
<td>24.17231</td>
<td>.18542</td>
</tr>
</tbody>
</table>

\[ F = 6.32255 \quad \text{Signif } F = .0001 \]
| Multiple R | .72615 |  |
| R Square   | .52729 |  |
| Adjusted R Square | .32882 |  |
| Standard Error | .92279 |  |

**Analysis of Variance**

<table>
<thead>
<tr>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>124.43059</td>
<td>2.26237</td>
</tr>
<tr>
<td>131</td>
<td>111.55119</td>
<td>.85154</td>
</tr>
</tbody>
</table>

**Significance**

\[ F = 2.65682 \quad \text{Signif } F = .0001 \]
optimized on the sample and thus overestimates the population value (tends to inflate the variance in the $R^2$ population). Any sample has some idiosyncratic characteristics that another sample does not have. The adjusted $R^2$ square tells how the model would fit another sample by controlling for the idiosyncratic characteristics of a given sample. For this reason Cohen, et al., advise that the adjusted or shrunken-$R$ is a better estimate of the population variance ($R^2_{\text{pop}}$).

Furthermore, as the number of independent variables increases, the bias on the observed sample $R$ squared tend to increase (Cohen & Cohen, 1983). As such, Pedhauzer (1982) advises that when the size of $R$ squared is judged, the number of independent variables and subjects must always be taken into consideration. When the ratio of the number of subjects to the number of independent variables is stringent ($\text{ratio} < 40:1$), the Shrunken $R$ square will be considerably less than $R$ square. Both Cohen and Cohen and Pedhauzer have affirmed (a) the adjusted or shrunken-$R$ square's ability to consider all the independent variables in the model and (b) its property as a better estimate of the population variance accounted for.

The second stage of the data analysis was conducted consistent with the focus of objective 4 to come up with a parasmoneous predictive model for African brain-drain. Answer to objective 4 could provide African policy makers with specific factors (empirical data) for predicting brain-drain
and for making useful intervention decisions. This focus demanded that the initial outcomes be analyzed a step further, by purging the model of nonsignificant variables.

Cohen and Cohen have suggested that step-wise regression procedures, using the backward strategy, was appropriate for (a) eliminating the insignificant variables in the multiple regression equation, and (b) approaching the maximum variance in the model with minimum sets of independent variables. The main problem in using stepwise regression is that there is little assurance that another sample may yield a stepwise solution with same order (Cohen & Cohen, 1983). Cohen and Cohen recommend stepwise procedures under three conditions: (a) when the research objective is in the context of prediction than explanation; (b) when n is very large, (n/k ratio of at least 40 : 1); and (c) the results are cross-validated. Consistent with these requirements, the articulated goal for this investigation was primarily predictive than explanation of the variance. Since n/k ratio = 18 : 1 was less than the recommended ratio, the adjusted or shrunken-R square has been considered the variance accounted for in the model. The cross-validation outcomes are generated from testing two alternate models (predictive RETURN score versus STAY scores).

In the light of competing views in the literature, pertaining to African brain-drain as detailed in Chapter II, an a priori hierarchical strategy for ordering the entry of
variables into the regression equation was not practical in this study. While there were hunches of some factors alleged to influence BDR, these did not lend themselves to a particular order for sequencing the entry of variables in the regression equation. Furthermore, while Cohen and Cohen recommend hierarchical over the anarchy of simultaneous strategy, they question the use of hierarchical strategy when there is no decisive rationale for ordering the entry of variables into the model. Based on the preceding discourse, Cohen and Cohen suggest that the step-wise regression analysis - backward strategy for eliminating interaction terms that accounted for the least variability in the model, was the most fitting procedure for use in this study. Theoretically, the latter, according to Cohen and Cohen is a variation of the simultaneous and hierarchical strategies in the reverse order.

The sequencing criterion for pulling variable out of the model was determined by the amount of variability accounted for in the regression equation. Cohen and Cohen suggest that a given variable that contributed the least variance variables in the model be the first to be eliminated from the regression model, and so it was for all subsequent variables removed. The main theoretical sub-scales were assumed that they would remain in the model. The backward process stopped when all the interaction terms remaining in the model were significant. The insignificant main variables were not eliminated if they were also part of the interaction terms that were significant.
The results of main effects are reported below. The results for the interaction of interest are reported latter in this chapter.

Tables 10 and 11 reports the results for the final models: specific factors associated with the intent to 'return' and intent to 'stay' dependent variables. Table 9 on 'return' reflects that $R^2 = .66$ and adjusted $R^2 = .63$ (shrunken $R$ square), $F(15, 171) = 22.2, p < .0001$. Table 10 shows that, on variable 'stay', $R^2 = .46$, adjusted $R^2 = .40$ (shrunken $R$ square), $F(18, 168) = 7.83, p < .0001$. The hypothesized independent variables listed on Table 9 account for 66 percent of the variance on the dependent variable RETURN. On variable STAY, the independent variables account for approximately 40 percent of the variability (see table 10).

Objective 4 attempted to generate predictive models for the transfer of human technology as it relates to African economies (as perceived by pre and post-graduated APs). Two competing models have been derived from the analysis of these data.

Model-I is expressed as predicted RETURN score. The hypothesis tested is $B \neq 0$.

\[
\text{RETURN} = 5.79 + (\text{Pushfor} \times -.08) + (\text{Dynam} \times -.38) + (\text{Homtie} \times -.32) + (\text{Uspull} \times -.58) + (\text{Homeland} \times .2) + (\text{Culture} \times -.5) + (\text{Foreign} \times -.15) + (\text{Profdev} \times -.13) + (\text{Rewards} \times .48) + (\text{Uspush} \times -.19) + (\text{Dynhom} \times .08) + (\text{Culfor} \times .15) + (\text{Homtfor} \times .2) + (\text{Uspull} \times -.58).
\]
### TABLE 10

Multiple Regression for Dependent Variable RETURN (Final Model)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>Beta</th>
<th>T</th>
<th>Sig T</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUSHFOR</td>
<td>-.081720</td>
<td>.035827</td>
<td>-.595747**</td>
<td>-2.281</td>
<td>.0238</td>
</tr>
<tr>
<td>DYNAM</td>
<td>-.384050</td>
<td>.161667</td>
<td>-.562576*</td>
<td>-2.376</td>
<td>.0186</td>
</tr>
<tr>
<td>HOMTIE</td>
<td>-.315812</td>
<td>.160605</td>
<td>-.392932*</td>
<td>-1.966</td>
<td>.0509</td>
</tr>
<tr>
<td>USPULL</td>
<td>-.575175</td>
<td>.180322</td>
<td>-.530569**</td>
<td>-3.190</td>
<td>.0017</td>
</tr>
<tr>
<td>HOMELAND</td>
<td>.201534</td>
<td>.080239</td>
<td>.278467**</td>
<td>2.512</td>
<td>.0129</td>
</tr>
<tr>
<td>CULTURE</td>
<td>-.495196</td>
<td>.194226</td>
<td>-.559218**</td>
<td>-2.550</td>
<td>.0117</td>
</tr>
<tr>
<td>FOREIGN</td>
<td>-.152056</td>
<td>.217479</td>
<td>-.222912</td>
<td>-1.699</td>
<td>.4854</td>
</tr>
<tr>
<td>PROFDEV</td>
<td>-.132504</td>
<td>.065965</td>
<td>-.130125*</td>
<td>-2.009</td>
<td>.0461</td>
</tr>
<tr>
<td>REWARDS</td>
<td>.484738</td>
<td>.193849</td>
<td>.567028**</td>
<td>2.501</td>
<td>.0133</td>
</tr>
<tr>
<td>USPUSH</td>
<td>-.190264</td>
<td>.238181</td>
<td>-.256798</td>
<td>-1.799</td>
<td>.4255</td>
</tr>
<tr>
<td>DYNHOM</td>
<td>.077325</td>
<td>.029768</td>
<td>.766548**</td>
<td>2.598</td>
<td>.0102</td>
</tr>
<tr>
<td>CULFOR</td>
<td>.153136</td>
<td>.046890</td>
<td>.941706**</td>
<td>3.266</td>
<td>.0013</td>
</tr>
<tr>
<td>HOMTFOR</td>
<td>.095584</td>
<td>.037233</td>
<td>.806577**</td>
<td>2.567</td>
<td>.0111</td>
</tr>
<tr>
<td>PULLPUSH</td>
<td>.158575</td>
<td>.054803</td>
<td>.934845**</td>
<td>2.894</td>
<td>.0043</td>
</tr>
<tr>
<td>REWHOM</td>
<td>-.085596</td>
<td>.036391</td>
<td>-.778958**</td>
<td>-2.352</td>
<td>.0198</td>
</tr>
<tr>
<td>(CONSTANT)</td>
<td>5.785060</td>
<td>1.260809</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multiple R: .81279
R Square: .66063
Adjusted R Square: .63086
Standard Error: .41871

Analysis of Variance

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
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<tbody>
<tr>
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<td>3.89047</td>
</tr>
<tr>
<td>Residual</td>
<td>171</td>
<td>29.97937</td>
<td>.17532</td>
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</tbody>
</table>

\[ F = 22.19148 \text{ Signif } F = .0001 \]

*p < .05
**p < .01
TABLE 11
Multiple Regression for Dependent Variable STAY (Final Model)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>Beta</th>
<th>T</th>
<th>Sig T</th>
</tr>
</thead>
<tbody>
<tr>
<td>PULLHOM</td>
<td>.215592</td>
<td>.076998</td>
<td>1.046231**</td>
<td>2.800</td>
<td>.0057</td>
</tr>
<tr>
<td>CULTURE</td>
<td>-.712160</td>
<td>.655372</td>
<td>-.492058</td>
<td>-1.087</td>
<td>.2787</td>
</tr>
<tr>
<td>HOMTIE</td>
<td>.628279</td>
<td>.331695</td>
<td>.478272*</td>
<td>1.894</td>
<td>.0599</td>
</tr>
<tr>
<td>FOREIGN</td>
<td>.647402</td>
<td>.342475</td>
<td>.580680*</td>
<td>1.890</td>
<td>.0604</td>
</tr>
<tr>
<td>USPUSH</td>
<td>.761781</td>
<td>.404533</td>
<td>.629071</td>
<td>1.883</td>
<td>.0614</td>
</tr>
<tr>
<td>RELY</td>
<td>.319447</td>
<td>.107578</td>
<td>.212402**</td>
<td>2.969</td>
<td>.0034</td>
</tr>
<tr>
<td>DYNAM</td>
<td>1.790263</td>
<td>.448293</td>
<td>1.604516**</td>
<td>3.994</td>
<td>.0011</td>
</tr>
<tr>
<td>USPULL</td>
<td>.523770</td>
<td>.569438</td>
<td>.295608</td>
<td>.920</td>
<td>.3590</td>
</tr>
<tr>
<td>PROFDEV</td>
<td>-.150309</td>
<td>.491724</td>
<td>-.903134**</td>
<td>-3.057</td>
<td>.0026</td>
</tr>
<tr>
<td>REWARDS</td>
<td>1.751364</td>
<td>.444077</td>
<td>1.253454**</td>
<td>3.944</td>
<td>.0001</td>
</tr>
<tr>
<td>COLHOM</td>
<td>-.139589</td>
<td>.058963</td>
<td>-.694114**</td>
<td>-2.367</td>
<td>.0191</td>
</tr>
<tr>
<td>HOMHOM</td>
<td>-.151994</td>
<td>.061668</td>
<td>-1.108570**</td>
<td>-2.465</td>
<td>.0147</td>
</tr>
<tr>
<td>DYNFULL</td>
<td>-.577695</td>
<td>.127309</td>
<td>-1.935843**</td>
<td>-4.538</td>
<td>.0001</td>
</tr>
<tr>
<td>REWFOR</td>
<td>-.437677</td>
<td>.098345</td>
<td>-1.907424**</td>
<td>-4.450</td>
<td>.0001</td>
</tr>
<tr>
<td>PULLPUSH</td>
<td>-.239283</td>
<td>.115884</td>
<td>-.863082*</td>
<td>-2.065</td>
<td>.0405</td>
</tr>
<tr>
<td>CULPULL</td>
<td>.419204</td>
<td>.167869</td>
<td>1.138645**</td>
<td>2.497</td>
<td>.0135</td>
</tr>
<tr>
<td>PROFOR</td>
<td>.366481</td>
<td>.114914</td>
<td>1.437833**</td>
<td>3.189</td>
<td>.0017</td>
</tr>
<tr>
<td>HOMELAND</td>
<td>.101793</td>
<td>.451336</td>
<td>.116958</td>
<td>.226</td>
<td>.8218</td>
</tr>
<tr>
<td>(CONSTANT)</td>
<td>-4.662510</td>
<td>3.155140</td>
<td>-1.478</td>
<td>1.413</td>
<td></td>
</tr>
</tbody>
</table>

Multiple R  .67552
R Square    .45632
Adjusted R Square .39807
Standard Error .87389

Analysis of Variance

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>18</td>
<td>107.68424</td>
<td>5.98246</td>
</tr>
<tr>
<td>Residual</td>
<td>168</td>
<td>128.29754</td>
<td>.76368</td>
</tr>
<tr>
<td>F = 7.83377</td>
<td></td>
<td>Signif F = .0001</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05
**p < .01
Analysis of the data yielded a alternate model as stated in objective 4 consistent with the attempt to answer what factors are associated with the lack of repatriation among African scholars, as perceived by pre and post-graduated APs from SSA.

