

TOWARDS ENTREPRENEURIALISM IN A GOVERNMENT UNIVERSITY SETTING: ATTITUDE OF ACADEMICS OF GOVERNMENT UNIVERSITIES IN SRI LANKA

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Abstract

The aim of the study is to investigate the culture of ‘entrepreneurial universities’ as the ‘third mission’ of universities. Main emphasis on attitudes of academics in Sri Lankan government universities toward entrepreneurial university culture with the concentration of Knowledge as Intellectual property, strengthening of academic labor spin-off venture creation, commercialization of academic outputs and Loss of sense of community and moral purpose. Data gathered through process of the “multi-method” in focus approach is occupied involving an interpretive, naturalistic approach to its subject matter. Data collected by in-depth interviews with 26 academics in Sri Lankan government universities and filtered and analyzed data in the way of arena of qualitative research paradigm in the grounded theory. Literature argues on: commercialization of university know-how; the process of technology transfers and exchange; the movement towards a ‘Triple Helix’ model of partnership between government, industry and higher education; the ‘massification’ of demand for higher education; the internationalization of universities; the changing nature of the knowledge society; the autonomy and future funding of universities; and overall, in response to the above, reflections on the ‘public value’ of higher education institutions. Results shows that, though there are opportunities to change the idea of ‘traditional university’ to the ‘entrepreneurial universities’, attitude of academics of government universities of Sri Lanka, still not ready to change their traditional thinking pattern due to different obstacles, barriers and cultural attitudes.

Keywords: Entrepreneurial Universities, Intellectual property Triple Helix ‘model, Massification

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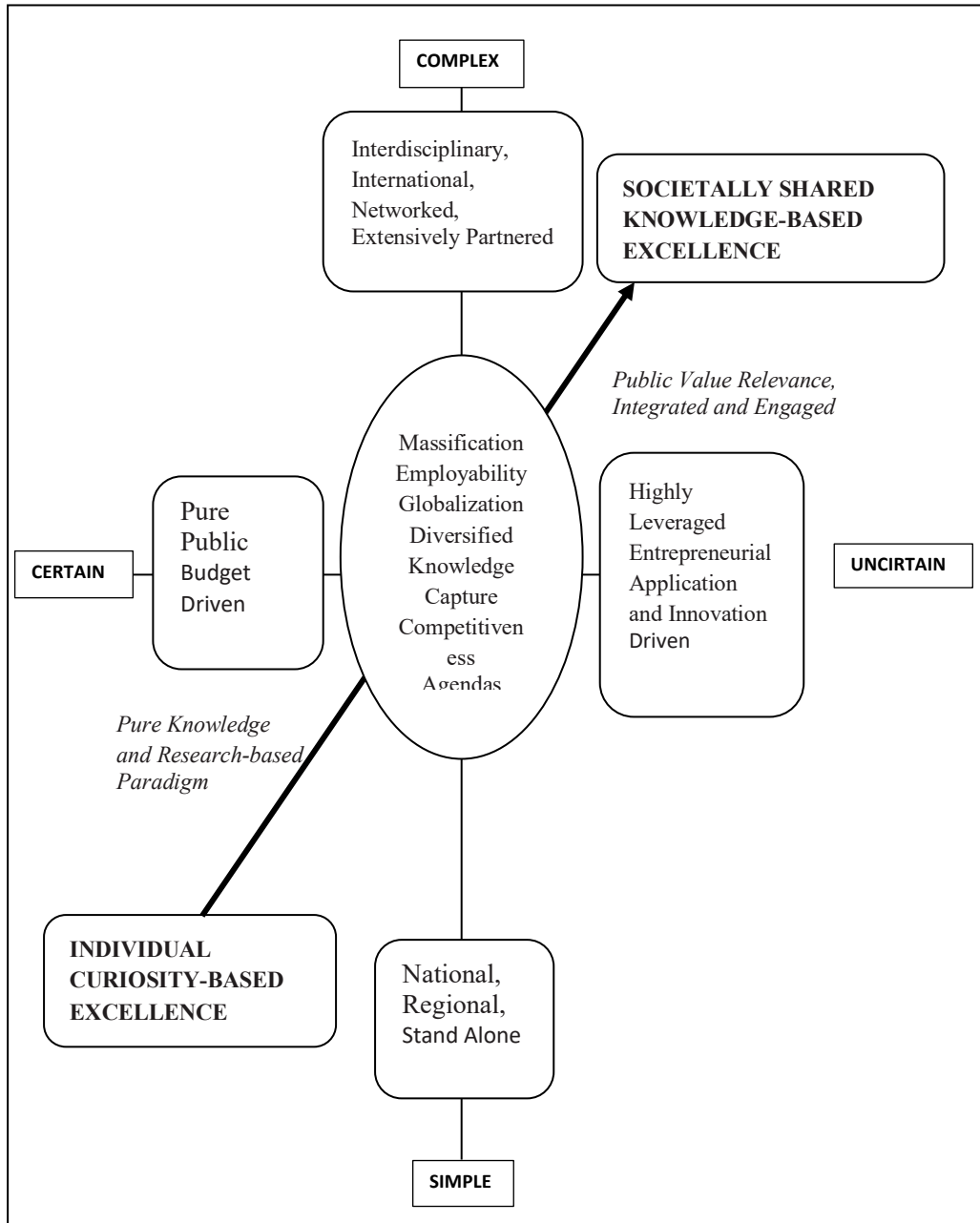
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1. INTRODUCTION

