HUMAN REOURCE DEVELOPMENT DRIVERS FOR UNIVERSITY-INDUSTRY COLLABORATION: EMPIRICAL EVIDENCE FROM UNIVERSITIES IN KENYA

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Abstract

The study leans towards the human capital development nature of universities and applies the philosophy of human resource development to explain the phenomenon of University-Industry Collaboration (U-I-C) in Kenya. The study reports the findings of an empirical research investigating the patterns of U-I-C and the human resource development (HRD) driving factors for the identified patterns of collaboration in Kenya using data gathered from 16 universities both public and private. The findings of the study reveal a significant correlation between the Motivation to pursue Collaboration and the Level of U-I-C among key decision makers in universities in Kenya ($n=16$; $r=.492$, $p<0.05$). While the findings provide an empirical explanation on the Motivation, Level and Types of collaboration prevailing in Kenya together with the managerial issues universities need to address in order to strengthen links with the productive sector, they strengthen the call for future research to focus on strategic HRD issues offering a viable pillar for supporting U-I-C.

Key words: Universities, HRD, U-I-C, Motivation, Type of Collaboration, Level of collaboration

Abbreviations:

AIHEPS : Alliance for International Higher Education Policy Studies
HRD : Human Resource Development
HRM : Human Resource Management
U-I C : University-Industry Collaboration
OD : Organizational Development
OT :Organization Theory

1. Introduction

Universities by the nature of their work are human capital development institutions. Rao (1995; 2004) commending on their role in most parts of the world observed that they are established to ensure achievement of Human Resource Development (HRD) goals in line with the espoused nature of HRD processes sustaining creativity and innovation and are therefore expected to serve as innovation actors (Xiao & Tsang, 2004; Motohashi, 2004). The rapidly growing concern for universities in developing countries to strengthen links with the industrial sector through the phenomenon of University-Industry Collaboration (U-I-C) has a lot to gain from the aspect of innovation since universities are at the center of the systems for national innovation. Scholarship in entrepreneurship theory has considered innovation as a key pillar that drives entrepreneurial processes (Hisrich et.al, 2009). Entrepreneurship approached from this perspective is a matter that has implications to the field of HRD as it has been discussed in these contexts at the levels of individual, corporate and national development that also correspond to the HRD levels of analysis (Garavan et.al, 2004). Both theoretical literature and extant research emphasize the human

dimensions that account for entrepreneurship development which translate into HRD concerns at these levels (Zhou et.al, 2011). To sustain entrepreneurship at the corporate and national levels, it is important to demonstrate the key areas that link both entrepreneurship and HRD. Dabic et.al (2011) observed that even though the two streams of management fields of study have developed separately, there are growing indications of clear linkages between them. Such a link is necessary for enabling universities to play their role effectively in driving innovation based entrepreneurship in their respective nations.

U-I-C programs therefore need to be anchored on the basic premise of the nature of the work of universities as institutions for human capital development (Leiponen, 2008). Using this approach would provide a useful basis to explain the patterns experienced among the institutions on the aspect of U-I-C. We base our support for this position on what seems to characterize the existing literature on this phenomenon of U-I-C leaning towards innovation. Innovation has been discussed in the context of entrepreneurial thinking as an aspect associated with HRD whose base is learning systems (Van Der Sluis, 2007). This learning is what is expected to characterize the environment of the work of universities. The key concepts that define entrepreneurship are at the heart of the philosophy of HRD and at the various levels of consideration of the entrepreneurship concept, it is observable that it is sustained by human factors. This in itself calls for an understanding of the human factors that account for the development and sustainability of entrepreneurship. HRD as both an area of study and professional practice is critical to the whole phenomenon of entrepreneurship that should form the basis for pursuit of U-I-C programs (Dabic et.al, 2011).