Model-II is expressed as predicted STAY score. The hypothesis tested is $B$ is not $= \text{Zero}$.

$$STAY = -4.66 + (\text{Pulhom} \cdot .22) + (\text{Culture} \cdot -.71) + (\text{Homtie} \cdot .63) + (\text{Foreign} \cdot .65) + (\text{Uspush} \cdot 76) + (\text{Rely} \cdot .32) + (\text{Dynam} \cdot 1.79) + (\text{Uspull} \cdot .52) + (\text{Profdev} \cdot -1.5) + (\text{Rewards} \cdot 1.75) + (\text{Culhom} \cdot -.14) + (\text{Homhom} \cdot -.15) + (\text{Dynpull} \cdot -.58) + (\text{Rewfor} \cdot -.44) + (\text{Pullpush} \cdot -.24) + (\text{Culpull} \cdot .42) + (\text{Profor} \cdot .37) + (\text{Homeland} \cdot .1).$$

It can be concluded that the second stage analysis provided answers to objectives 1 to 4 inclusively. These data have (1) identified specific factors perceived by African scholars to encourage repatriation to source country (see table 9); (2) identified specific factors perceived by African scholars to encourage the propensity to stay, or re-exit back to the U.S. (see table 10); (3) established associations among main variables of interest (sub-scales), as well as generated unique combinations of factors associated with BDR; and (4) yielded two empirical models for predicting return versus stay outcomes.

Some of the beta values on the predicted STAY scores are
greater than -1 to +1 range. According to a statistical consultant, Fred Ruland, while in theory the beta values are expected to fall in the range of -1 to +1, higher or less values could be obtain with highly correlated variables. Professor McCullum advises that beta values are regression weights not correlation values, as such, they are not restricted to the -1 and +1 range. Professor McCullum added that as the number of independent variables increases, beta weights may fall outside the -1 to +1 range. Interpretation for the significant interactions terms appear later in this section.

A third stage analysis was done to show how the sub-scales were inter-correlated among themselves. Factor analysis was not feasible in this study based on the large numbers of observation required per independent variable tested in the model. Psychometric theory (Nunnally, 1967) specifies a rule of thumb, ratio of 10 : 1 observations per each item in the instrument.

A correlation matrix was done to determine some level of understanding of the way the different scales entered in the model are correlated. The results of the correlation matrix for the main effects of sub-scales are reported on Table 12. An interpretive summary pertaining to correlations of interests among the main sub-scales appears below.

1) Intent to stay variable is negatively correlated with the propensity to return. The product moment correlation
TABLE 12
Correlation Coefficients Among Composite Sub-Scales

<table>
<thead>
<tr>
<th>Variables in the Equation</th>
<th>RETURN</th>
<th>STAY</th>
<th>HOMTIE</th>
<th>DYNAM</th>
<th>RELY</th>
<th>REWARDS</th>
<th>CULTURE</th>
<th>PROFDEV</th>
<th>USPULL</th>
<th>USPUSH</th>
<th>HOMELAND</th>
<th>FOREIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>RETURN</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAY</td>
<td>-.1815*</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOMTIE</td>
<td>.0986</td>
<td>-.1873*</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DYNAM</td>
<td>.1000</td>
<td>-.2059**</td>
<td>.0116</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RELY</td>
<td>.1015</td>
<td>.0711</td>
<td>.1048</td>
<td></td>
<td>.3613**</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REWARDS</td>
<td>.1818*</td>
<td>-.0982</td>
<td>.1010</td>
<td>.6120**</td>
<td>.4942**</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CULTURE</td>
<td>.1593*</td>
<td>-.0933</td>
<td>-.0768</td>
<td>.5126**</td>
<td>.3146**</td>
<td>.6022**</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROFDEV</td>
<td>.1427</td>
<td>-.0773</td>
<td>.1916**</td>
<td>.5552**</td>
<td>.5267**</td>
<td>.6381**</td>
<td>.5342**</td>
<td>1.0000</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>USPULL</td>
<td>-.0836</td>
<td>.2456**</td>
<td>-.0297</td>
<td>-.0926</td>
<td>.1044</td>
<td>.0762</td>
<td>-.0638</td>
<td>.0493</td>
<td>1.0000</td>
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</tr>
<tr>
<td>USPUSH</td>
<td>.0288</td>
<td>-.0484</td>
<td>.1023</td>
<td>-.0630</td>
<td>.1376</td>
<td>.1449*</td>
<td>.0869</td>
<td>.0930</td>
<td>.1786*</td>
<td>1.0000</td>
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<td></td>
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<tr>
<td>HOMELAND</td>
<td>.4109**</td>
<td>-.2278**</td>
<td>.1880**</td>
<td>.1710*</td>
<td>.1189</td>
<td>.2354**</td>
<td>.1230</td>
<td>.2804**</td>
<td>-.0094</td>
<td>.0804</td>
<td>1.0000</td>
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<tr>
<td>FOREIGN</td>
<td>.6887**</td>
<td>.2927**</td>
<td>-.0738</td>
<td>-.0420</td>
<td>.0400</td>
<td>.0306</td>
<td>-.0084</td>
<td>.0549</td>
<td>-.0092</td>
<td>-.0526</td>
<td>.1837*</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*p < .05
**p < .01
coefficient is $r = -0.18 \ p < .05$. The converse relationship reveals that when the decision to return to source country are definite, intent to stay tends to decrease. Alternatively, when the intent to stay intensifies, the interest to return decreases.

2) There is a negative linear relationship between HOMTIE and stay intent. The product correlation coefficient is $r = .19, \ p < .05$. As the bond intensifies towards home, such as desire to raise children in home country, responsibility to support ones extended family, based on African ethos, the less likely APs will stay, or re-exit back to the U.S. Conversely, APs are more likely to stay or re-exit back to the U.S., when the familial ties are loosely connected.

3) There is a negative linear relationship between DYNAM (global socio-political dynamics in SSA and intent to stay. The product correlation coefficient is $r = -0.21, \ p < .01$. As African scholars perceive the political climate at home not conducive, such as when harboring fear of political pressure versus tolerance for opposition, and related socio-political instability, the more they intend to stay or re-exit back to the U.S. Conversely, as they perceive favorable socio-political structures in SSA under which they interact as conducive, the less likely they intend to stay or re-exit back to the U.S.

4) There is no linear relationship between RELY and returnability-intent, $\ p > .05$. While RELY is highly
correlated with other independent variables in the matrix, such as, Dynam, Culture, Rewards, and Profdev, $p < .01$, with each of the cited factors, standing alone, RELY has zero correlation on returnability-intent.

5) There is a positive linear relationship between REWARDS and intent to return variable. The product correlation coefficient is $r = .18, p < .05$. As the APs perceive the economic conditions and related pecuniary benefits in SSA, the more they intend to return home. Alternatively, APs are not likely to repatriate when they perceive the infrastructure determining economic stability as less conducive.

6) There is a positive relationship between CULTURE and intent to return. The product coefficient is $r = .16, p < .05$. Culture as defined in this study as perceived occupational climate, such as prevailing ethnic preferences in the allocation of opportunities based on "blood" and other related personalities and pettiness, was negatively correlated with intent to stay. The more African scholars perceived the occupational culture to be conducive in home country, the more they intend to return to SSA, than stay in the U.S.

7) There is no linear relationship between PROFDEV, defined in this study as the perceived infrastructure determining career advancement and scholarship, and returnability-intent. The product coefficient is $p > .05$.

8) There is positive linear correlation between intent
to stay and USPULL - conditions perceived to pull APs to the
U.S., such as search for the American life-style, civil
liberty and related political and academic freedoms enjoyed
in the U.S., \( r = .25, p < .01 \). As the stated conditions in
the U.S. are perceived to be conducive, the more scholars
intend to stay or re-exit back to the U.S.

9) There is no linear relationship between USPUSH and
returnability intent, \( p > .05 \). Conditions from the U.S.
alleged to push African scholars to SSA, such as, perceived
occurrence of racial discrimination and under-utilization of
minority groups in the mainstream economy have no correlation
with intent to return home or stay in the U.S.

10) The independent variable HOMELAND is positively
correlated with intent to return and negatively correlated
with intent to stay, \( r = .41, p < .01 \) for the dependent
variable RETURN; and \( r = -.23, p < .01 \) for the dependent
variable STAY. The stronger the patriotic sentiments toward
homeland the more APs intend to return. Conversely, the less
patriotic they feel toward homeland the more they intend to
stay in the U.S.

11) The independent variable FOREIGN (favorable
sentiments toward the U.S.) is highly correlated with RETURN
and moderately correlated with STAY. The correlation
coefficients are \( r = .70 \) on variable RETURN and \( r = .30 \)
on variable STAY, \( p < .01 \). Standing alone, FOREIGN did not stand
the test of the model, but was powerful as part of the
significant interactions, as reported in table 12.

According to personal discussions with professor Arnold (1990), variables leave the model for two reasons: (a) when they are not inter-correlated, such as in the case of USPUSH (see Table 12); and (b) when they have too much shared variance with other independent variables, such that one variable loses its stability in the model. That is, if independent variables are highly correlated only one is likely to get into the regression equation. Any attribution of superiority to one variable entered in the model would be incorrect, since the two variables are redundant (i.e. measure of the same construct). The latter applies to the case of FOREIGN (see effect on the model Tables 10, 11, as compared to Table 12, where it is highly inter-correlated with many other independent variables).

While exploratory factor analysis was not feasible in this study, the correlation matrix among composite sub-scales yielded useful information, in terms of what these sub-scales do and direction in which they go in the model.

The fourth staged analysis addressed the significant interactions. Figures 1 and 2, on the subsequent pages, report the plotted interaction outcomes from the model RETURN and STAY (from tables 10 & 11). The interaction terms are numbered as RETURN 1 to 6 and STAY 1 to 8.

The aim of this particular analysis was to explain the discovered interaction terms in the model - predicted RETURN
score (see Figure 1) and predicted STAY score (see Figure 2). Keppel (1983) has advised that complexly determined behaviors need factorial experiments to isolate and tease out these complexities.

In this study it was necessary to understand the category levels at which the hypothesized sets of variables explain the change in the dependent variables of interest in the model. A median split procedure, 2 X 2 factorial design, was used to derive the mean scores for plotting high and low levels of each the interaction factor. The theoretical interpretation for the interaction, thus, was based on the category at which that level (high or low) was associated with change in returnability-intent (propensity to return home versus stay in the U.S.).

The interaction outcomes yielded theoretical implication. Figure 1, on predicted RETURN score, is interpreted below.

RETURN 1 = Culture * Foreign:
The propensity to return to source country is high when FOREIGN - favorable sentiments toward the U.S., and CULTURE - perceived occupational culture in home country are high. The rate of increase in RETURN, when culture changes from low to high, is higher when FOREIGN is high.

RETURN 2 = USPUSH * FOREIGN:
The propensity to return is high when USPUSH - conditions pushing APs from the U.S. and FOREIGN - favorable sentiments toward the U.S. are high. The rate of
Interactions for Variable RETURN (Culture by Foreign)

Interactions for Variable RETURN (Push by Foreign)
Figure 1, Continued...

Interactions for Variable RETURN (Dynam by Homeland)

Interactions for Variable RETURN (Foreign by Hometie)
Figure 1, Continued...

Interactions for Variable RETURN (Push by Uspull)

![Graph showing interactions for Variable RETURN (Push by Uspull)]

Interactions for Variable RETURN (Rewards by Homeland)

![Graph showing interactions for Variable RETURN (Rewards by Homeland)]

Figure 1: Plot of Means for Interaction Terms on Variable RETURN
increase in intent to return, when USPUSH changes from low to high, is greater when FOREIGN is low. Change in RETURN, across changes in USPUSH, is minimal when FOREIGN is high.

RETURN 3 = DYNAM * HOMELAND:
The propensity to return is high when the levels of HOMELAND - patriotic sentiments toward home country, and DYNAM - the perceived global socio-political dynamics in source country, SSA are high. The rate of change in RETURN, as DYNAM changes from low to high, seems minimal at both the high and low levels of patriotic sentiments toward source country.

RETURN 4 = HOMTIE * FOREIGN:
The propensity to return to home country (RETURN) is high when HOMELAND (patriotic sentiments toward home country) and FOREIGN (favorable sentiments toward the U.S.) are high. The rate of increase in RETURN, when HOMTIE changes from low to high, is higher when FOREIGN is low.

RETURN 5 = USPULL * USPUSH:
The propensity to return (RETURN) is high, when the condition perceived to attract APs to the U.S. (USPULL) is low and USPUSH is high - conditions discouraging APs here in the U.S. Intent to return does not change, as USPULL goes from low to high, when USPUSH is low. Radical decrease in return is pronounced as USPULL changes from low to high, when USPUSH is high.
RETURN 6 = REWARDS * HOMELAND:

The propensity to return (RETURN) is high when REWARDS - perceived rewards are low, and patriotic sentiments are high (HOMELAND). Very little change occurs in intent to return as rewards move from low to high, when HOMELAND is high. The rate of change in return as REWARDS move from low to high is higher when HOMELAND is low.