Traditionally, universities were supposed to fill two missions (research and teaching). They used to consider commercially-based activities at best as irrelevant and in most cases vulgar. The reasons for change include: (i) the growing social pressure on universities to broaden their traditional missions and to adopt a more proactive participation in their region's economic development. This leads universities to define a third mission, namely to be "entrepreneurial universities" (Etzkowitz, 1998); (ii) The increasing inter-relation of science and technology in numerous disciplines such as IT and biotechnology, inducing more collaboration between industry and universities (Etzkowitz, 1998); and (iii) The declining proportion of public budgets for funding traditional academic activities (teaching and Piccaluga) requiring universities to search for alternative financing (Chiesa, 2000).

The entrepreneurial concept is centrally concerned with the means of coping with and creating uncertainty and complexity (Casson 1982). Its traditional essence, (Schumpeter 1934), is that of creating and dealing with new and innovative combinations of 'factors of production' and 'ways of doing things'. The Schumpeterian notion of 'creative destruction', leading to innovation and renewal, manifests itself in uncertain and complex task environments for those within the system. Dynamic task environments with high levels of change therefore demand, and emerge through, entrepreneurial initiative. Conversely static environments lend themselves to more predictable and routinized bureaucratic patterns of response.

The changing dynamic environment of higher institutions and their respondent evolution (Wissema 2008) is portrayed in Figure 1.1.



Adopted from Lawrence and Lorsch (1986), Covin and Slevin (1991) and Gibb (1985).

Figure 1.1 The changing dynamic environment of higher institutions

The Figure attempts to characterize the evolving nature of the task environment facing universities on a simple/complex and certain/uncertain axis. It highlights the way that the notion of 'Excellence' might be changing (Wissema 2008). Within this frame it seeks to summaries their response as evidenced by a growing body of literature.

Certainty in the environment has been reduced by changes in funding. There has been a movement away from a system that was at one time nearly total central or regional public funding, to a situation where a growing proportion of finance has to be sought from non-direct public sources including fees, research grants, local development monies, alumni, industry and social enterprise, contract research and philanthropy (Williams 2009). While government remains a key player in most countries, it has moved its disbursement stance into a more directive mode. Thus the uncertainty resulting from having to seek a greater proportion of funding from other sources is matched by pressure to move away from the simpler, more certain, 'autonomous' environment (guaranteed by the public purse) within which to pursue individualistic research and teaching. There is now an imperative to demonstrate more direct public value. Some governments are providing direct financial incentives to higher education institutions to leverage public funding.