2. The Research Problem

Universities as human capital development institutions will need to pursue collaborations on the basis of a supportive human resource based philosophy. HRD fits in this context due to its strategic nature that offers a basis for learning suitable to sustain innovation, knowledge generation and dissemination, which are considered essential for knowledge generating entities in informing the patterns of alliances they initiate with other firms. Some key aspects that would require examination to explain the patterns of collaboration arise from the nature of HRD with regard to motivation to pursue learning, transfer, collaborate and the intensity of the collaborations together with their likely impact on the choice of the types of collaborations (Hawley & Taylor, 2006). Even though the existing literature on entrepreneurship based on innovation links the process of entrepreneurship with HRD (Dabic et.al, 2011), in our review of the empirical studies done on the area of U-I-C, we identify the need for empirical efforts to study the phenomenon of U-I-C using the HRD lense (Martin, 2000; Motohashi, 2004; Sohn, 2005).

We justify adoption of such an approach by two reasons, namely growing industry demands and the need to respond to these demands that are purely human resource based. Summerville (2005) observed that institutions in the Higher Education (HE) sector are going through rapid revolution and have to meet changing demands of the industry. Segen et.al (1999) had earlier pointed that these industry demands place greater emphasis on human factors as well as challenging the ways in

which managers have been traditionally developed and educated given that job related reasons are the most cited for engaging in education training (Merriam & Caffarella, 1991). Thus the HRD philosophy should be an integral element of the phenomenon of U-I-C. With regard to the need for response to the industry demands raised, we point that the work of universities needs to demonstrate relevance to the industry needs. There are growing concerns touching on the relevance of curriculum, access and delivery models being used by the universities. There are indications that most Universities' products may be at dissonance with the expectations of the general society in most parts of the world including Kenya (Ruben, 2006; Hatala & Gumm, 2006; Pfeffer & Fong, 2002; Segen et.al, 1999; Sessional Paper No.1, 2005). We suggest that the phenomenon of U-I-C based on the nature of the work of universities will enhance the ability of the universities to address this situation. By use of three HRD constructs relevant to the phenomenon of U-I-C, this study sought to understand the relationship among Motivation for U-I-C, Level of U-I-C and the Type of U-I-C. The study identified three objectives that sought to determine: the relationship between Motivation and Level of U-I-C; the relationship between the Motivation and Type of U-I-C and; the relationship between the Level and Type of U-I-C.

3. Theoretical Review

Universities as entities for human capital development need a Human Resource Management (HRM) orientation in the pursuit of U-I-C programs. Mintzberg et. al, (2003) have pointed that collaboration programs are part of organizations' strategic options that rely on critical aspects of HRD notably in the area of organizational learning which according to Weigl et.al (2008) is essential for organizational adaptation to external uncertainties and environmental changes. This is based on the perspective embraced by most HRD scholars on the meaning of HRD advanced by McLean and McLean (2001, pp.1067), which states that *"HRD is any process or activity that either initially or over the long term, has the potential to develop adult's work based knowledge, expertise, productivity and satisfaction, whether for personal or group/team gain or for the benefit of an organization, community, nation or ultimately the whole humanity"*. Two aspects of the HRD theory enable us to build a case for an HRD based approach to U-I-C, namely the HRD paradigms and the levels of HRD analysis. Bates and Chen (2005) identified three distinct paradigms in HRD: the learning, performance and meaning of work. The learning paradigm focuses on change through learning which is expected to produce development of the individual and therefore postulates learning as a critical part of an organizational culture. Accordingly, HRD serves the basic need of facilitating learning and adaptation to a changing work environment (Toracco, 2005) and is thus concerned with fostering learning, enhancing employee learners' efficacy and improve organizational performance (Frank, 1988; Scully-Russ, 2005). The performance paradigm presents HRD as an area focused on advancing the performance of systems that sponsor HRD by improving the capabilities of individuals working in the system and improving the system. The meaning of work paradigm takes a holistic approach to both human and organizational development (OD) using a human centered approach so as to initiate programs that transcend organizational boundaries and aim at improving the quality of life in the organization, the society and the world as a whole (Huczynski & Buchanan, 2007).