The interaction terms on the predicted STAY score, are interpreted below (see Figure 2).

STAY 1 = USPULL * HOMELAND:

The propensity to stay in the U.S. is high when USPULL is high and patriotic sentiments toward homeland are low. The rate of change in intent to stay, as USPULL moves from low to high, is higher when patriotic sentiments toward homeland are high.

STAY 2 = CULTURE * HOMELAND:

The propensity to stay is high when perceived occupational culture in home country is high and patriotic sentiments are low. No perceptible change occurs in STAY as CULTURE moves from low to high, when patriotic sentiments are low.

STAY 3 = HOMTIE * HOMELAND:

The propensity to stay is high when HOMTIE is low and HOMELAND is low. The rate of change in STAY is bigger as bond with extended family moves from low to high when patriotic sentiments toward homeland are high.
Interactions for Variable STAY (Uspull by Homeland)

Interactions for Variable STAY (Culture by Homeland)
Figure 2, Continued...

Interactions for Variable STAY (Hometie by Homeland)

Interactions for Variable STAY (Dynam by Uspull)
Figure 2, Continued...

Interactions for Variable STAY (Rewards by Foreign)

![Graph: Interactions for Variable STAY (Rewards by Foreign)]

Interactions for Variable STAY (Rewards by Foreign)

![Graph: Interactions for Variable STAY (Rewards by Foreign)]
Figure 2, Continued...

Interactions for Variable STAY (Culture by Uspull)

Interactions for Variable STAY (Profdev by Foreign)

Figure 2: Plot of Means for Interaction Terms on Variable STAY
STAY 4 = DYNAM * USPULL:

The propensity to stay is high when DYNAM (socio-political dynamics in home country) is high. The rate of change is bigger as DYNAM moves from low to high when USPULL, conditions in the U.S. alleged to attract APs is high.

STAY 5 = REWARDS * FOREIGN

The intent to stay in the U.S. is high when REWARDS is low and FOREIGN is high. Slopes are almost the same, and lines are almost parallel.

STAY 6 USPULL * USPUSH:

The intent to stay is high when USPUSH is low and pull is high. The rate of change in STAY intent is higher as USPULL moves from low to high when USPUSH is low.

STAY 7 CULTURE * USPULL:

The intent to stay is high when CULTURE is low and USPULL is high. The lines are almost parallel and slopes are almost the same.

STAY 8 PROFDEV * FOREIGN:

The intent to stay is high when PROFDEV (perceived infrastructure determining career advancement in home country) is low and FOREIGN (favorable sentiments toward the U.S. are high. The rate of change in STAY is bigger as PROFDEV moves from low to high, when FOREIGN is low.

According to Keppel (1982), while significant interactions terms are difficult to interpret, the discovery
of such unique interactions have added more to the understanding of the phenomenon under study, over and above information provided by the main effects. Keppel concludes that data outcomes of interaction terms have implications for theory development, and allows more speculation about processes involved in the phenomenon, how variables combine to influence the dependent variable of interest.

The interactions in the study reveal that the transfer of human technology, as it relates to African economies, is not as simple as sometimes assumed. It is complex (i.e., not linear) and cannot be explained by one theoretical construct. It involves a matrix of variables which need not be overlooked in the analysis. This investigation yielded competing models toward predicting measuring attitudes associated with returnability-intent among APs, as well as, contributed to existing theoretical framework towards factors facilitating BDR versus brain-drain syndrome (BDS).

Discourse comparing the present findings with competing traditional views about African brain-drain appears in Chapter V, (discussion section). Implications for future research, and suggestions to policy makers in SSA are included. For strategic discussion, the demographic data for analyzing the characteristics of the sample used in this study are included in the next chapter as miscellaneous results.
5.1 Introduction

This study was a correlational inquiry. The central focus of the investigation was to examine the attitudes of pre and post-graduated APs in the U.S. toward brain-drain reversal (BDR) to determine if factors identified by African scholars to encourage BDR are associated with the returnability intent—propensity to repatriate to source country versus stay in the U.S. The end-sought was to provide a quantitative predictive model African policy makers could use for making useful intervention decisions toward facilitating repatriation of African intellectuals educated abroad.

Such an investigation was necessary for two reasons: First, there is a growing concern among African countries that SSA region’s power of expertise is deteriorating. Second, the deficiency of such expertise has an adverse impact on the sustainable development operation in Africa, (SADACC Reports 1987/1988) and has driven SSA, in some areas, to depend on technical skills from the West to man critical management positions in public and private sectors. According to the World Bank (1990) over 100,000 technical experts (foreign) have been integrated in SSA economies, while over 80,000 African scholars have remained abroad.
Given the articulated reasons, the present inquiry, therefore, focuses on selective brain-drain of qualified human technology from SSA as the mega-constraint to Africa's development. If the best minds of Africa fail to return to SSA, the articulated problem of dearth of indigenous expertise and related vicious circle of dependence on imported skills will continue unabated; and threatens the region's capacity of self-sufficiency in relation to human technology.

The reverse transfer of African scholars occurs in two ways: (a) APs who remain abroad after completion of their studies, and (b) others (b) APs who do return home (initially) but re-exit back to the U.S. and other countries abroad. Studies on African brain-drain have not examined the attitudes of the latter group, to understand this phenomenon. Studies are sparse which address the reversal of brain-drain among African economies. Studies examining African brain-drain tend to focus on one area, or single ethnic group and, thus, limit generalization to the SSA region.

The present study, therefore, was founded on three basic assumptions: (1) Both patterns of selective brain-drain, aforementioned, have been deleterious to the efforts of amassing a reservoir of critical indigenous expertise essential for development operations in SSA; (2) African scholars abroad are an untapped resource, as such, there is a need for African economies to consider pro-active strategies for the redeployment of African scholars, as an available
option for building a pool of vital indigenous expertise for sustainable development operations in SSA; and (3) The need for critical examination of the BDR phenomenon and articulation of an empirical model for predicting BDR. The preceding concerns are the central foci of the present inquiry.

5.2 Summary of Procedures

This study designed a comprehensive instrument, with two major parts, to test the traditional views about African brain-drain. These scales were guided by a review of theoretical frame-works and interviews with African scholars, officials in African Embassies in Washington D.C, as well as, some local professionals. Part I was a Likert Scale composed of 50 items measuring factors perceived to encourage BDR. Part II was a Semantic Differential Scale. Part IIA measured patriotic sentiments toward homeland versus favorable sentiments toward the U.S. Part IIB measured returnability-intent - propensity to repatriate versus stay, or re-exit back to the U.S. Between the (Likert Scale and Semantic Differential Scale) 2 dimensional scales, 12 composite sub-scales were generated, which represented the sets of variables of interest in this study. These constructs are listed below:

RETURNABILITY-INTENT - was represented by dependent variables:

Sub-scale 1 RETURN - Propensity to repatriate to source country.

Sub-scale 2 STAY - Propensity to stay, or re-exit back
to the U.S.

PATRIOTIC SENTIMENTS - was represented by two independent variables:
Sub-scale 3 HOMELAND - Patriotic sentiments toward the homeland.
Sub-scale 4 FOREIGN - Favorable sentiments toward the U.S.

ENCOURAGERS OF BDR - were represented by eight sets of variables:
Sub-scale 5 HOMTIE - Responsibilities to bond with extended family in home country.
Sub-scale 6 DYNAM - Global socio-political milieu and related structures in home country.
Sub-scale 7 RELY - Perceived prospects of being re-integrated in meaningful positions in home country.
Sub-scale 8 REWARDS - Economic benefits for rewarding expertise in home country.
Sub-scale 9 CULTURE - Occupational culture perceived to prevail in home country.
Sub-scale 10 PROFDEV - Infrastructure in home country determining professional/career advancement.
Sub-scale 11 USPULL - Conditions in the U.S. hypothesized to discourage repatriation among APs.
Sub-scale 12 USPUSH - Conditions in the U.S. hypothesized to encourage repatriation among APs.

A detailed code-map, or interpretation of what the codes
represents is included in appendix D.

The target population for this investigation included both pre and post graduated African scholars in the U.S. Post-graduated scholars were represented by a selected group of African scholars who initially returned to SSA, but later, for whatever reason, returned back to the U.S. Procedures used for sample selection and data collection are detailed in Chapter III. Dillman's (1982) guidelines for conducting successful mail surveys were adhered to, wherever possible. A total sample of \((n = 187)\) respondents was used in this study.

Validation of the instrument was established by eight Panel of Experts, who were approached by letter to serve in this capacity. The contents of the questionnaire were assessed in terms of, clarity, accuracy and appropriateness to the phenomenon under study. The validation process is included in Appendix B. Suggestions from the Panel shaped the final form of the instrument.

Reliability for the instrument was established by Cronbach alpha coefficient of internal stability. The instrument pilot tested with a sample of \((n = 30)\) African students from a Mid-West university. The reliability outcomes, coefficient of alpha for the 12 sub-scales on the pilot and final samples, ranged from \(\alpha = .50\) to \(.89\). According to psychometric theory, Nunnally (1967), a reliability of \(.50\), or \(.60\) is acceptable at entry stages of
research, for predictor tests. For details refer to Tables 5 and 6 listed in Chapter III.

5.3 Summary of Statistical Analysis

Multiple regression analysis statistical procedure was used to analyze the data in this study. A four-stage analysis was done to achieve the objectives of this study. Inferences to the population were set a priori at an .05 significance level.

Stage 1 analysis was a simultaneous regression procedure with the main composite sub-scales in the equation, and all possible two way interaction terms. Omnibus $F$ ratio was significant at the .0001. (Results are reported on Tables 9 - 10).

Stage II analysis was aimed at achieving a parasmoneous predictive model by process of eliminating the interaction terms accounting for the least variance in the equation, as proposed by Cohen and Cohen (1983). The technique used for the process of eliminating the variables was the Step-wise, backward strategy. According to Cohen and Cohen, the latter regression strategy fitted the data in this study. For reasons well articulated in Chapter IV, hierarchical strategy would not fit the data in this study. Results of the second analysis were reported on Tables 10 and 11. The hypothesis tested was $B \neq 0$. Model 1 was expressed as predicted score on the dependent variable RETURN. Model 2 yielded a predicted score for variable STAY. The mathematical equations
were included in Chapter IV.

Stage III analysis yielded a correlation matrix for the main sub-scales in the model (see Table 12). An exploratory factor analysis was not calculated in this study due to limited number of observations, as prescribed by psychometric theory (Nunnally, 1967). The correlation matrix provided, thus, a deeper understanding of how the composite sub-scales were inter-correlated among themselves. Detailed related interpretation was included in Chapter IV, under the results section.

Stage IV analysis aimed at explaining the significant interaction terms in the model RETURN and STAY. Keppel has advised that discovered interactions in a model yield more information over and above that provided by the main effects and generate unique theoretical implications. To explain the interaction in the model, a median split 2 x 2 factorial design - low and high levels of each variable in the interaction terms, were calculated and plotted, (see Figures 1 & 2). The visual display of the interaction provided a more perceptual explanation, as well as, theoretical interpretation of the factors associated with the dependent variables - RETURN and STAY. The outcomes were interpreted in the light of categorized association. Details of the interpretation are included in Figures 1 and 2, under Chapter IV.

5.4 Summary of Findings

The underlying assumptions for the analysis of the study
were (a) APs themselves possess the information encouraging them to repatriate home versus stay, or re-exit back to the U.S.; (b) when these attitudes were probed and empirically tested, specific factors undergirding concerns of APs would surface; (c) associations among these factors would be established, and predictive models would be plausible outcomes.

To test the research objectives of the study two hypothesis were stated: One hypothesis implied $R^2 = 0$, no relationships existed among factors perceived by APs to encourage BDR, patriotism and returnability-intent. The other hypothesized that $R$ squared not = Zero.

A summary of expected pattern of relationships among the sets of variables, consistent with the alternate hypothesis, was outlined in Table 7 in Chapter IV. These theories were tested with multiple regression statistical analysis. Inference to the population were made at a significant alpha level of .05.

The results of the regression analyses are reported in Tables 8 - 12 on Chapter IV. The $F$ ratios, $p < .0001$, supported the alternate hypothesis. The significant results provide answers to objectives 1 and 2, namely to identify specific factors APs perceive to influence (1) their decisions to return to source country and (2) their plans to stay, or re-exit back to the U.S. or other countries abroad, (see Table 10, 11).
The significant findings supported the alternate hypothesis that relationships exist among factors perceived by African scholars to encourage BDR, patriotism sentiments and returnability-intent - propensity to repatriate versus stay in the U.S. $R^2 \neq 0$ in the population (see Table 12). These data, thus, provided answers to objective III.