2. LITERATURE REVIEW

There is now a considerable international literature addressing the notion of what has been termed 'the entrepreneurial university' (Lehrera et al 2009). The concept of the 'entrepreneurial university' was first elaborated by Clark (1998) in *Creating Entrepreneurial Universities*. In this book, Clark describes the ways in which universities can escape from the overly restrictive funding schemes and administrative systems of the state funded higher education sector. He argues that they can do this through supporting and developing innovation within their own institutions and by forging partnerships with other entrepreneurial organizations. In this way not only is it possible to generate additional finance but at the same time stimulate the research agenda (Shattock 2009). The entrepreneurial university concept embraces universities of all types including those with a strong research tradition as well as newer organizations (Kauffman, 2008). The literature, in this regard, both academic and pragmatic policy-oriented, ranges over a wide range of issues including:

- (i) the basic philosophical 'idea' of a university and how this is changing over time (Mendoza and Berger 2005);
- (ii) the commercialization of university know-how (Cook et al., 2008);
- (iii) the process of technology transfers and exchange (Zhou 2008);
- (iv) the associated closer engagement of the university with industry and indeed stakeholders of all kinds (CIHE 2008);
- (v) the movement towards a 'Triple Helix' model of partnership between government, industry and higher education (Thorn and Soo 2006);
- (vi) the strategic response to the 'massification' of demand for higher education (Shattuck 2000);
- (vii) the internationalization of universities (Altbach and Knight 2006, OECD 2006)

- and their strategies for dealing with global competition (both opportunities and threats);
- (viii) the changing nature of the knowledge society and the challenge this poses to the organisation of knowledge within higher education (Senges 2007);
 - (ix) the pressures on universities to respond to social as well as economic local and regional development problems albeit in a global context (Arbo and Benneworth 2007);
 - (x) the central pressure upon higher education, from central government, to foster innovation and demonstrate relevance to national and international competitiveness agendas (Mittelstadt et al., 2008);
 - (xi) the autonomy and future funding of universities (Armbruster 2008);
 - (xii) and overall, in response to the above, reflections on the ‘public value’ of higher education institutions (Weerts 2007).

2.1 Academic Capitalism in the New Economy

As a concept, academic capitalism (Slaughter and Leslie 1997, Slaughter and Rhoades 2004) describes the way in which colleges and universities are shifting from a “public good knowledge/learning regime” to a knowledge regime attuned to the market and market like behaviors. Higher education institutes – particularly public higher education institutes faced with a major loss in state support – now develop market and sell a wide range of products commercially in the private sector as a basic source of income. This goes far beyond nonacademic consumption items. Today, higher education institutions are seeking to generate revenue from their core educational, research and service functions, ranging from the production of knowledge (e.g. research leading to patents) created by the faculty to the faculty’s curriculum and instruction (teaching materials that can be copyrighted/ marketed).

It can be seen the ascendancy of neo-liberal and neo-conservative politics and policies that shift government investment in higher education to emphasize education’s economic role and cost efficiency. This shift has led governmental agencies to cut funding for public higher education (along with most public services). The combination of these cutbacks, along with competition among institutions, leads academic managers to play the leading role in advancing academic capitalism on campus. Higher education has experienced what George Keller (1983) called “the management revolution in the academy,” which has involved academic managers exercising greater strategic control over the direction of colleges and universities. Increasingly, the presidents of higher education institutions are both seeing themselves as, and being labeled as, CEOs. In this context, their faculties have increasingly become “managed professional” (Rhoades, 1998). Academic capitalism in the new economy encompasses, but constitutes more than, these developments.

2.2 University Spin-offs (USO)

University spin-offs such as Google and Silicon Valley are companies founded to exploit intellectual property. They serve to transform technological breakthroughs

from university research, which would probably remain unexploited otherwise. Therefore, policy makers especially in developed and some developing countries have become very interested in university spin-offs (USOs) as a means for technology transfer. An in-depth review of the literature shows that most authors do not clearly define a university spin-off (Pirnay, 1998). However, indeed, any phenomenon can be qualified as a “spin-off” as long as it simultaneously fulfils three conditions: (i) it takes place within an existing organization, generally known as the “parent organization”; (ii) it involves one or several individuals, whatever their status and function within the “parent organization”; and (iii) these individuals leave the “parent organization” to create a new one.