The levels of analysis approach has identified three levels through which HRD is understood to function: individual, organizational and national levels. At the individual level, HRD focuses on individual based interventions such as training and development, organizational development, executive development, technical education and workforce development so as to improve individual, group and organizational effectiveness (McLagan, 1989; Torrraco, 2005). At the organizational level, HRD focuses on how to achieve and maintain the survival of an organization by fostering a culture of lifelong learning in order to facilitate continuous adaptation and by utilizing the concept of learning, to increase the knowledge and skills of employees so as to enlarge their individual capacities to cope with and change their environment (Beardwell & Holden, 1997). HRD at this level provides a platform for OD through learning (Prasad, 1996). At the national level, HRD focuses on a country's national development through the aspect of competitiveness to which it contributes through national policies for national human capital development (Paprock, 2006; McLean, 2006). These levels also correspond to those relied on in considering entrepreneurship, namely individual, corporate and national. The point of concern across the levels is the continuous generation of new ideas through the process of creativity and innovation. Innovation has been presented as the principal source of competitive advantage in most businesses with the success of firms now depending more on their intellectual capability that arises from employee creativity as opposed to the traditional focus that depended on material assets (Amabile et al., 1996; Zhou et.al, 2011). The innovation derives from the aspect of creativity (Grosse & Kujawa, 1992) which has roots in processes for knowledge management in organizations (Awad & Ghaziri, 2004). The creative capability of individuals and collective knowledge of workers is considered to be the fuel that powers innovation in firms. While creativity leads to the production of new and useful ideas in any domain, innovation is the successful implementation of those creative ideas within an organization (McLean, 2005).

It is this aspect of innovation that paves way for the pursuit of collaborations with external stakeholders. At the center of the whole process is generation of new ideas, an aspect that connects with knowledge generation. Knowledge development is a key theme in HRD and thus to this extent, entrepreneurship is considered an HRD area of focus (Wilson, 2005). Thus, as earlier observed by Morris and Jones (1993), an entrepreneurial orientation is critical for organizational survival and growth in a rapidly changing business environment. Current discussions on the role of entrepreneurship at the corporate and the national levels have this focus on the management of knowledge for sustaining competitiveness. Using this connection, we further identify an increased role of HRD in pursuing collaborations based on innovation through a consideration of the suitable environment that sustains the effective generation, dissemination and translation of knowledge into commercialized products. For this to occur, the prevailing environment needs to offer the needed flexibility, an aspect that the HRD orientation amply supplies (Joy-Matthews et.al, 2004). Based on this knowledge perspective, three questions need to be addressed: what drives universities to pursue collaborations? What patterns of collaboration are pursued by the universities? and what is the level of the collaboration pursued? (AIHEPS, 2005). We answer these questions by adopting three

constructs through which a theoretical model is designed for this study namely, Motivation for Collaboration, Types of Collaboration and Level of Collaboration.

3.1 Motivation for U-I -C

A key concern in the area of U-I-C is what motivates universities to develop collaborative ties with the productive sector. Answering this question for the human capital development institutions will require that the nature of these institutions is well understood. The universities as human capital development institutions have their mandate lying on the aspect of human resource development. Within the philosophy of HRD, we identify essential ingredients that offer an explanation as to what may motivate universities to pursue external collaborations. The organic model of HRD proposed by Stead and Lee (1996) uses the three levels of HRD analysis, and focusing on the national level identify the aspect of "needs" as a basis for U-I-C through motivation. The model explains the evolution of HRD over time in a manner that requires transformation to ensure survival. Their main argument is that events of different eras generate new ideas of the time whose impact is the development of human resources at a national, organizational and individual level and the emergence of new needs through a process that leads to the need to evolve, adapt, and transform in order to survive. This is achieved as HRD evolves by embracing value systems which recognize motivational needs prevailing within a nation. According to the view of the behavioral sciences, motivation is presented as a concept rooted in needs and that those needs become the basis for goal directed behavior (Robbins & Judge, 2007; Luthans, 1992). Combining this behavioral science position with that of the organic model, we point that the needs faced by the universities at the various levels of HRD analysis present a major drive for universities to pursue collaborations. Most of these needs will mirror the aspect of innovation which derives from the major output of their work, knowledge. Specific needs will touch on areas such as those of building social networks and capital; responding to the challenges of a learning society; and building environment relevant competencies (Ozcelik & Ferman, 2006; Park & Kwon, 2004; Ardichvili & Dirani, 2005; Dooley et.al, 2004).