Furthermore, the significant outcomes yielded a model for predicting transfer of human technology, as it relates to African economies. The hypothesis tested is: $B \neq 0$. The predictive model is expressed as predicted RETURN score:

$$\text{RETURN} = 5.79 + (\text{Pushfor} \times -0.08) + (\text{Dynam} \times -0.38) + (\text{Homtie} \times -0.32) + (\text{Uspull} \times -0.58) + (\text{Homeland} \times 0.2) + (\text{Culture} \times -0.5) + (\text{Foreign} \times -0.15) + (\text{Profdev} \times -0.13) + (\text{Rewards} \times 0.48) + (\text{Uspush} \times -0.19) + (\text{Dynhom} \times 0.08) + (\text{Culfor} \times 0.15) + (\text{Homtfor} \times 0.1) + (\text{Pullpush} \times 0.16) + (\text{Rewhom} \times -0.09).$$

Analysis of the data yielded an alternate model as stated in objective 4, consistent with the attempt to answer what factors are associated with the lack of repatriation among African scholars, as perceived by pre and post-graduated APs from SSA. The hypothesis tested is: $B$ is not $= 0$. The predicted STAY score: Model-II is expressed as predicted STAY score.

$$\text{STAY} = -4.66 + (\text{Pulhom} \times 0.22) + (\text{Culture} \times -0.71) + (\text{Homtie} \times 0.63) + (\text{Foreign} \times 0.65) + (\text{Uspush} \times 0.76) + (\text{Rely} \times 0.32) + (\text{Dynam} \times 1.79) + (\text{Uspull} \times 0.52) + (\text{Profdev} \times -1.5) + (\text{Rewards} \times 1.75) + (\text{Culhom} \times -0.14) + (\text{Homhom} \times -0.15) + (\text{Dynpull} \times -0.58) +$$
(Rewfor * -.44) + Pullpush * -.24) + (Culpull * .42) + (Profor * .37) + (Homeland * .1). These data provided answers to objective IV - to provide a predictive model (quantitative) for BDR, as it relates to African economies.

The significant interactions revealed unique combination of independent variables (shared variance) that accounted for the change in the dependent variables RETURN score and STAY score. As Keppel suggested, the predicted interactions have yielded insights to the understanding of the phenomenon under investigation, and added knowledge to the existing theoretical frameworks toward BDR, as it relates to African economies of SSA. These data have, thus, answered objective V inclusively - to contribute to traditional theoretical framework and to generalize the results to the population of APs from SSA in the U.S. A comprehensive interpretation of the interactions appears in the previous chapter.

5.5 Discussion and Implications

This section compares the empirical outcomes of the present investigation with the traditional views articulated in Chapter II, implications of which were drawn within the context of factors that may predict the reverse transfer of human resources in African economies. This discourse is particularly facilitated by Table 7, which depicts the expected relationships; and Table 12, which depicts the outcomes of correlation coefficients among sets of variables in the present investigation.
To put Table 7 in context, it is crucial to present a brief summary of the theoretical arguments toward BDR underlying the composite sub-scales. Some of the dominant theoretical frameworks that have been explicated in this inquiry are the "Cosmopolitan" paradigm and "Nationalist" orthodoxy (Adams, 1968). The cosmopolitan approach perceives skilled human resource from less developed countries to technologically advanced countries as driven by economic factors. The cosmopolitan framework, thus, implies that BDR is determined by pecuniary factors and that African scholars are "economic refugees" (Ricca 1989). The nationalist perspective perceives African scholars as instruments for development, and that reverse transfer of human technology as a function of a shift in sense of mission, or nationalist interests (Liu 1985). The multipurpose theory, coined for this study, considers both pecuniary and non-pecuniary factors as important in the investigation on BDR among African scholars.

Given these polarized views, this discussion proceeds by comparing the present findings to the extent to which the existing theoretical framework which shaped the development of the instrument (composite sub-scales) have been supported in this study. The implications of the outcomes are also discussed.

1. **APs AS POTENTIAL ECONOMIC REFUGEES:** This view was tested by the sub-scale **REWARDS.** The expected relationships was that
REWARDS would be negatively correlated with intent to stay in the U.S. and positively correlated with the propensity to repatriate to source country (see Table 7).

In this study the independent variable REWARDS (perceived pecuniary attributes for compensating the skilled manpower in home country) was positively correlated with intent to return, \( p < .01 \), and was not correlated with intent to stay in the U.S. These data imply that when perceived economic order at home is conducive, desire to stay in the U.S., or re-exit back to the U.S. is not a compelling force. As REWARDS increases propensity to return to source country in SSA also increases.

2. APs AS POTENTIAL POLITICAL REFUGEES: According to Apraku, (1990) the transfer of human technology among African scholars is determined by political order in home country; and that APs would fail to repatriate when they perceived the political environment under which scholars interact in SSA as not empowering. This view was tested by sub-scale DYNAM - perceived socio-political dynamics in home country. The expected relationship (see Table 7) was that DYNAM would be negatively correlated with intent to stay and positively correlated with intent to return.

The outcomes in this study reveal that DYNAM is negatively correlated with stay intent, \( p < .01 \); and not correlated with return intent. These data imply that the propensity to stay or re-exit back to the U.S., increases as global socio-political conditions at home are perceived by
scholars as less conducive. The propensity to stay is less compelling when APs perceive the political climate at home as more empowering (among other things, tolerance for opposition and innovative input from scholars in Africa).

3. **APs AS ACADEMIC REFUGEES:** According to the career development thought (Zunker, 1986), the transfer of African scholars is determined by a search for an environment which stimulates and nurture intellect. African scholars would depart in search of ego-identity, to be all that one can be - higher order needs in the language of Abraham Maslow’s hierarchy of needs. This view was tested by sub-scale **PROFDEV**. The expected relationship (see Table 7) was that **PROFDEV** - perceived infrastructure determining career advancement and scholarship would be negatively correlated with intent to stay and positively correlated with propensity to return.

In this study variable **PROFDEV** did not have a linear relationship with either **RETURN**, or **STAY** variables $p > .05$.

4. **APs AS POTENTIAL SOCIAL REFUGEES:** According to Useem and Useem (1955) personalities existing with the framework of occupational culture may influence the decision to repatriate to source country. Informal interviews with some African students have confirmed Useem and Useem’s notion of BDR as a function of perceived occupational culture. This view was tested by sub-scale "**CULTURE**" - perceived environment in home country, such as allocation of opportunities for career
advancement based on ethnic preference and related pettiness in the work place. The expected relationship (see Table 7) was that CULTURE would be negatively correlated with the propensity to stay in the U.S. and positively correlated with intent to return home.

The findings in the present study supported positive correlation of CULTURE with intent to return home, \( p < .05 \). Culture was not correlated with intent to stay \( p > .05 \). The implication of these data is that as APs perceive the prevailing occupational environment as more accommodative of American educated professionals and merited recognition of expertise, the more they are motivated to return.

Along with social refugee explanation, sub-scale RELY tested the dependency theory, or the notion that African economies tend to rely on imported skills to man positions of significance in public and private sectors in development operations (World Bank Reports). This concern has surfaced, or been verbalized by African scholars, in informal discussions. RELY in this study represented perceived prospects for re-integration of indigenous expertise in home country. The expected relationship, based on the dependency theory, was that RELY would be negatively correlated with intent to stay and positively correlated with propensity to return.

The outcomes in the present study revealed that RELY had no linear correlation with either STAY, or RETURN, \( p > .05 \).
While RELY was not associated with the returnability-intent, RELY was highly correlated with other independent variables: DYNAM, $p < .01$; REWARDS $p < .01$; PROFDEV, $p < .01$. RELY shared variance with many other variables, but when standing alone it was not stable in the model. The implication of these data is that RELY by itself, is not a determinant factor for BDR. It is an important factor in the decision to repatriate only as it relates the configuration of other factors in the model.

5. TRANSFER OF APs AS a PULL and PUSH FACTORS from the U.S. Some conditions in the U.S. have been alleged to influence lack of repatriation among APs. Das (1974) has noted that African scholars are subjected to the same racial discrimination other minority groups are experiencing, which determine integration prospects in the stream U.S. economy. Interviews with some African scholars revealed the presence of fear of being under-utilized in the U.S. At the same time African scholars have expressed their positive views toward the academic and political freedoms enjoyed in the U.S. On the other hand, informal interviews with some local students indicated that APs lack of repatriation is a function of quest for American life style. These views were tested by the composite sub-scales USPULL and USPUSH. USPULL represented alleged conditions in the U.S. perceived to compel APs not to return to the source countries. USPUSH represented alleged conditions in the U.S. perceived to discourage their stay here
in the U.S. - facilitate BDR. The expected relationships were that: USPULL would be positively correlated with propensity to stay in the U.S. and USPUSH be positively correlated with decisions to repatriate to SSA.

The outcomes of the present analysis partially supported the expected relationships. USPULL was positively correlated with intent to stay, $p < .01$, while no association was evident between USPUSH and propensity to return to SSA. The implication drawn from these data is that, while perceived favorable attributes in the U.S. are highly associated with the decision to stay, or re-exit back to the U.S., perceived unfavorable attributes in the US. are not a compelling reason for repatriation to SSA. While the pull is stronger than the push factors, conditions at home, in SSA, seem to bear a greater weight on the decision to return home, or stay in the U.S.

6. Last, TRANSFER AMONG APs As a FUNCTION of NATIONALIST INTEREST (Adam 1968). Liu's study (1985) indicated that lack of repatriation among contemporary scholars from developing countries would be associated with the shift in patriotism (sense of mission contributes to national development). Das, on the other hand refutes that scholars are motivated by narrowly defined national interests. Chukunna (1976) reports that patriotism was important in the decisions of American educated Nigerians. Harbinson (1968) affirms, among other things, that the brain-drain problem would occur among
talented Africans if patriotism weakened. Grinberg and Grinberg has categorized migrant individuals into two groups: (a) Ocnophiles - characterized by strong familial bond, and motivated by contact with familiar people; (b) Philobatics - presumed to avoid ties and derive pleasure in pursuit of uncharted horizons.

These views were tested by three composite sub-scales: HOMTIE - bond or responsibilities to extended family in home country; HOMELAND - magnitude of nationalistic sentiments toward home land (patriotism) measured by Semantic Differential Scale; and FOREIGN - favorable sentiments toward the U.S. (foreign land) measured by Semantic Differential Scale. The expected relationship (see Table 7) were: HOMTIE correlate positively with intent to return, and negatively correlated with STAY. HOMELAND would positively correlate with RETURN and negatively correlated with STAY $p < .01$, respectively.

The findings in this study reveal that there was no linear relationship between HOMTIE and return-intent, $p > .05$. HOMTIE, was negatively correlated with STAY, $p < .05$. HOMELAND was positively correlated with RETURN, $p < .01$, and negatively correlated with STAY. FOREIGN was positively correlated with RETURN and STAY, $p < .01$ respectively.

The implications drawn from this analysis seem to suggest that first, intent to stay, or re-exit back to the U.S. is intensified when the bond, or responsibilities to extended
family decreases (HOMTIE). On the contrary, Onwudiwe (1990) explains that departure among APs is intensified by a need to provide for the extended family. In the face of unstable, or stagnant economic order in SSA, as suggested by the World Bank reports, in terms of debt crisis with the International Monetary Fund (IMF) and related austerity measures, or structural adjustment to enable SSA to service its foreign debts, APs provide for their extended families more adequately when they are outside their countries (Onwudiwe, 1990). Onwudiwe has argued that: "in some cases, African scholars are the only social security, unemployment benefit, college financial aid and medical insurance their relatives have" (p.33).

Onwudiwe's thesis was not supported by the outcomes in this study, as APs perceived responsibilities, or bond to the extended family were greater. APs were less likely to stay, or re-exit back to the U.S. \( p < .01 \).

Second, the implication of the inverse association between HOMELAND (patriotic sentiments toward source country), with STAY, supports the nationalist orthodoxy that as patriotism increases the propensity to return to Africa increases, and as patriotism decreases, propensity to stay, or re-exit back to the U.S. increases. Furthermore, the positive association of FOREIGN with RETURN, and STAY, seem to imply that intent to return, or repatriate is undaunted by favorable attitudes toward the U.S. These sentiments co-
exist, and are not necessarily competing, or mutually exclusive feelings, as they relate to BDR - repatriation decisions among APs from SSA.

Figures 1 and 2, plotted significant interactions in the models and provide additional information over and above the main effects (relationships among the main sets of variables, or the composite sub-scales articulated above). A detailed explanation of the interaction was highlighted in Chapter IV. These interactions have added richness toward understanding of the phenomenon understudy. The matrix of factors that may predict the decisions to return versus stay among APs, is expressed in the predictive equation.

Informal discussions with a senior official of the World Bank revealed that bilateral organizations, which help with development operations in SSA, are keen to know what could be done to attract those scholars who are abroad and retain them, so that they do not re-exit back to the U.S. or other countries abroad. Furthermore, these agencies are concerned as to whether they should focus on the intervention process toward the outflow of qualified human resource, such as, incentive rewards or focus on the 'big picture,' such as, economic climate (boosting industry capacity) and global socio-political order in SSA.

Empirical findings in this study indicated that structural climate, pecuniary and non-pecuniary factors, should be mutually considered in intervention initiatives to
reverse brain-drain of scholars among African economies.