USO can be defined as “new firms created to exploit commercially some knowledge, technology or research results developed within a university”. Academic spin-off establishment is one potential way to bridge the gap between research and industry (Wright et al., 2008). A USO constitutes a particular way of generating business with “knowledge” produced within universities and is therefore considered to be a mechanism of knowledge transfer from university to industry (Bozeman, 2000). Two kinds of knowledge are likely to be transferred by spinning-off the new firm: (i) the *codified* knowledge and the *tacit* (or embodied) knowledge (Howells, 1995). *Codified* knowledge represents the most visible output of research activities. It takes various forms such as a publication, an experimentation report, a computer program, a technical artifact and equipment. Tacit knowledge is much more concerned with pieces of personal knowledge accumulated by an individual during his/her academic activities. Cassier (1997) observes that codified and tacit knowledge are closely related to one another. Consequently, the economic exploitation of codified knowledge (e.g. technology) by spinning off new firms can be problematic, particularly when the project is carried out by a surrogate entrepreneur with little technical expertise (tacit knowledge) to really understand and fully exploit the technology (codified knowledge).

Vohora, Wright, and Lockett (2004) observed that the competencies required making the transition from academic research to the recognition of a potential commercial opportunity and the establishment of an independent spin-off firm. Danneels (2002) define a competence as an ‘ability to accomplish something by using a set of material and immaterial resources’. Entrepreneurship literature is stressed that; (1) the driving force required accomplishing the spin-off process. Knowledge-based new ventures are often developed by teams, rather than by single individuals (Clarysse and Moray, 2004). In addition to that, university spin-off projects are often characterized by a dynamic interaction of different individuals with different competencies throughout the start-up process (Vanaelst et al, 2006); (2) the exploitation of opportunities is a necessary element in the creation of new ventures (Eckhardt and Shane, 2003). Druilhe and Garnsey (2004) followed the initial start-up process of academic entrepreneurs and found that business models are altered as entrepreneurs improve their knowledge about resources and opportunities; (3) for the entrepreneurial process is the assembly and organization of resources to exploit the opportunity (Alvarez and Barney, 2000) These three areas or driving forces can be

conceptualized by the need for competencies to achieve these functions of spin-off process.

3. METHODOLOGY

3.1 *Interpretive, naturalistic approach*

In this study, qualitative researching method was derived from the traditions of anthropology and sociology (Borg & Gall, 1989) for the data collection, analysis and concludes the research. As Denzin and Lincoln defined (1994), the “multi-method” in focus approach is occupied involving an interpretive, naturalistic approach to its subject matter. Researcher studied things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of meanings people bring to them under “an umbrella term to refer to several research strategies that share certain characteristics” Bogdan and Biklen (1992). To help us understand complex real-life social situations requires either experience or specific cases that we can learn from (Eisner, 1998). It is unusual for the outcome of a case study to generalize in the way that natural science data can, although this is possible (Denzin, 2009).

3.2 *Topic Selection*

Bernard (1988) suggested that qualitative researchers consider whether the topic is of interest, both personally and theoretically, and whether it is amenable to scientific inquiry, as well as whether adequate resources are available to study the topic. For instance, researcher selected the topic in the urgent solution required area as “Entrepreneurialism in a Government University Setting”. Specifically, researcher argues, that “at the beginnings of a paradigm, inspired induction (or more likely enlightened speculations) applied to exploratory, empirical research may be more useful than deductive reasoning from them”. Erlandson et al, (1993) suggested that a naturalistic study should be designed in advance, to some degree. They recommended that the researcher begin by identifying a research problem, choosing a research site, and identifying initial research questions. Denzin and Lincoln (1994) concurred, adding that there should be a clear focus on the research questions and the purpose of the study. A research site should be selected, based on the research topic, as well as accessibility, simplicity, opportunity to remain unobtrusive, if desired, and likelihood that whatever is to be observed happens frequently (Spradley, 1980). Gaining access and entry into the field site requires trust and good communication skills (Janesick, 1994), so that later the researcher gains a truer picture of what occurs in the field, and the meanings participants attach to events and context. As an example, researcher’s interest in his own field of “ideology of academics in government universities in Sri Lanka towards the entrepreneurial university concept” is taken in to consideration