3.2 Type of Collaboration

There are several types of U-I-C programs that have been used in previous research. They include general support, contractual research, research centers and institutes, research parks, consulting, technology licensing, professors as recruitment agents, enrollment of corporate engineers in university programs, student practice model, web portals and joint ventures (Carrin et.al, 2003; Lapina & Slaidins, 2005; Sohn, 2005; Wu, 2005; Chang et.al, 2006). One point of concern is how universities determine the forms of collaboration to enter into alliances with other organizations. Based on the argument supporting motivation for U-I-C, we adopt a stakeholder based premise for identification of relevant forms of collaboration programs. Beardwell and Holden (1997) recommended the stakeholder approach in implementing Vocational Education and Training (VET) strategies which is considered relevant for adoption by universities in view of the following four observations. First, U-I-C plays a crucial role in innovation. The new demands facing higher

education call for a university-industry partnership that leads to implementation of new ideas through commercialization (Wu, 2005). Second, U-I-C is considered one of the crucial areas to transition national economies into the status of the knowledge economy (Lapina & Slaidin, 2005). Third, U-I-C facilitates the removal of barriers that prevent professionals from sharing information through the creation of intellectual webs (Quinn et.al, 1996). Fourth, U-I-C offers an opportunity for universities to adopt entrepreneurship as a key drive for socio-economic growth and development as it facilitates dissemination and application of innovative ideas. As the Universities exploit the opportunities emanating from the innovative ideas, they realize a strategic renewal that enables them to adapt and respond to challenges in their markets (Chang et.al, 2006; Pappas et.al 2007).

3.3 The Level of Collaboration

This represents the depth of involvement among parties in a collaboration. We establish from the literature that little effort has been made towards identifying the dimensions for assessing the depth of involvement in a collaboration program. Weigl et.al (2008) suggested several dimensions that we used in this study to measure the depth of involvement in collaboration: Formalization, standardization, frequency, intensity and reciprocity. Frequency refers to the degree to which instructions, rules, norms, procedures and values governing transactions among the organizations in a network are made explicit through communication. This dimension is thus measured in terms of how explicit the communication on the rules has been made between the partners in collaboration. Standardization refers to the degree of similarity of resources or procedures used. One commonly used feature to measure this is the level of development of information system links among network members. Frequency is the amount of contact between organizations in a network. Frequency thus measures the number of interactions among members regarding the particular relationship. Intensity is the level of resource investment that an organization has in its relationship with another organization. The relationships may range from casual to an all consuming depending on the amount of resources committed. High intensity is characterized by high dependency of members on the relationship. Reciprocity is the degree of symmetry in a relationship reflected through two dimensions, resource reciprocity and the extent to which terms of the agreement are mutually agreed upon with equal contributions from all organizations. The resource reciprocity is the extent to which resources in a transaction or a relationship flow to both parties equally or benefit one unilaterally.

4. Conceptual Framework and Hypotheses

Using the three constructs described in the theoretical review, we propose a simple conceptual model linking the three constructs as presented in Figure 1. In adopting this model, we rely on the relevant Organization Theory (OT) literature underlying pursuit of interorganizational networks along which U-I-C programs are initiated and sustained. Daft (2007) offered a theoretical perspective to interorganizational networks indicating that the collaborations are initiated and sustained at the functional levels of organizations by technical personnel using their professional networks. In the case of universities, the technical personnel responsible for this are the heads of departments and deans of schools. Thus, the motivation of the deans of schools supported by the

members of academic staff in their faculties would be critical to initiating and sustaining U-I-C. From the conceptual model, we hold the view that using the HRD lense to U-I-C, the motivation for pursuit of collaboration based on the needs experienced by the universities becomes the pillar upon which U-I-C is established. The motivation derives from the nature of HRD leaning towards the learning paradigm by which new knowledge is generated and shared. At the three levels of HRD analysis, we propose that this motivation will determine both the level and type of collaboration. Specifically, we propose the following three hypotheses with regard to the phenomenon of U-I-C in Kenya:

Hypothesis 1:

There is a positive relationship between the Motivation to pursue collaboration by universities and the Level of collaboration.

Hypothesis 2:

There is a positive relationship between the Motivation to pursue collaboration and the Type of collaboration pursued by universities.

Hypothesis 3:

There is a positive relationship between the Type and the Level of collaboration pursued by universities.