In conclusion, the outcomes of this investigation attest to the notion that reverse transfer of human technology among African scholars is more complex than sometimes assumed (i.e. not linear). It cannot be explained by one variable or theoretical construct. It involves a matrix of variables - pull factors from the U.S., as well as, a configuration of push conditions from the source country. It is explained by multi-dimensional attributes. Both pecuniary and non-pecuniary attributes - psychological and structural forces need not be overlooked in the analysis of the predicted RETURN and STAY scores (returnability-intent). The weight of the overall results has leaned toward external structural factors (socio-political dynamics) as more compelling reasons for lack of repatriation among APs, for DYNAM, beta = 1.60, p < .0001.

5.6 Recommendations to African Policy Makers

The analyses in this study have yielded factors associated with BDR and a predictive model that managers in manpower development units, or counsellors in training and development programs can utilize for predicting conditions that inhibit BDR. These officials, thus, could be able to make useful judgments toward proactive intervention before the brain-drain syndrome (BDS) occurs, in their constituencies.

Specifically, policy makers can utilize this data for (1) formulating strategies for redeployment of indigenous talent domiciled abroad, toward building a reservoir of critical
indigenous expertise necessary for sustainable development operations in SSA; and for (2) active recruitment and redeployment of APs to provide an alternative to reliance on imported expertise for replenishing SSA's paucity of skilled manpower. Africa, thus, would reverse the proverbial sentiment that: "Africa consumes what it does not produce and produces what it does not consume!"

Miscellaneous results which have implication for structural reconstruction and incentives toward maximizing the integration of returning expertise, were generated from the analysis of demographic data outlined in Table 13. Some relevant, or vital characteristics which need mentioning, are highlighted below:

1. SPONSORSHIP: (Q 87) The majority of American educated African scholars (59 percent) reported that they were self-sponsored. The outcome in this sample supports the report from IIE (Open Doors 1987/88), which reports that an overwhelming majority of international students (80%) are self-sponsored. It appears from these data that, if African Governments are concerned about effective BDR, an attempt need to be made to reduce this disproportionate representation of non-sponsored students.

2. DEGREE PURSUED: (Q 88) The distribution of the sample reveals that 87 percent of the APs had senior degrees, while 56 percent had pursued doctoral degrees. This trend has positive human technological implications, that SSA does
Table 13
Frequency Distribution of Sample of African Professionals by Demographic Data

<table>
<thead>
<tr>
<th>Q. Item</th>
<th>Response Category</th>
<th>n</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q. 87</td>
<td>SPONSORSHIP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Sponsored</td>
<td>76</td>
<td>41</td>
</tr>
<tr>
<td>2</td>
<td>Non-Sponsored</td>
<td>111</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td><strong>N = 187 (100)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. 88</td>
<td>DEGREE PURSUED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Undergraduate</td>
<td>25</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>Masters</td>
<td>58</td>
<td>31</td>
</tr>
<tr>
<td>3</td>
<td>Doctoral</td>
<td>104</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td><strong>N = 187 (100)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. 89</td>
<td>AREA OF STUDY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Social Science</td>
<td>77</td>
<td>41</td>
</tr>
<tr>
<td>2</td>
<td>Natural Science</td>
<td>75</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>Humanities</td>
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<td>18</td>
</tr>
<tr>
<td>4</td>
<td>Other</td>
<td>2</td>
<td>01</td>
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<td>Q. 90</td>
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<td>15</td>
</tr>
<tr>
<td>2</td>
<td>26 - 32</td>
<td>49</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>33 - 40</td>
<td>74</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>41 &amp; above</td>
<td>36</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td><strong>N = 187 (100)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. 91</td>
<td>GENDER</td>
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</tr>
<tr>
<td>1</td>
<td>Male</td>
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<td>86</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>27</td>
<td>14</td>
</tr>
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<td></td>
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<tr>
<td>Q. 92</td>
<td>BIRTH ORDER</td>
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</tr>
<tr>
<td>1</td>
<td>First Born</td>
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<td>36</td>
</tr>
<tr>
<td>2</td>
<td>Middle Born</td>
<td>89</td>
<td>48</td>
</tr>
<tr>
<td>3</td>
<td>Last Born</td>
<td>31</td>
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</tr>
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Table 13 Continued ....

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<th>Q. Item</th>
<th>Response Category</th>
<th>n</th>
<th>Percentages</th>
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<td>Q. 93</td>
<td>MARITAL STATUS</td>
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</tr>
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<td>1 Single</td>
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<td>81</td>
<td>43</td>
</tr>
<tr>
<td>2 Married</td>
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<td>106</td>
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<td>Q. 94</td>
<td>SPOUSE NATIONALITY</td>
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</tr>
<tr>
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</tr>
<tr>
<td>2 American</td>
<td></td>
<td>23</td>
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</tr>
<tr>
<td>3 Other</td>
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</tr>
<tr>
<td>(N/A SINGLE)</td>
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<td>(81)</td>
<td>(43)</td>
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<td>19</td>
</tr>
<tr>
<td>2 West Africa</td>
<td></td>
<td>95</td>
<td>51</td>
</tr>
<tr>
<td>3 Central Africa</td>
<td></td>
<td>26</td>
<td>14</td>
</tr>
<tr>
<td>4 Southern Africa</td>
<td></td>
<td>30</td>
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<tr>
<td>Q. 96</td>
<td>WITH CHILDREN</td>
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<td></td>
</tr>
<tr>
<td>1 Yes</td>
<td></td>
<td>90</td>
<td>48</td>
</tr>
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<td>2 No</td>
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<td>97</td>
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<tr>
<td>Q. 97</td>
<td>CHILDREN'S LEVELS IN SCHOOL</td>
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</tr>
<tr>
<td>1 Pre-School</td>
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<td>131</td>
<td>73</td>
</tr>
<tr>
<td>2 Elementary</td>
<td></td>
<td>37</td>
<td>21</td>
</tr>
<tr>
<td>3 High School</td>
<td></td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>4 Other</td>
<td></td>
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</tr>
<tr>
<td>N/A</td>
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<td></td>
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<tr>
<td>Q. 98</td>
<td>SECTOR ASPIRING TO WORK FOR:</td>
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<tr>
<td>IN SSA</td>
<td>IN U.S.</td>
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<td>35</td>
<td>(19)</td>
</tr>
<tr>
<td>4 Other</td>
<td></td>
<td>26</td>
<td>(44)</td>
</tr>
<tr>
<td>187 (100)</td>
<td></td>
<td></td>
<td>187 (100)</td>
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</tbody>
</table>


Table 13

<table>
<thead>
<tr>
<th>Q. Item</th>
<th>Response Category</th>
<th>n</th>
<th>Percentages</th>
</tr>
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<tbody>
<tr>
<td>Q. 99</td>
<td>INTENT TO REPATRIATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not Certain</td>
<td>46</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>134</td>
<td>72</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>187</td>
<td>(100)</td>
</tr>
</tbody>
</table>

Q.99-A YEARS OF DELAY TO RETURN
| 1       | 1 - 3 Years      | 69 | 37          |
| 2       | 4 - 6 Years      | 40 | 21          |
| 3       | 7 -10 Years      | 13 | 7           |
| 4       | 11 or more       | 13 | 7           |
| (N/A had no plans) | (52) | (28) |
| N       |                  | 187| (100)       |

Q.99-B REASON FOR DELAYING
| 1       | Practical Training | 62 | 33          |
| 2       | Pay-off Study Loan | 8  | 4           |
| 3       | Save Money for Repatriation | 52 | 28 |
| 4       | Other             | 16 | 9           |
| (N/A about returning) | 49 | 26 |
| N       |                  | 187| (100)       |

Q.100 RATE VALUE OF THE PROFESSION BY HOME COUNTRY
| 1       | Income           | 25 | 13          |
| 2       | Job Security     | 36 | 19          |
| 3       | Fringe Benefits  | 14 | 8           |
| 4       | Position/Status  | 87 | 47          |
| 5       | Other            | 25 | 13          |
| N       |                  | 187| (100)       |
possess the capacity to attain manpower self-sufficiency (expert power). This discourse is founded on the popular notion that "each nation is measured by the strength of it's minds" and Jeffersonian ethos - trust in the educated populace. Jefferson proclaimed: "I know of no safe depository of the ultimate powers of the society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion by education" (Theobald, 1987 p.138).

3. SECTOR IN WHICH APs WERE ASPIRING TO WORK FOR AT HOME - SSA, VERSUS U.S: (Q 98) Interesting results emerged from these data. While more APs (51 percent) indicated they would work for Government in the U.S., the process was reversed when applied to SSA. A modicum number of students (31 percent) preferred to work for Government at home. A majority of 69 percent, however, indicated they would work for non-government enterprise, self-employed, or other sectors. In most cases APs specified research. These data imply that African economies may need to intensify the option of privatization, and increase support of small scale and large scale private industries - thus augment the capacity for the absorption, or re-integration of returning African scholars.

4. INTENT TO REPATRIATE: (Q 99) This question was developed to solicit decisive responses toward repatriation. The majority of APs (72 percent) indicated that they intend to
return to Africa; and 28 percent were uncertain about repatriation, or had no plans to return. The concern of this study was more with the latter group which may fall between the cracks. Based on the previous discussions concerning a growing population of scholars who return home, but bounce back to the U.S., the number of non-returnees may increase. According to Patinkin (1968) 10 to 15 percent potential non-returnees warrants serious concerns from developing economies.

5. NUMBER OF YEARS PLANNED FOR DELAYING RETURN: (Q 99-A) The majority of the APs (63 percent) planned to delay repatriation for more than four years. This figure does not include those who had no plans to return, or were uncertain about repatriation to source country.

6. REASONS FOR DELAYING: (Q 99-B) Less APs (33 percent) planned to delay due to the desire to polish-up their expertise (practical training). The majority (67 percent) were compelled to delay returning due to obligations to pay-off study loans, and to save money for repatriation. This trend seems associated with the majority of APs being self-sponsored. The implication is that potential non-returnees may increase in the future, unless governments make efforts to assist scholars at least in the final stages of their academic pursuits by: (a) providing for repatriation costs, and (b) re-imburseing self-sponsored students, part, or whole of academic related loans.

Furthermore, economic rewards were perceived as a
compelling factor for decisions to repatriate to source country, REWARDS, .57 coefficient of beta weights, \( t = 2.501, p < .01 \). Last, African scholars were requested to estimate how they would perceive their skills to be valued by home country (see Q 100). The frequency distribution reveals that 47 percent of APs perceived position/status as important, or valuable, and next was job security (19 percent). Physical income was equal in importance as "other factors - non-pecuniary." The latter were specified as "opportunity to contribute to development in my country." This response has underlying implication for strong patriotic sentiments. Some specified favorable political climate as of value than economic concerns. The latter confirm the notion that the most compelling reason for lack of repatriation specified by APs was perceived global socio-political climate prevailing in source countries.

These results have provided food for thought for stakeholders in SSA, if BDR is a concern among African policy makers. It is evident from the analyses of this inquiry that the APs' national interest to contribute to the development of SSA has not shifted. Both pre and post-graduated APs would prefer to be in SSA than being in the U.S., but there are external conditions getting on the way of their aspiration or 'sense if mission' to advance national development. These data, thus, support Apraku's assertion that a move toward socio-political transformation that presents a politically
conducive milieu under which scholars interact is expedient for attracting indigenous skills in SSA.

Other pertinent suggestions toward facilitating BDR, that can be drawn from the analyses in this study, are articulated below.

1) African societies, in conjunction with bilateral organizations for international development, could establish centers of excellence in SSA that would attract and retain African intellectuals.

2) Experienced African scholars who are not ready to repatriate to SSA, for whatever reason, could be used as consultants rather than foreign technical experts, unless where it is absolutely necessary to do so.

3) African countries, through their respective Embassies, could nurture or enhance the patriotic sentiments exhibited by APs in two ways: (a) by maintaining an accurate record of their nationals studying in the U.S. (b) by developing close contacts with their students overseas through correspondence or campus visits to meet students and their advisors so as to encourage research that is relevant to the national development needs; and (c) by supporting students not only in rhetoric but by placing resources at their disposal. For instance, Governments could encourage donor agencies to sponsor research related to development needs in SSA, even when it is conducted by self-supported students.

Last, faculty in the U.S. could also help African
students by shelving the 'ego centric notions' of academic imperialism of the West (professors as only active givers of 'truth' and foreign students as passive recipients of knowledge). Faculty advising foreign students, African scholars in particular, could enhance these scholars' sense of mission in mapping cross-cultural programs, and through being responsive and supportive of research topics related to development need in SSA. Such efforts would be consistent with the popular sentiment to internationalize the campuses for mutual benefit of both the foreign scholars and national intellectuals. Furthermore, such a relationship would afford African scholars to acquire relevant expertise and sensitivity to the development needs of Third World countries.

5.7 Recommendations for Future Research

The present study was limited by constraints of time and money to compare the test group in this study with American educated APs who have repatriated and stayed in SSA. Such a comparison would enhance the precision of the present study.

Future research could be conducted that uses the test groups as a parameter to establish if there is a significant difference among the responses of the APs who are in the U.S. and those who have remained in SSA.

The second limitation of the study was low number of observations to warrant a factor analysis. Validation of the present instrument's construct validity with a sample of African scholars not less than (n = 500) would increase the
precision of the outcomes in the present investigation.

The study measured attitudes of APs toward BDR and provided a predictive equation for RETURN and STAY scores. A longitudinal study is needed that would test this model on actual behavior.