3.3 *Sample selection Method*

Typically, multiple voices of several participants are described and compared. Research participants are typically selected not randomly, but purposively in an effort to carefully represent those many voices. These samples may be small, but are described in great detail, to derive deep insights regarding them and the research context. Participants may be consulted during the analysis and reporting

phases of the research to verify the researcher's interpretations. Participants are as "human instruments" in the system being studied by interacting with the academics and policy makers. For this reason, and because the studies are designed to provide rich descriptions of particular systems, most qualitative researchers suggest that findings from one study may not necessarily be generalized to other environments and systems. Rather than being value-free, some call qualitative research value-laden (Denzin & Lincoln, 1994).

3.4 Method of Data Collection

In-depth studies of single settings or related sets of data can yield insights into the types of events the case represents, however they require intensive observations, usually over periods of time, and reviews of various sorts of data, typically collected using multiple methods, including observations, interviews, and reviews of documents and artifacts (Robinson, 1995). Researcher, as an instrument, using multiple methods, data collected through tedious process of in-depth-interviews, participant observation, conversation and questionnaires. Researcher purposively selected 26 academics in government universities for this purpose.

Interviews have often been used to investigate views of educators and policy makers. Moallem (1994) relied on interviews, along with observations, to build her model of a teacher's thinking. Donaldson (2000) also used interviews to examine faculty and student use and perceptions of instructional innovations. Researcher conducted observations over a 25 years and interviewed relevant groups after observations to clarify what was observed and the perceptions.

Written questionnaires reduce *interviewer bias* because there is uniform question presentation (Jahoda, et al., 1962). Unlike in-person interviewing, there are no verbal or visual clues to influence a respondent to answer in a particular way. Many investigators have reported that interviewer voice inflections and mannerisms can bias responses (Barath and Cannell, 1976).

3.5 Method of Analysis

Qualitative data are typically analyzed on an ongoing basis using an inductive approach to yield meanings and interpretations and sometimes to develop "grounded theory" (Borg & Gall, 1989). Analyzing qualitative data can be fearful. Researchers can feel as if they are "swimming" in data and may not know where to begin. Miles and Huberman (1994), however, suggested that researchers just begin, adding that "...any method that works, that will produce clear, verifiable, credible meanings from a set of qualitative data" is useful. They add, "The creation, testing, and revision of simple, practical, and effective analysis methods remain the highest priority of qualitative researchers". Analysis activities fall into the areas of reducing the data, coding and displaying them, and drawing conclusions (Miles and Huberman, 1994).

The variables we select as "independent" are themselves often highly inter-correlated and influenced by the variables we are attempting to explain. For instance,

researcher has many forms of data: narratives, videotapes, logs, journals, photographs, interview transcripts, field notes of observations, and responses for questioners.

There are as many approaches to analyzing data, as there are perspectives on qualitative research; there is not one best approach. For instance, Miles and Huberman (1994) suggested three approaches to data analysis - interpretive, collaborative, and ethnographic. Researcher using the latter approach would typically develop categories of phenomena, and record instances of those, sorting and refining as he goes along.

4. DATA: [Entrepreneurial Culture vs. Research and Teaching]

4.1 *Stick to the Letter of appointment and Circulars*

Strategic planning underpinned by the accountability of higher education institutions means that institutional research goals are placed above subject discipline or individual academic freedom. Top down strategic management is not practiced and academics are seen as highly competent individuals who are able to execute their research in an orderly way without being formally managed.

Senior Academic argued: *“you can’t just let individual pockets of people continue doing what they are doing, without aligning it to some kind of coherent strategy”*. In contrast to the managerial approach, another academic was described as an organization where all the academics knew what they are employed to do – teach and research: *“this is how a university functions . . . you are here . . . you have the space and the freedom to express yourself, according to your needs, within the broader context of scientific practice now, but if the recruitment procedure included with research experiences, you are also not here”*

In some universities, academics’ teaching time and work load are managed through a system of class rosters that is filtered up through the management hierarchy from the head of the department, then controlled by the dean. One of the Deans noted: *“every person has a timetable and each of my heads of departments, each member of staff, will have a little roster, no one has enough time to concentrate on researches. My idea is, there is a necessity of establishing **research task force** and If there is a possibility we can go ahead and earn money by selling our research findings”*. The monitoring of staff activity through the class roster system goes further in some instances where academics are not encouraged to telecommute and their ‘on campus’ presence is favored.