5. Research Methodology

5.1 Research Design and Population

The study used a descriptive survey design and relied on a structured questionnaire designed to elicit specific information from respondents (Malhotra, 1996; Kerlinger & Lee, 2000). The study relied on data gathered from a population sample of organizational units in Public and Private Universities in Kenya through the use of a predetermined questionnaire. The population of the study comprised all Public and Private Universities operating in Kenya. At the time of the survey, there were 26 Universities in Kenya: 7 Public Universities, 13 Chartered Private Universities and 9 Universities operating with a Letter of Interim Authority (Commission for Higher Education, 2011). The study selected universities that had operated in Kenya at least five years before the date of the study. This criterion provided 19 universities: 7 Public and 12 Private universities from which data was collected for the study. All the 7 public universities collaborated while only 9 in the private category collaborated providing an 84% success rate on the part of the institutions from which respondents were drawn.

5.2 Sampling Design

The primary data for answering the research objectives was obtained from representatives of administrative units at several levels in each university. To identify the respective respondents from each university, a multi stage technique as suggested by Zikmund (2003) and Joy and Kolb (2009) was applied at three stages to select the respondents from whom primary data was collected. In the first stage, 19 universities were selected, while in the second respondent units were identified from the academic units (schools, faculties, directorates) and administrative units (support units, central

administration, boundary units) of the various universities whose entire population was estimated at 300. The third stage involved use of stratified random sampling to obtain at least 60% of the respondents from the universities. The various strata were identified from the areas of academic specialization of schools/faculties and the basic orientation for decision making by the administrative units. Overall, 130 respondents participated representing a 72% success in response rate. The responses were comprised of: Senior Administrators (n=29;22.3%); Deans/Directors (n=67; 51.5%); Boundary Span Managers(n=34;26.2%).

5.3 Data Collection and Analysis

The primary data was obtained using a questionnaire structured on a 5-point Interval Likert scale to measure the three variables shown in the conceptual model. The contents of the questionnaire were derived from several sources as summarized in table 1. The contents of the questionnaire were pretested through officers in the offices for coordination of postgraduate programs and heads of departments and some registered doctoral students from various universities in Kenya that were not participating in the main survey. Editorial issues were addressed and the structure of questions as well as the overall design of the questionnaire. To facilitate field work, a research permit was obtained from the National Council for Science and Technology and an introductory letter explaining the purpose of the research attached to each questionnaire. Two methods were used to administer the questionnaire: personal interviews and drop and pick. The drop and pick method was used for respondents other than the senior administrators. The personal interviews were used in the case of administrators in the level of deputy vice chancellors and registrars through which their responses were coded directly in the research instrument. Internal consistency of the research instrument was measured through the Coefficient Alpha score since it was structured on a 5-point likert scale (Nachmias & Nachmias, 2004). The results of the reliability test are shown in table 2 and indicate that the instrument used has a relatively high reliability of 0.8885 according to the interpretation offered by Malhotra (1996).

6. Results

6.1 Descriptive Findings

The first section of the questionnaire measured the construct of motivation to pursue collaboration. The aggregate mean score and standard deviation measured at 4.0966 and 0.8930 respectively. This indicates that generally the respondents' motivation level to pursue collaboration stands at a level above the 50-50 chance likelihood. The items that scored relatively high are those touching on pursuing collaboration with private organizations*(x=4.0746; s.d=.90977)* and pursuing knowledge updating activities *(x=4.0448; s.d=.80590)*. The other items in this section of the questionnaire reported relatively lower mean scores. These were motivation to: Work on an interdisciplinary project; Pursue collaboration with private organizations; Initiate consultation with public bodies; Facilitate creation of intellectual webs internally; Pursue knowledge updating activities; Convert knowledge into useful products; Ensure knowledge transfer to external stakeholders; and Create intellectual webs externally.