Future research may test the models in this study by conducting a predictive validity study to determine decision patterns (false negative versus false positive) among African scholars who have returned to SSA versus those who did not. False negative represents a test group whose scores predicted that they would not return home but they actually repatriated to SSA. False positive represent the outcome of the test group whose scores predicted that they would repatriate to SSA but have not returned. Both these conditions reflect what Frankl (1984) refer to as "paradoxical intention."

Furthermore, research is necessary that is geared toward offering solutions to the brain-drain of African scholars. Suggested questions that need to be addressed are: 1. What should African Governments do to encourage the return of African expertise? 2. What should international development assistance agencies do to encourage the return of African talent, and 3. What should African scholars themselves do to maximize brain-drain reversal (BDR)? The present investigation began probing the latter questions. On account of time and financial constraints, however, the data will be analyzed as post-dissertation follow-up study.
TO RETURN OR NOT TO RETURN THAT IS THE .....?

(Scholars at the Cross-Roads!)

A Study of Factors Influencing Repatriation of Scholars
As Perceived by Pre and Post-Graduated Professionals
From Sub-Saharan Africa

DEPARTMENT OF EDUCATIONAL POLICY & LEADERSHIP

(Summer, 1991)

THE OHIO STATE UNIVERSITY
Please return to:

NOZIPHO N. NXUMALO
P.O. BOX 24812
COLUMBUS, OHIO 43224

TEL: (614) 476-0154
The following items are an attempt to assess the perceptions of African students about specific factors which encourage/discourage African scholars from returning to home countries after completion of their academic pursuits in the United States. The best answer to each statement is your personal opinion.

**SCALE**

**LEVEL OF ENCOURAGEMENT**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
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<tbody>
<tr>
<td>ED</td>
<td>D</td>
<td>SD</td>
<td>SE</td>
<td>E</td>
<td>EE</td>
</tr>
</tbody>
</table>

(circle one)

1 = Extremely Discouraging (ED)  4 = Slightly Encouraging (SE)
2 = Discouraging (D)  5 = Encouraging (E)
3 = Slightly Discouraging (SD)  6 = Extremely Encouraging (EE)

Here is how you use the scale:

**EXAMPLE:**

SUPPOSE you perceive SALARY LEVELS in your country as an extremely encouraging FACTOR, circle 6. If you see them as an extremely discouraging factor, circle 1. If they are encouraging, circle 5. If they are discouraging, circle 2. If they are somewhat discouraging circle 3. and if they are somewhat encouraging circle 4.

PLEASE NOTE: The rating scale will be provided at the top of each subsequent page. Please respond to ALL items.
Please remember to rate the following items in the EXTENT to which you perceive them to ENCOURAGE, or DISCOURAGE the decision of African SCHOLARS/professionals from Sub-Saharan to RETURN to home country after completion of studies in the U.S. Please respond to ALL questions.

<table>
<thead>
<tr>
<th>LEVEL OF ENCOURAGEMENT</th>
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<tbody>
<tr>
<td>(Circle one)</td>
</tr>
<tr>
<td>ED  D  SD  SE  E  EE</td>
</tr>
</tbody>
</table>

1. Availability of job opportunities in my home country 1 2 3 4 5 6
2. Tribalism/nepotism in employment in home country 1 2 3 4 5 6
3. My ties with extended family in home country 1 2 3 4 5 6
4. My experience with racial discrimination in the U.S. 1 2 3 4 5 6
5. Lack of support for professional net-working in home country 1 2 3 4 5 6
6. Monetary rewards in the U.S. for qualified Africans 1 2 3 4 5 6
7. Attitudes of older workers toward returning professionals from abroad 1 2 3 4 5 6
8. Benefits offered to local experts in home country 1 2 3 4 5 6
9. Intolerance for innovative ideas from scholars in home country 1 2 3 4 5 6
10. Political freedom enjoyed in the U.S. 1 2 3 4 5 6
11. Lack of integration of African professionals in the U.S. 1 2 3 4 5 6
12. Level of involvement of scholars in development of home country 1 2 3 4 5 6
<p>| | | | | | |</p>
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<tbody>
<tr>
<td>13. The nature of political decisions in home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. My prospects of securing a suitable job in my field in home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>15. The level of dependence of my country on foreign advisors</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Relevance of my skills acquired abroad to development needs in my country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>17. The quality of government/agency support toward my education abroad</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>18. My experience as a self-sponsored student in the U.S. (e.g. financial strain; independence)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>19. Financial assistance by my home government/agency to defray repatriation expenses for returning scholars (e.g. traveling; shipment)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>20. The quality of life in home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>21. Corruption in employment practices in home country (e.g. in appointments, promotions, transfers)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>22. Under-utilization of African skills/expertise in the U.S.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>23. The quest for American lifestyle</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24. Salary levels in entry positions for new professionals in home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td></td>
<td>LEVEL OF ENCOURAGEMENT</td>
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<tr>
<td>25.</td>
<td>Level of interest exhibited by donor-agencies in the return of scholars</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>26.</td>
<td>Facilities in home country to apply skills acquired abroad</td>
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<tr>
<td></td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>27.</td>
<td>Willingness of donor-agencies to use local experts in agency sponsored projects in home country</td>
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<tr>
<td></td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>28.</td>
<td>Level of integration of local experts in the private sector/foreign companies in home country</td>
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<tr>
<td></td>
<td>1 2 3 4 5 6</td>
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<td>29.</td>
<td>Under-utilization of the available local expertise in home country</td>
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<td></td>
<td>1 2 3 4 5 6</td>
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<td>30.</td>
<td>Existence of pettiness in decisions of some officials in home country</td>
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<td></td>
<td>1 2 3 4 5 6</td>
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<td>31.</td>
<td>My desire to raise my children in Africa</td>
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<tr>
<td></td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>32.</td>
<td>My aspiration to raise my children in the U.S.</td>
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<td></td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>33.</td>
<td>Absorption power of African economies to re-integrate professionals</td>
<td></td>
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<td></td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>34.</td>
<td>My obligation to support an extended family in my home country</td>
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<td></td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>35.</td>
<td>Senior workers' attitudes toward returning professionals from abroad</td>
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<td></td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>36.</td>
<td>African policy makers' efforts to recruit local professionals from abroad</td>
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<td>SD</td>
<td>D</td>
<td>SD</td>
<td>SE</td>
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<td>37. Civil liberties enjoyed in the United States</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>38. Economic stability in home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>39. My access to quality life in the U.S</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>40. Political stability in home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>41. My marriage to an American spouse</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>42. Immigration policies for integration of African professionals in the mainstream U.S. economy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>43. Availability of resources for professional enrichment (e.g. research, seminars) in home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>44. Job prospects for African professionals in the U.S</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>45. Level of tolerance for political opposition in my home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>46. Tolerance for cultural diversity in the U.S</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>47. My interest to contribute to national development in home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>48. Preference for foreign experts over local professionals in my home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>49. Level of support from home country</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>50. Availability of opportunities based on who you know in the U.S. culture</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
PART XI

SEMANTIC DIFFERENTIAL SCALE
AS A MEASURE OF AFRICAN STUDENTS SENTIMENTS AND
RETURNABILITY-INTENT (ASSRI)

-----------------------------------------------

DIRECTIONS

In the following pages, you will find four phrases:
1) MY SENTIMENTS of HOME-LAND, 2) MY SENTIMENTS of
FOREIGN-COUNTRY, 3) RETURN-INTENT to HOME-COUNTRY and
4) STAY-INTENT in FOREIGN-COUNTRY.

Below each phrase are nine paired-descriptive scales in
concepts such as "PLEASANT" or "UNPLEASANT" to convey
your feelings.

Here is how you USE the scales:

If your feelings about the phrase at the top of the page
is closely described by (e.g.) "pleasant" check (X) as
follows:

MY SENTIMENTS of HOME-LAND

Pleasant -X----;

If your feeling about the phrase is closely described by
"unpleasant" check (X) as follows:

Pleasant --X---;

If your feeling about the phrase is closely described
equally by "pleasant and unpleasant" concepts check (X)
as follows:

Pleasant X----;
**SECTION - A**

PLEASE REMEMBER to place your response (X) on the appropriate space on the scale to the extent each item closely represents YOUR FEELINGS about the phrase cited at the top of the scale. Please respond to ALL items.

### MY SENTIMENTS OF HOME-LAND

51. Happy  
52. Worthless  
53. Pleasurable  
54. Kind  
55. Bitter  
56. Relaxed  
57. Unfair  
58. Positive  
59. Strong  

### MY SENTIMENTS OF FOREIGN COUNTRY

60. Happy  
61. Worthless  
62. Pleasurable  
63. Kind  
64. Bitter  
65. Relaxed  
66. Unfair  
67. Positive  
68. Strong
SECTION - B

PLEASE REMEMBER to place your response (X) on the appropriate space on the scale to the extent each item closely represents YOUR FEELINGS toward the phrase cited at the top of the scale. Please respond to ALL items.

INTENT TO RETURN TO HOME-COUNTRY

69. Certain -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Uncertain
70. Impossible -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Possible
71. Inconceivable -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Conceivable
72. Willing -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Unwilling
73. Unattainable -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Attainable
74. Concrete -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Alterable
75. Unrealistic -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Realistic
76. Definite -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Indefinite
77. Avoidable -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Unavoidable

INTENT TO STAY IN FOREIGN-COUNTRY

78. Certain -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Uncertain
79. Impossible -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Possible
80. Inconceivable -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Conceivable
81. Willing -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Unwilling
82. Unattainable -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Attainable
83. Concrete -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Alterable
84. Unrealistic -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Realistic
85. Definite -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Indefinite
86. Avoidable -~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~-~- Unavoidable
PART III

DEMOGRAPHIC DATA

In this section, you are requested to provide personal data for statistical analysis. ALL information is CONFIDENTIAL and will NOT be identified with your name.

87. Are you: (Circle one)
   1. SPONSORED
   2. NON-SPONSORED

88. Degree pursued: (Circle one)
   1. UNDERGRADUATE
   2. MASTERS
   3. DOCTORAL

89. Area of study: (Circle one)
   1. SOCIAL SCIENCES
   2. NATURAL SCIENCES
   3. HUMANITIES
   4. OTHER ________________ (Specify)

90. How old are you? (Circle one)
   1. UNDER 25
   2. 26-32
   3. 33-40
   4. 41 AND ABOVE

91. Are you: (Circle one)
   1. MALE
   2. FEMALE

92. What is your birth order? (Circle one)
   1. FIRST BORN OR ONLY CHILD
   2. MIDDLE CHILD
   3. LAST BORN

93. What is your marital status? (Circle one)
   1. SINGLE
   2. MARRIED

94. IF married, is your spouse an: (Circle one)
   1. AFRICAN
   2. AMERICAN
   3. OTHER

95. Which region do you come from? (circle one)
   1. EAST AFRICA
   2. WEST AFRICA
   3. CENTRAL AFRICA
   4. SOUTHERN AFRICA
96. Do you have children?
1. NO
2. YES

97. If yes, how many in each category?
1. PRE-SCHOOL _____
2. ELEMENTARY _____
3. HIGH SCHOOL _____
4. COLLEGE _____
5. NONE IN SCHOOL _____

98. Sector you aspire to join in U.S.A. Home Country (check one category)
1. GOVERNMENT _____
2. NON-GOVERNMENT _____
3. SELF-EMPLOYMENT _____
4. OTHER - Specify _____

99. Do you intend to DELAY returning to your home country following completion of your studies?
1. NOT CERTAIN
2. NO
3. YES

   If YES, please respond to A and B:
   A. About how long?
      1. 1 - 2 YEARS
      2. 3 - 4 years
      3. 5 OR MORE
   B. For what reason? (e.g.)
      1. FOR PRACTICAL EXPERIENCE
      2. TO PAY-OFF STUDY LOAN
      3. TO SAVE MONEY FOR REPATRIATION EXPENSES
      4. OTHER - (Specify) ______

100. How would you measure the extent to which your profession is valued by home country?
1. INCOME
2. JOB SECURITY
3. FRINGE BENEFITS
4. POSITION/STATUS
5. OTHER - (Specify) ______
PART IV

COMMENTS & SUGGESTIONS

What do you think should be done to encourage the return of African scholars? Please feel free to add comments that may enhance this study toward encouraging brain-drain reversal, or full participation of ALL African expertise in the development of Africa.

PLEASE NOTE: You may use separate sheets as needed. (Remember! YOUR ANONYMITY is assured). Specifically:

1. What should AFRICAN GOVERNMENTS do to encourage the return of African scholars?
2. What should INTERNATIONAL DEVELOPMENT ASSISTANCE AGENCIES do to maximize the return of African scholars?
3. What should AFRICAN SCHOLARS themselves do to maximize reversal of brain-drain?
THANK YOU VERY MUCH!!!

ASANTE SANA! E SE PUPO! NGIYABONGA!

MERCI BEAU COUP! MUCHAS GRACIAS!
ENKOSI KAKHULU! DANKIE!
KE LEBOGA THATA!
MUITO OBRIGADO!
NA GODE SOSAI!
MEDAWASE!
NDEWO!