4.2 *Entrepreneurial University vs. Private Business*

As I understood, most of academics are working as part time to the university and full time professional practitioners to third party. When I was conducting the survey, I wanted to have the clarification on why they are operating separately outside the university instead of putting their effort to create venture withing the University instead of starting family businesses outside the University. Many senior lecturers

commented that, “I found the occupation as **‘Lecturer’**, and observed that all the senior academics have luxury houses and comfort life with their own vehicles and so many. Me too, wanted to follow the same and started to earn money in different ways regardless the development of the university. My family is important than the university... then what is the purpose of thinking the **entrepreneurial development** of the university. Rules rigidity operating within the University is our main barrier and also when we are going to start business type operations within the University, we have to allocate more than 10% proportionately from the income. Then why we are wasting our time and warring to create entrepreneurial culture or venture creation in the University?” Not only that, most of **academics and administrative categories earn profit through formal and informal commissions which are receiving from the internal projects.**

Another group of senior academic stated that, “We are totally **entrepreneurial type**. Instead of our salary from here, we earn about 5-7 times of earnings from our private businesses. From visiting lectures in public and private universities, we earn about 30-40% of my permanent salary. There is no even PAYE tax for.... we are coming to the university only for to maintain our dignity and reputation. This is added advantage for our private businesses...”. Government is there to fund the university. We are receiving our salary, probably to the bank account. Even, we are not coming to the university to collect the salary, if we don't have lectures or meetings.... what a freedom is this?”

4.3 Commercialization vs. Researches of academics

On the other hand, the institutional attitude of researcher autonomy is a theme that is evident throughout most aspects of people management and research management philosophies at the university. Many Senior Academics stressed: “We are always busy with researches, because you know, whether we work hardly to the university or not, gaining the same benefit, but publishing papers in journals is only way to get promotions, instead of going after entrepreneurial culture development within the university One day somebody may use my findings. Now I am doing these only for my own carrier development. It is possible to defend our way of doing things, **we are not serious about applied researches** as what research institutions do. We have to go with what the common academics.... There are thousands of circulars for to have transformation government universities in to the culture of entrepreneurial type, but no marks are allocated for promotions... then what is your logic on...?”.

As a consequence of the history of the institution and its teaching mission, most participants expressed the view that academics at the institution view themselves as teachers. They noted: “Remember academic people joining universities as teachers. That's what you were employed for. Our academic freedom cannot be vested to ‘managed style’. Can you say how authorities in Sri Lankan universities value researches? Are they employing even existing research findings? How many doctoral researches came to Sri Lanka during last ten years’ period? Did they disclose any of the research? We think most of our aim is to just survive or we are in university service only to earn our personal income... If they contributed with

their research findings [If those findings are real], now Sri Lankan government universities may be profitable without begging government funds.... You know, what the Malesia, India etc. universities are doing? ... They are not depending [partly depending] on government funds and contributing to the government... But you know, in Sri Lanka, what our academics think? To utilize earned funds in accordance with their internal plans and own requirements, whether it is required or not.... Then what...? They do not try to accumulate it for the economic development... Then you think how far we are in with the entrepreneurial culture... ”

There is a necessity of interact academics with, and is mainly driven by the theory that people are motivated through self-actualization and status needs. Academic debate and discussion are key factors of the intangibles that drive research interaction. The role of academic leadership is to reinforce the emphasis on research with instruments such as promotion criteria (e.g. promotion to professorship), and emphasizing the associated status that research carries at the institution. One of the deans stated: *“In our universities, there is no research environment and enthusiasm. Some lecturers are getting their promotions to professorship just by material printing. Then other academics are also trying to follow the same easy pattern to get their promotion. I know, most of our staff is not thinking about the development of country instead of their personal development only in the working place. Our institutions are also encouraging this style, while giving the recognition... Then we have problem of what to do? And going with the existing path...spreading out the university name among industry and related parties in and among countries is very difficult task. But you know there is no proper evaluation for that.. then most of academics who are thinking about the institute as well as the country are discouraged ... Then who are thinking for innovations? Like commercialization...”*