The second section of the questionnaire measured the construct of Type of collaboration. The respondents were required to express their opinions to each statement in a scale of 1-5 ranging from "none at all" to "excellent" in the partnership for each program listed in the scale. The different items listed in the scale on this section received mixed responses. Those that received the lowest mean scores were technology licensing (*x=2.8317; s.d=1.26546),* research parks *(x= 2.91; s.d=1.27995),* technology transfer offices *(x=2.64; s.d=1.32207),* which sends the message that according to the scale used, these areas have only experienced some slight degree of collaboration. The remaining items in the scale have mean scores that show that universities in Kenya have collaborated at a moderate level and that there is none of the areas in which the mean score is rated at a good or excellent level. The areas are: general support *(x=3.5224; s.d=1.00541);* contract research *(x=3.4592; s.d=0.99658);* research centers *(x=3.41; s.d=1.5500);* research consortia *(x=3.28; s.d=1.08321);* joint research and development *(x=3.1818; s.d=1.31214);* faculty consulting *(x=3.12; s.d=1.23321).* It is also worthy noting that the standard deviation is relatively high implying that this is an area in which the responses across the universities varied widely. This may be understood from the diversity of responses, differences in the nature of programs undertaken at each school and university as well as the possible influences of the size of each university.

The last section of the instrument measured the construct on the Level of collaboration. The scores for the statements were: trust based interactions *(x=3.6364;s.d=0.85062)*; reciprocal contacts *(x=3.6899; s.d=0.94206)*; instructions governing transactions *(x=3.7109; s.d=0.9149);* similarity of resources *(x=3.7187;s.d=0.88680);* development of information system links *(x=3.7460; s.d=2.79123);* amount of contacts between the partnering organizations *(x=3.5238;s.d=0.89814);* amount of resources in the relationship *(x=3.6299; s.d=0.83384);* flow of resources to both parties (x=3.4127; s.d=0.87882); and mutual agreement of terms *(x=3.5039; x=0.88975)*. The aggregate mean and standard deviation for this section stand at 3.6191 and 1.09846 respectively. This sends the message that the level of collaboration in the universities participating in the study is slightly low since the scores are relatively below 4. Since the standard deviation on the scores of most of the items is relatively low, it implies that the respondents are generally agreeing that across the schools and universities, the level of collaboration is low. One area is however outstanding, namely that of development of information system links *(x=3.7460; s.d=2.79123),* sending the message that even though the mean score falls within the range of close to high, the institutions have extremely varying levels of linkages in this area.

6.2 Test of Hypotheses

The study tested three hypotheses. The field data obtained was transformed into a composite index for each university studied for the three variables investigated. The various indices were used to perform a bivariate correlation analysis and the results are shown in table 2. The results of the test of the hypotheses show that: hypothesis 1 is fully supported *(r=0.492; p=0.05)*; hypothesis 2 is not supported *(r=-0.096; p=0.755);* and hypothesis 3 is partially supported *(r=0.131; p=0.670).* The findings lead to the conclusion that: there is a significant positive relationship between Motivation

and Level of collaboration; there is a slightly weak positive relationship between the Level and Type of collaboration that is statistically not significant and; there is an inverse relationship between Motivation and Type of collaboration among universities in Kenya.

7. Discussion and Implications for Theory and Practice

The study was conceptualized on the premise of a HRD perspective to U-I-C. The first construct upon which the HRD based U-I-C was argued to rest on was motivation to pursue collaboration. In adopting this construct, the study leaned towards the stream of scholarship in HRD supporting establishment of interorganizational networks at organizational level (Daft, 2007; Weigl, et al, 2008) drawn from the learning paradigm to postulate that the learning orientation would provide a basis for pursuit of interorganizational networks. At the national level where universities play the role of implementing national HRD policies, the learning orientation would support interorganizational networks for U-I-C that are initiated by the staff at the functional level of schools and departments. The support of hypothesis 1 is a major step in pointing at how HRD theory may be applied in the HE sector to strengthen collaboration with the industry. The theory relied on was based on the concept of innovation as part of entrepreneurial processes that are anchored in HRD. That the descriptive findings and the results of the test of hypothesis 1 are consistent with the stream of scholarship that has considered entrepreneurship as the main component around which U-I-C revolves strengthen the HRD premise for the pursuit of U-I-C (Chang et.al, 2006). In theory, the finding provides an explanation on the role played by HRD in pursuing U-I-C. How HRD fits in this process has been linked to the aspect of motivation derived from the learning paradigm. The study used the input of the organizational studies and the configuration of organizations to show that the alliances are initiated at functional levels based on professional synergies among managers at that level through which they share newly generated knowledge (Daft, 2007; Jones, 2004). Thus in discussing interorganizational networks at university level, the schools, departments and faculty working under each are critical to establishing and sustaining alliances with the industry.