If you wish to receive a summary of the results of this study, indicate by writing your name and address at the back of the RETURN ENVELOPE and NOT on the questionnaire, in order to ensure CONFIDENTIALITY.
APPENDIX B

PANEL OF EXPERTS AND CONTENT VALIDITY PROCESS
Dear "F2":

I am requesting you to serve in the Panel of Experts for ascertaining the content validity of the Mail Questionnaire I have developed for collecting data for my doctoral dissertation study. Enclosed is a Validation Form for your use in rating the validity of the items contained in the instrument.

The purpose of my study is to identify specific factors (as perceived by pre and post-graduated professionals from Sub-Saharan Africa) associated with the African students' decision to return, or not return to source countries after completion of educational pursuits in the United States.

I have sent the instrument to other experts in the area of African studies and international affairs, who are familiar with issues affecting manpower development in Third World countries. As you review the proposed items, feel free to comment on the following:

(a) Content validity -- are the items representative of the content/domain being measured.

(b) Clarity -- is each item clear? Is the language suitable to the potential respondents in this study.

If you have any questions, you could call me at the telephone number cited above. Thank you in advance for your expert input.

Sincerely

Nozipho N. Nxumalo

Graduate Associate,
The Ohio State University

Enclosure (1)
TO RETURN OR NOT TO RETURN THAT IS THE ......?

(Scholars at the Cross-Roads!)

A Study of Factors Influencing Repatriation Among African Professionals From Sub-Saharan Africa

(Summer, 1991)

DEPARTMENT OF EDUCATIONAL POLICY & LEADERSHIP
**Determinants of Repatriation As Perceived By Pre and Post-graduated Professionals From Sub-Saharan Africa: An Empirical Analysis**

by Nozipho N. Nxumalo

**QUESTIONNAIRE ITEM CONTENT VALIDITY FORM**

**PART I**

The subsequent pages outline 50 items intended to represent factors that may encourage or discourage African scholars to repatriate to source countries.

Please rate these items on two criteria:

(1) **RELEVANCE** of the item to increase the propensity to return or not return to source country.

(2) **CLARITY** of the meaning of the item.

Your response is interpreted as follows:

<table>
<thead>
<tr>
<th>RELEVANT?</th>
<th>CLEAR?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YES</strong> = the item is relevant;</td>
<td><strong>YES</strong> = the item is clear;</td>
</tr>
<tr>
<td><strong>NO</strong> = the item is not relevant.</td>
<td><strong>NO</strong> = the item is not clear.</td>
</tr>
</tbody>
</table>

**NOTE:** If an item is relevant but unclear, please REWORD the item on the blank lines provided below each item. Thank you!

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>RELEVANT?</th>
<th>CLEAR?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Availability of job opportunities in home country .....YES NO YES NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Tribalism/nepotism in employment in home country ...YES NO YES NO</td>
<td></td>
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</tr>
<tr>
<td>ITEMS</td>
<td>RELEVANT?</td>
<td>CLEAR?</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
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</tr>
<tr>
<td>3. My ties with extended family in home country......................YES NO YES NO</td>
<td></td>
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<tr>
<td>4. My experience with racial discrimination in the U.S.............YES NO YES NO</td>
<td></td>
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<tr>
<td>5. Lack of support for professional net-working in home government...YES NO YES NO</td>
<td></td>
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<tr>
<td>6. Monetary rewards in the U.S. for qualified Africans...............YES NO YES NO</td>
<td></td>
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<tr>
<td>7. Attitudes of older workers toward returning professionals from abroad....YES NO YES NO</td>
<td></td>
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<tr>
<td>8. Benefits offered to local experts in home country...............YES NO YES NO</td>
<td></td>
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<tr>
<td>9. Intolerance for innovative ideas from scholars in home country....YES NO YES NO</td>
<td></td>
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<tr>
<td>10. Political freedom enjoyed in the U.S..............................YES NO YES NO</td>
<td></td>
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<tr>
<td>11. Lack of integration of African professionals in the U.S........YES NO YES NO</td>
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<tr>
<td>ITEMS</td>
<td>RELEVANT?</td>
<td>CLEAR?</td>
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<td>---------------------------------------------------------------------</td>
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<tr>
<td>12. Level of involvement of scholars in development of home country.</td>
<td>YES</td>
<td>NO</td>
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<td></td>
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<td>13. The nature of political decisions in home country.</td>
<td>YES</td>
<td>NO</td>
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<td></td>
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<tr>
<td>14. My prospects of securing a suitable job in my field in home country.</td>
<td>YES</td>
<td>NO</td>
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<td></td>
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<td>15. The level of dependence of my country on foreign advisors.</td>
<td>YES</td>
<td>NO</td>
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<td></td>
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<tr>
<td>16. Relevance of my skills acquired abroad to development needs in my country</td>
<td>YES</td>
<td>NO</td>
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<td>17. The quality of government/agency support toward my education abroad.</td>
<td>YES</td>
<td>NO</td>
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<td>18. My experience as a self-sponsored student in the U.S. (e.g. financial strain; independence)</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>19. Financial assistance by my home government/agency to defray repatriation expenses for returning scholars (e.g. traveling; shipment)</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>ITEMS</td>
<td>RELEVANT?</td>
<td>CLEAR?</td>
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<tr>
<td>---------------------------------------------------------------------</td>
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<tr>
<td>20. The quality of life in home country..........................YES NO YES NO</td>
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<tr>
<td>21. Corruption in employment practices in home country (e.g. in appointments, promotions, transfers)........YES NO YES NO</td>
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<tr>
<td>22. Under-utilization of African skills/expertise in the U.S..........YES NO YES NO</td>
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<tr>
<td>23. The quest for American lifestyle..................................YES NO YES NO</td>
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<tr>
<td>24. Salary levels in entry positions for new professionals in home country........YES NO YES NO</td>
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<tr>
<td>25. Level of interest exhibited by donor-agencies in the return of scholars........YES NO YES NO</td>
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<tr>
<td>26. Facilities in home country to apply skills acquired abroad........YES NO YES NO</td>
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<tr>
<td>27. Willingness of donor-agencies to use local experts in agency sponsored projects in home country........YES NO YES NO</td>
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<tr>
<td>ITEMS</td>
<td>RELEVANT?</td>
<td>CLEAR?</td>
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<tr>
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<tr>
<td>28. Level of integration of local experts in the private sector/foreign companies in home country .......... YES NO YES NO</td>
<td></td>
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<tr>
<td>29. Under-utilization of the available local expertise in home country .............. YES NO YES NO</td>
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<tr>
<td>30. Existence of pettiness in decisions of some officials in home country .................. YES NO YES NO</td>
<td></td>
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<tr>
<td>31. My desire to raise my children in Africa .................. YES NO YES NO</td>
<td></td>
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<tr>
<td>32. My aspiration to raise my children in the U.S ........... YES NO YES NO</td>
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<tr>
<td>33. Absorption power of African economies to re-integrate professionals .............. YES NO YES NO</td>
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<tr>
<td>34. My obligation to support an extended family in my home country ............. YES NO YES NO</td>
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<tr>
<td>35. Senior worker's attitudes toward returning professionals from abroad ........ YES NO YES NO</td>
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<td></td>
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<tr>
<td>ITEMS</td>
<td>RELEVANT?</td>
<td>CLEAR?</td>
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<tr>
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<tr>
<td>36. Civil liberties enjoyed in the United States .....................</td>
<td>YES NO</td>
<td>YES NO</td>
</tr>
<tr>
<td>37. African policy makers' efforts to recruit local professionals from abroad ..........</td>
<td>YES NO</td>
<td>YES NO</td>
</tr>
<tr>
<td>38. Economic stability in home country ..................................</td>
<td>YES NO</td>
<td>YES NO</td>
</tr>
<tr>
<td>39. My access to the quality of life in the U.S ......................</td>
<td>YES NO</td>
<td>YES NO</td>
</tr>
<tr>
<td>40. Political stability in home country ...............................</td>
<td>YES NO</td>
<td>YES NO</td>
</tr>
<tr>
<td>41. My marriage to an American spouse ..................................</td>
<td>YES NO</td>
<td>YES NO</td>
</tr>
<tr>
<td>42. Immigration policies for integration of African professionals in the mainstream U.S. economy ......</td>
<td>YES NO</td>
<td>YES NO</td>
</tr>
<tr>
<td>43. Availability of resources for professional enrichment (e.g. research, seminars/conferences) in home country ...</td>
<td>YES NO</td>
<td>YES NO</td>
</tr>
<tr>
<td>ITEMS</td>
<td>RELEVANT?</td>
<td>CLEAR?</td>
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<td>---------------------------------------------------------------------</td>
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<tr>
<td>44. Job prospects for African professionals in the U.S. ............</td>
<td>YES</td>
<td>NO</td>
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<td>YES</td>
<td>NO</td>
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<tr>
<td>45. Level of tolerance for political opposition in my home country.</td>
<td>YES</td>
<td>NO</td>
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<td></td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>46. Tolerance for cultural diversity in the U.S...................</td>
<td>YES</td>
<td>NO</td>
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<td></td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>47. My interest to contribute to national development in home country.</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>48. Preference for foreign experts over local professionals in my home country.</td>
<td>YES</td>
<td>NO</td>
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<td></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>49. Level of support from home country...........................</td>
<td>YES</td>
<td>NO</td>
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<td></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>50. Availability of opportunities based on &quot;who you know&quot; in U.S.culture.</td>
<td>YES</td>
<td>NO</td>
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<td></td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

Are there other items that you feel should be included on the questionnaire that may encourage or discourage African scholars to repatriate to source countries?
PART II

SEMANTIC DIFFERENTIAL SCALE
AS A MEASURE OF AFRICAN STUDENTS SENTIMENTS AND RETURNABILITY-INTENT (ASSRI)

DIRECTIONS

In the following pages, you will find four phrases:
1) MY SENTIMENTS of HOME-LAND, 2) MY SENTIMENTS of FOREIGN-COUNTRY, 3) RETURN-INTENT to HOME-COUNTRY and 4) STAY-INTENT in FOREIGN-COUNTRY.

Below each phrase are nine paired-descriptive scales in concepts such as "PLEASANT" or "UNPLEASANT" to convey the RESPONDENTS' feelings about the phrase.

You are required to RATE the scales on two criteria:

(1) SUITABILITY of the items (paired-adjectives) to elicit affective response toward the phrases appearing at the top.

(2) CLARITY of the phrases

RATING TASK: Please read sections A and B below and then respond to the following:

| Are the selected phrases CLEAR? | YES | NO |
| Are the selected paired-adjectives SUITABLE? | YES | NO |

SUGGESTIONS for improvement if needed:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

________________________________________________________________________
SECTION - A

MY SENTIMENTS OF HOME-LAND

51. Happy --------------:---:---:---:---:---:---:--- Sad
52. Worthless --------------:---:---:---:---:---:---:--- Valuable
53. Pleasurable -------------:---:---:---:---:---:---:--- Horrible
54. Kind ---------------:---:---:---:---:---:---:--- Cruel
55. Bitter ---------------:---:---:---:---:---:---:--- Sweet
56. Relaxed -------------:---:---:---:---:---:---:--- Tense
57. Unfair ---------------:---:---:---:---:---:---:--- Fair
58. Positive -------------:---:---:---:---:---:---:--- Negative
59. Strong ---------------:---:---:---:---:---:---:--- Weak

MY SENTIMENTS OF FOREIGN COUNTRY

60. Happy ---------------:---:---:---:---:---:---:---:---:--- Sad
61. Worthless -------------:---:---:---:---:---:---:---:---:--- Valuable
62. Pleasurable -------------:---:---:---:---:---:---:---:---:--- Horrible
63. Kind ----------------:---:---:---:---:---:---:---:---:--- Cruel
64. Bitter -------------:---:---:---:---:---:---:---:---:--- Sweet
65. Relaxed -------------:---:---:---:---:---:---:---:---:--- Tense
66. Unfair -------------:---:---:---:---:---:---:---:---:--- Fair
67. Positive -------------:---:---:---:---:---:---:---:---:--- Negative
68. Strong -------------:---:---:---:---:---:---:---:---:--- Weak

Are the selected phrases CLEAR?  YES  NO
Are the selected paired-adjectives SUITABLE?  YES  NO
Suggestions for improvement if needed:
SECTION - B

INTENT TO RETURN TO HOME-COUNTRY

69. Certain --------:--------:--------:--------:----- Uncertain
70. Impossible ----:--------:--------:--------:----- Possible
71. Inconceivable -:--------:--------:--------:----- Conceivable
72. Willing ---------:--------:--------:--------:----- Unwilling
73. Unattainable --:--------:--------:--------:----- Attainable
74. Concrete --------:--------:--------:--------:----- Alterable
75. Unrealistic ---:--------:--------:--------:----- Realistic
76. Definite --------:--------:--------:--------:----- Indefinite
77. Avoidable ----:--------:--------:--------:----- Unavoidable

INTENT TO STAY IN FOREIGN-COUNTRY

78. Certain --------:--------:--------:--------:----- Uncertain
79. Impossible ----:--------:--------:--------:----- Possible
80. Inconceivable -:--------:--------:--------:----- Conceivable
81. Willing ---------:--------:--------:--------:----- Unwilling
82. Unattainable --:--------:--------:--------:----- Attainable
83. Concrete --------:--------:--------:--------:----- Alterable
84. Unrealistic ---:--------:--------:--------:----- Realistic
85. Definite --------:--------:--------:--------:----- Indefinite
86. Avoidable ----:--------:--------:--------:----- Unavoidable

Are the selected phrases CLEAR? YES NO
Are the selected paired-adjecitives SUITABLE? YES NO
Suggestions for improvement if needed: ___________________________
PART III

This section consists of items to collect demographic data for statistical analysis. Please read each question and respond to questions provided in each box.