Research has, however, been allowed to take its own course and was not directed at institutional level. As a result of the fact that ‘intangible’ interaction amongst academics takes place, most other research management decisions are based on creating the physical environment and infrastructure within which researchers can carry out their tasks. Group of senior academics explains: *“research interaction is caused to emerge in the context of conferences, in publications, in tearoom discussions, in the building of library collections, where everyone has a tacit understanding of what research is about, and how you should practise and manage research. But we know this is type of ceremonial... We are helpless in innovations. Time to time Faculty Board and Senate not accepting our proposals based on personal, departmental and faculty matters...If I am correct, I can remember that I wanted to introduce the private sector collaboration with the faculty to start many programs, but it was not successful with... on the other hand there are complex procedures and obstacles in introducing paid courses and establishment of business incubators specially leading to spin-off ventures...”*

The emphasis placed on the importance of research is further illustrated by the ‘publish or perish’ sentiment that was frequently repeated during interviews. *“For many years we have had this ‘publish or perish’ syndrome about which the guys are*

so derogatory. I say, let them publish, for heaven's sake. Naturally this will also produce some rubbish. But rather than a person is doing nothing and can be most probably seen republications or plagiarism... People in the business sector or government are not attracted to get the research services from the government universities due to many reasons... All the services in relation to new projects are given to private consultancy firms..." Although research is a very high priority and is emphasized throughout the university, the reality of high student numbers, and its associated high teaching loads, has led many academics to focus on teaching instead of research. "People claim that 'if you cannot publish then you aren't an academic'. But reality is somewhat far. Our educational policy makers are also preaching the same without preparing the research atmosphere within the university system. In addition, we must learn first 'how to research' from very beginning, because though there is a 'research methodology' subject for our degree course, we couldn't understand anything about researches at that time... Actually we do not have applied researchers ... If we had had them, we know how to deal with and sell them..."

4.4 Linkage Gap: University and Industry

Most of universities don't perceived researches as core business. That determined the psychology or the way staff members behave in the context of research. They believe that the matter of applied researches is belongs to the outside research institutions. Some participants noted: *"absence of a 'research environment' or 'research culture' at universities, predominantly at a stage of 'research for activity' as opposed to 'research for output'. Therefore, we like to say that 'we're doing all this research and, research is in all the doing' and we say 'ha, where are the end products?' you see, and the end products are publications, and when you look at the publications they are not applied and no end use... but research institutions are charging huge amounts and doing the research at the target... another reason is that there is no demand for research contributions from universities to the outside organisation. Our question is Like China and some south Asian countries, why Sri Lankan universities or professors are not invited to prepare and involve in to preparation policy frameworks, feasibility reports, project reports, market researches and other entrepreneurial type activities..."*

The merger with the industry has further placed pressure on academic staff members to become actively involved in research. Some of the academics have been resisting based on institutional autonomy and academic freedom. Group of academics noted: *"in 1998, our VC arranged the program to do collaborate research with industry. They ask us to have industry training two days a week. Our idea is why we are flexible to their program and calendar... we are educated than them... we are academics... then we refused to participate that program. To stimulate research . . . and research literature also proves this - you must create an environment, different from managing research. It is not unimportant to manage research, but it is more important to create an environment so that the research can probably move more easily in a pro-active direction... Our idea was not to sell our researches or findings... But when we were closer to the retirement age, we understood that the*

practicability of our VC's proposal...Now time passed...But we always instruct to our junior staff to stick in to that matter..."