The findings on hypothesis 2 bring out an interesting scenario for universities in Kenya in the knowledge based era. The descriptive findings on the one hand indicate the types of collaboration leaning towards research and consultancy are rated at a moderate level while on the other hand, for collaborations of the type tending towards technology and knowledge transfer have been rated relatively low. The results in addition showed a weak inverse relationship between the Motivation for U-I-C and the Type of U-I-C pursued by the universities. Using the HRD approach to the pursuit of U-I-C, it is possible to offer an explanation on this prevailing situation for universities in Kenya. We note that while there is a significant statistical relationship between the Motivation to pursue collaboration and the Level of collaboration, that between the Motivation and the Type of collaboration is a weak inverse relationship. The HRD approach to the pursuit of collaborations embraces a strategic orientation that requires a stakeholder perspective both within and without an organization (Freeman & McVea, 2001; Mintzberg et.al, 2003). The approach emphasizes the role of the stakeholder orientation which this hypothesis shows the universities may not be well oriented

to. Internally, the approach facilitates the development of a culture that fosters adaptability and quick response to changing conditions in the environment and calls for close coordination among both line and staff managers. In the case of programs for U-I-C, members of faculty initiate the intentions for collaborations while those in administration come in at the point of developing working documents such as memoranda of understandings that spell out the collaboration programs. Why this inverse relationship obtains may be indicative of a situation in which there is low coordination among the faculty and administrative staff at the universities in which the administrative staff may develop documents for collaboration that may not be totally consonant with the intentions of the inventions and innovations of the academic staff. Thus, while HRD may have been relied on in the aspect of motivation for U-I-C as connected with creativity and innovation, the benefits of HRD may not have been extended to creating supportive university-wide HRM systems for managing these innovations. Using the strategic HRM approach (Golding, 2007), we question the extent to which HRM practices in the universities studied have been strategically aligned to support collaborations in universities given that while the universities fare well in research and consulting programs, they rate poorly in technology transfer.

The reported findings on hypothesis 3 show a positive but weak relationship. Even though based on the level of statistical significance of the test of this hypothesis (*r=0.131*; *p=0.67*), this hypothesis is partly supported, we however draw important insights from the finding. The level of collaboration had relatively low mean scores while the types of collaboration with relatively high mean scores tended towards those on research and consulting. Those that touched on areas requiring knowledge or technology transfer scored low. Given the explanation offered for the test of hypothesis one and two, we are of the view that the low level of involvement in technology transfer related programs is likely to have affected this relationship in addition to the state at which HRD has been integrated into university wide systems to support innovation and facilitate administrative systems that would support pursuit of collaborations in line with the nature of the innovations achieved by the key members of staff. This finding moves the level of scholarship on the area of level of collaboration forward by virtue of having empirically tested an instrument whose contents had not been tested before by its proponents (Weigl, 2008). The questionnaire relied on a theoretically proposed set of dimensions of the level of collaboration in interorganizational networks. The study adopted these items and to the extent that they have produced desirable empirical results ***(α =0.725)*** validates them for adoption and use in future empirical work.

In practice, the institutions in this sector will find it useful to understand the three constructs that were measured under the phenomenon of U-I-C. First, the research was conducted using an instrument whose contents were developed from other studies in the same area as well as theoretical postulates from prominent scholars in the supporting disciplines that grounded the study (Carrin et.al, 2003; Lapina & Slaidins, 2005; Sohn, 2005; Wu, 2005; Chang et.al, 2006) which may be interpreted to imply that the U-I-C situation in Kenya compares favorably with situations elsewhere in the world. The instrument measured the motivation, level and the nature of collaboration. The motivation aspect had been included because one of the streams of HRD theory and empirical work

leaning towards knowledge management has this aspect of motivation to share acquired knowledge. There are important concerns for managers to take note, in terms of how the knowledge is generated, how it is shared and the needed atmosphere for this knowledge to be successfully transferred.