87. Are you: (Circle one)
   1. SPONSORED
   2. NON-SPONSORED

   Are the categories appropriate? YES NO
   Is the question clear? YES NO
   Suggestions for improvement: ________________________________

88. Degree pursued: (Circle one)
   1. UNDERGRADUATE
   2. MASTERS
   3. DOCTORAL

   Are the categories appropriate? YES NO
   Is the question clear? YES NO
   Suggestions for improvement: ________________________________

89. Area of study: (Circle one)
   1. SOCIAL SCIENCES
   2. NATURAL SCIENCES
   3. HUMANITIES
   4. OTHER ________________ (Specify)

   Are the categories appropriate? YES NO
   Is the question clear? YES NO
   Suggestions for improvement: ________________________________

90. How old are you? (Circle one)
   1. UNDER 25
   2. 26-32
   3. 33-40
   4. 41 AND ABOVE

   Are the categories appropriate? YES NO
   Is the question clear? YES NO
   Suggestions for improvement: ________________________________

91. Are you: (Circle one)
   1. MALE
   2. FEMALE
92. What is your birth order? (Circle one)
   1. FIRST BORN OR ONLY CHILD
   2. MIDDLE CHILD
   3. LAST BORN

   Are the categories appropriate? YES NO
   Is the question clear? YES NO
   Suggestions for improvement: ____________________

93. What is your marital status? (Circle one)
   1. SINGLE
   2. MARRIED

94. If married, is your spouse an: (Circle one)
   1. AFRICAN
   2. AMERICAN
   3. OTHER

   Are the categories appropriate? YES NO
   Are the questions clear? YES NO
   Suggestions for improvement: ____________________

95. Do you have children?
   1. NO
   2. YES

96. If yes, how many in each category?
   1. PRE-SCHOOL _____
   2. ELEMENTARY _____
   3. HIGH SCHOOL _____
   4. COLLEGE _____
   5. NONE IN SCHOOL _____

   Are the categories appropriate? YES NO
   Are the questions clear? YES NO
   Suggestions for improvement: ____________________

97. Which region do you come from? (circle one)
   1. EAST AFRICA
   2. WEST AFRICA
   3. CENTRAL AFRICA
   4. SOUTHERN AFRICA

   Are the categories appropriate? YES NO
   Is the question clear? YES NO
   Suggestion for improvement: ____________________
98. What sector do you aspire to join in the:

<table>
<thead>
<tr>
<th>U.S.A.</th>
<th>Home Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>(check one)</td>
<td></td>
</tr>
</tbody>
</table>

1. GOVERNMENT
2. NON-GOVERNMENT
3. SELF-EMPLOYMENT
4. OTHER - Specify

Are the categories appropriate? YES NO
Is the question clear? YES NO
Suggestions for improvement:

99. Do you intend to DELAY returning to your home country following completion of your studies?
1. NOT CERTAIN
2. NO
3. YES

If YES, Please respond to A and B:
A. About how long?  B. For what reason? (e.g.)
1. 1 - 2 YEARS   1. FOR PRACTICAL EXPERIENCE
2. 3 - 4 YEARS   2. TO PAY-OFF STUDY LOANS
3. 5 OR MORE   3. TO SAVE MONEY FOR REPATRIATION EXPENSES
4. OTHER - (specify)

Are the categories appropriate? YES NO
Are the questions clear? YES NO
Suggestions for improvement:

100. How would you measure the extent to which your profession is valued by home country?
1. Income
2. Job security
3. Fringe benefits
4. Position/status
5. Other - (specify)

Are the categories appropriate? YES NO
Is the question clear? YES NO
Suggestions for improvement:
PART IV

COMMENTS & SUGGESTIONS

Part IV consists of three open-ended questions to afford the respondents opportunity to make comments/suggestions that may enhance this study toward encouraging brain-drain reversal, or full participation of all African expertise in the development of Africa.

1. What should AFRICAN GOVERNMENTS do to encourage the return of African scholars?

<table>
<thead>
<tr>
<th>Is the question clear?</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the question relevant?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Suggestions for improvement:</td>
<td>___________________________</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C

CORRESPONDENCE FOR DATA COLLECTION
July 10, 1991

"F1"

Dear "F2":

Your institution has been randomly selected to participate in a research study of factors considered by African scholars as important in their decisions to repatriate to source countries, after completion of their academic pursuits in the United States and other countries abroad.

It is anticipated that the results of this study will provide African policy makers a viable source of reference data they may utilize toward: (1) gaining a deeper understanding of specific factors deterring scholars from returning to Africa; and (2) building intervention systems to curb the brain-drain of African scholars (such as developing incentive programs and recruitment strategies to attract indigenous expertise from abroad, and encouraging their full participation in the development of Africa). However, for these data to be truly representative of African scholars across the country, the response of African students in your institution is crucial.

You are requested, therefore, to please furnish a list of names and local addresses of all African students from Sub-Saharan Africa, currently enrolled in your institution, to enable me to send them a questionnaire to which they need to respond. Please be assured that the students' rights to confidentiality, as well as, anonymity of their responses are guaranteed. A coding system, however, will be used on the questionnaire simply to help me to identify which questionnaires have been returned from your institution. Any other help you may afford me to maximize the response rate from your institution would be highly appreciated. A copy of the instrument/questionnaire the students will be requested to complete is enclosed.

Endorsement of this request and support of articulated procedures, to ensure confidentiality of all the respondents in this study, are evidenced by the accompanying signatures of Dr. Virgil E. Blanke, Chairman for my Doctoral Dissertation Committee, and Dr. John E. Greisberger, Director of International Students and Scholars, here at The Ohio State University.
Should you have any further questions, please contact me by calling (614)476-0154, or my major Professor, Dr. Virgil E. Blanke at (614)292-7700.

Thank you, in advance, for your participation in this study.

Sincerely

Nozipho N. Nxumalo
Graduate Student

Supporting signatures:

1. Dr. Virgil E. Blanke, Chairman, Doctoral Department of Educational Policy & Leadership, The Ohio state University.
   301 Ramseyer, 29 West Woodruff Avenue
   Columbus, OH 43210-1177
   ___________________________  ___________________________
   Signature  Date

2. Dr. John E. Greisberger, Director, Office of International Students and Scholars, The Ohio State University.
   1030 Lincoln, 1800 Cannon Dr
   Columbus, OH 43210-1700
   ___________________________  ___________________________
   Signature  Date
August 4, 1991

Dear Colleague:

Your institution was randomly selected among other colleges and universities in the nation. You are requested to participate in an important study examining specific factors encouraging, or discouraging African scholars from repatriating to home countries, following their academic pursuits in the United States.

Please consider this study as an opportunity to "tell your side of the story" by dispelling, or confirming the prevailing conjectures about African brain-drain. The findings of this study can be a viable information-resource African policy makers could use in developing intervention strategies for achieving optimal participation of African scholars in the development of Africa.

Your confidentiality is guaranteed. While reporting the findings statistics will be given and some statements quoted, however, you have my word that all individual responses will be kept anonymous. The coding used on the questionnaire will simply help me to ascertain the number of questionnaires returned from your university (response rate).

Your input involves completing the enclosed instrument. All I am asking for is only 15 minutes of your valuable time. An addressed envelope with postage-paid has been enclosed. Please return your completed response by August 20, 1991.

I am excited about the prospects of your participation in this study!

Sincerely,

Nozipho N. Nxumalo
Graduate Student
August 4, 1991

"F1"

"F2"

Your name has been obtained through net-working with other African professionals in the United States. You are requested to participate in an important study examining specific factors perceived by African scholars to influence repatriation decisions. Little has been documented on why some African-graduates return to Africa, but later re-exit back to the U.S. or other countries abroad. This is your opportunity to "tell your story!" Dispel or confirm the prevailing notions about African brain-drain.

Your input includes completing the enclosed questionnaire with four parts. All I am asking for is only 15 minutes of your valuable time. The findings of this study may provide viable information-resource African policy makers could utilize for intervention initiatives toward achieving optimal participation of African scholars in the development of Africa.

Your confidentiality is guaranteed. In reporting the results, statistics will be given and some statements quoted, however, you have my word that all individual responses will be kept anonymous. The code used on the instrument is simply to enable me to determine the response-rate.

Should you have any question, feel free to call me at (614) 476-0154. An envelope is enclosed for returning your completed response at your earliest convenience, preferable by August, 20 1991. Thank you for your prospective input.

Sincerely,

Virgil E. Blanke, Ph.D
Chairman, Dissertation Committee

Noripho N. Nxumalo
Graduate Student
August 5, 1991

Dear

I would like to express my sincere gratitude, to you and the African scholars attending your institution, for consenting to participate in my research study.

I have enclosed ____ questionnaires and corresponding addressed envelopes with the postage paid, to enable the respondents to return their completed responses to me without cost on their part.

Please distribute these questionnaires to the targeted population (African students from Sub-Saharan Africa) as soon as possible. I would appreciate, also, if you would attach your personal note along with mine (enclosed) to urge the students to return the duly completed responses by August 20, 1991. I would like to analyze the data by September so as to be able to provide you with the summary of the results of this study by November before I graduate this coming Fall quarter.

I can be contacted by calling 614-476-0154 (home) or 614-292-7700 (ED P & L office).

Sincerely

Nozipho N. Nxumalo
Graduate Student
APPENDIX D

CODE-MAP FOR INTERPRETING CODES FOR

SUBSCALES
CODE MAP FOR VARIABLES IN SUB-SCALES

HOMTIE: Perceived responsibilities to extended families in home country, love for familiar surroundings, and manifested by factors such as desire to raise the children in Africa. Grinberg et al (1989) refers to home ties as "Ocnophilic tendencies." HOMTIE was represented by Q3, Q31, Q34 and Q47.

DYNAM -- Perceived global socio-political dynamics, such as fear of political pressure versus tolerance for opposition, that mirrors political instability in home country, and related civil liberties and political freedom. Referred in this study as external-forces around which professional interact in home country. DYNAM was represented by Q13, Q20, Q40 and Q45.

RELY -- Anticipation of prospects for re-integration. If African scholars in the SSA, such as perceived availability of job opportunities versus reliance of home country on imported skills - technical experts in home country. RELY was represented by Q8, Q15, Q25, Q27, Q28, Q36, Q48.

REWARDS -- Perceived pecuniary benefits for African professionals in the source country, such as remuneration, or salary levels, and allowances determined by economic stability in home country. REWARDS were represented by Q1, Q14, Q17, Q19, Q24, Q33, Q38, Q49.
CULTURE -- Prevailing occupational climate perceived by APs to inhibit healthy inter-personal relationship. Such attitudes are manifested by personalities, pettiness and ethnic preference in the allocation of opportunities based on "blood", or who you know in home country. CULTURE was represented by Q2, Q7, Q21, Q30, Q35.

PROFDEV -- Perceived academic infrastructure promote scholarship, personal and career growth in home county, such as recourse to facilitate research, tolerance for scholarly innovations and related academic freedom, and maximization of skills acquired abroad. PROFDEV was represented by Q5, Q9, Q16, Q26, Q29, Q43.

USPULL -- Perceived conditions in the U.S. that are alleged to attract influx of African scholars in the U.S. African scholars exit in two ways, by not returning to source country after completion of their degrees and by returning home initially, but bounce back to the U.S. or other countries abroad. Conditions such as being part of the American dream/life style, civil liberties and related political freedom. (Informal discussions with local students). The USPULL was represented by Q6, Q10, Q23, Q32, Q37, Q39, Q41, Q46.

USPUSH -- Perceived conditions in the U.S. that are alleged to encourage African scholars not to stay in the U.S. (Push them home) such as under-utilization and discrimination which African-Americans are subjected to (Das, 1974). USPUSH was represented by Q4, Q11, Q22,
Q42, Q44, Q50.

HOMELAND -- Drain from the Nationalist Orthodoxy that African scholars are motivated by interest to participate in national development. Chukunta (1976) informs that patriotism need not be overlooked when examining factors contributing to the decision to repatriate. Harbinson, warns that BDR increases when patriotism is high and vice versa. HOMELAND was represented by Q51 to Q59.

FOREIGN -- Favorable sentiments toward the host country. Grinberg et al asserts that some individuals, prefer to be outside familiar surroundings and are motivated by uncharted horizons (philobatic tendencies), not necessarily that there are other external factors pushing them from source country, in some cases. Favorable sentiments toward the U.S. were represented by Q60 to Q68.

RETURN -- Declared plans to repatriate to source country. These were measured by the degree of intensity of the decision to repatriate on the Semantic Differential Scale, and determined by Q69 to Q77.

STAY -- Declared plans to stay in the U.S. These were measured by the degree of intensity of their decision to stay on the Semantic Differential Scale, represented by Q78 to Q86.
LIST OF REFERENCES


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