9. Conclusion and Recommendation

The findings of the study lead us to make two conclusions. First, HRD is relevant to the phenomenon of U-I-C based on the learning orientation that becomes the basis for creativity and innovation. Secondly, the HRD perspective supports the motivation of staff at the appropriate levels of organizational analysis as well as the corresponding level of collaboration between universities and external stakeholders. In view of the findings presented, we make two recommendations. The first recommendation regards future research which according to this research derives from one of the limitations of the study, namely the fact that the study did not undertake to document the situational positioning of HRM and its current design among the universities for purposes of facilitating creativity and innovation. This research has established that even though HRD offers relevant pillars upon which collaborations may be pursued, its situational positioning in the institutions could better explain the nature of the relationships between the motivation and type of collaboration. Future research therefore could consider examining the designs of HRD systems in universities and their likely influence on the choice of the types of collaboration programmes. The second recommendation arises from this observation on the state of HRD in the universities. We recommend that the various representatives of the management of the universities undertake to establish integrated HRM systems that would not only support faculty intentions, but also facilitate them in managing the innovations that will promote knowledge transfer to the industry. As we embrace the move towards knowledge based economies, the universities will stand a better chance of success in ensuring that they are well prepared to create and transfer knowledge to the industry. HRM therefore needs to play a more strategic role to ensure integration between faculty in academia and those offering administrative support.

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FIGURES AND TABLES

Figure 1: Model Relating Motivation, Type and Level of U-I C

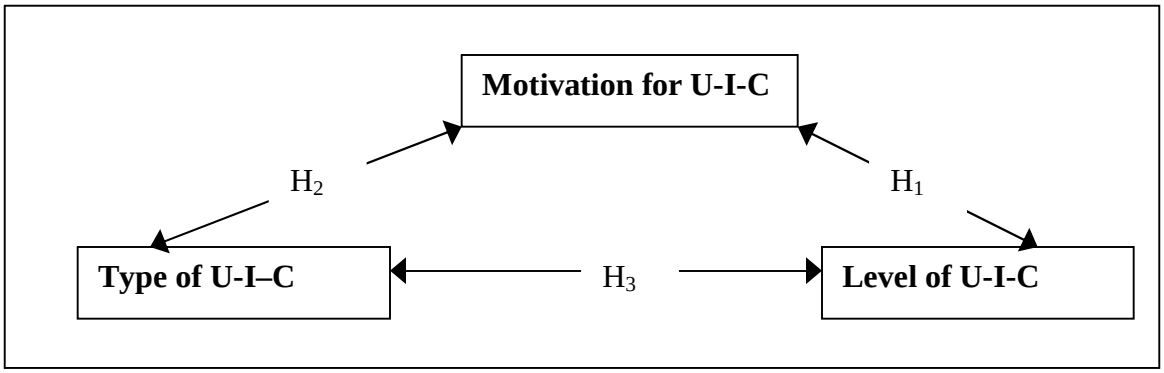

Table 1: Test of Reliability of Questionnaire

Construct and Variable	No. of items	Source of Questionnaire Items	Target Respondents	Cronbach Alpha score
Motivation for Collaboration	**15**	Ozcelik & Ferman, 2006; Park & Kwon, 2004; Ardichvili & Dirani, 2005; Dooley et.al, 2004.	Deans of schools, Directors of institutes	0.9510
Type of Collaboration	13	Wu, 2005; Chang et.al, 2006; Sohn, 2005; Lapina & Slaidins, 2005; Carrin et.al, 2003.	Deans of schools Boundary span role officers	0.900
Level of Collaboration	9	Weigl et.al, 2008	Registrars, boundary span role officers	0.725
	37	**Overall Reliability**		0.8885

Table 2: Results of Hypotheses Testing

Hypothesis	**Finding**		**Conclusion**
	R value	***p* value**	
H_1: There is a positive relationship between the Motivation to pursue Collaboration by universities and the Level of Collaboration.	0.492	0.05	Moderate Positive Relationship; Hypothesis 1 is supported
H_2: There is a positive relationship between the Motivation for Collaboration and the Type of Collaboration pursued by universities.	-0.096	0.755	Weak Inverse Relationship; Hypothesis 2 is not supported
H_3: There is a positive relationship between the Type of Collaboration and the Level of Collaboration pursued by universities.	0.131	0.670	Weak Positive Relationship; Hypothesis 3 is partly supported.