Before merging, institutional climate is to be reorganised with research culture and environment. Leaders must give lessons to followers. One of the deans stated: *"I am not research-orientated...I can remember one of the staff member, one day supposed in the faculty board to apply for exceptions for few subjects from the professional body for our undergraduates...who cares professional bodies...my opinion is that if we are applying for exceptions, that is just like insulting ourselves...however, I as the Dean, I don't like to get involve with industry people... it may be threat to our academic sovereignty and autonomy..."* Again he stressed that: *"that is not my role... and so, if a dean is not research-orientated, the dean tends to bring obstacles in the way of the researchers, because they don't see research as a core business. My role is to survive in this position as long as possible and who cares what we did during my tenures as you mentioned, what shall we do with entrepreneurial culture and what is the benefit from...The dean's role at the university is to create an environment in which academics could carry out their academic tasks without interference or direct control"*.

The strong links with industry and professions is must. But Sri Lankan higher education sector is not having strong links with industry and professions. They are still behaving as 'Ivory Tower' to maintain the undefined institutional autonomy and the academic freedom. The university and their particular subject disciplines had to have strong links with industry and other external role-players the form of the university, when interfacing with industry, was described as beyond the scope of a traditional university; therefore, the universities are rigid and slow to respond. Group of senior academics emphasized: *"The question is whether the university can interface with industry as a university. We don't believe that the university is a business; our universities are state run; if we going to have collaboration with them, they may 'skim' and 'absorb' us...we have to end up with nothing..."*

4.5 Centralized Research Management with Faculty Research Manager

The need for a centralized research management structure at Sri Lankan universities was born. The placement of a research manager at each faculty was another consequence of the indifference of senior management towards research and the resulting lack of emphasis placed on the importance of research. Senior academic noted: *"There was a need for a research manager/coordinator in the faculty, because one thought that if the dean was not pushing for research and if the dean were too busy then the research manager would stimulate interest in research"*. The fact that the research mission had not been established at most of Sri Lankan universities can be cited as another reason for the placement of research managers at faculty level. The role that each research manager plays in the faculties varies from being responsible for the entire research culture within the faculty to being highly operational. Operational support includes the conducting of research as well as research mentorship.

In extreme cases, research is regarded as something that you are either able to do, or you should not be in academia. Assumptions are also made that academics will feel comfortable to approach seasoned researchers for mentorship and guidance and that the experienced researchers will in turn respond positively. The management of formalized researcher development, however, is recently practiced by some faculties at the university: Many senior academics commented: *“we all have different talents. Everybody can’t become good researchers. And I think one should have clarity regarding that. But there should be an opportunity for everybody to develop as researchers. For this purpose, the academic attitude, research infrastructure (especially funding), and institutional environment should be re arranged... But I think, if anything, we have really been privileged. I mean the universities have had their funding cut continues...”*

Embarrassing administrative rules and regulations with discriminations were also badly affected to the academic enthusiasm towards research culture in some higher educational institutions. Some of junior lecturers mentioned: *“...what is the point of talking about research grants or research culture among universities, if they are not allocating even funds to their academics for postgraduate research degrees...though there are enough funds in...”*

Commitment to “basic research” and the orientation towards “market-oriented science” are entirely two different things. One of the classic academic mentioned: *“Generally, the powers that be favor this. It is encouraged, and it creates problems. It’s not the kind of research that faculty think they should be doing in an academic setting. If you don’t come up with the answers industry wants you to find, what do you do? I’ve seen a lot of conflicts. Others say it is the most important thing we can do to show that we are useful. Our department head thinks it’s important. ... I haven’t had the connections with industry. If I had to feed my family and needed something to do, perhaps I would have developed such connections”.*

5. ANALYSIS OF DATA

The future of Sri Lanka in the knowledge competitive global economy of the twenty first century depends critically on the country’s intellectual and human capital. Higher education institutes must develop a culture of their own. This culture must go beyond the bodies of specific knowledge which are taught and cultivated and extend to a vague ethos of attitudes and sensibilities, of standards and canons of judgment which must be assimilated and cannot be explicitly taught. On the other hand, to face this global competitive, ever change environment, higher education institutions must ready to build up complex set of relationships (OECD, 1996) with actors in the system, which includes entrepreneurs, government, research institutions and other relevant parties. This will be paved the way for complete higher education structure (Mikhail, 2006) with the Tri-Partite System (Grubb, 2003) as a viable element of national innovation system.

According to the National Education Commission (NIC) recommendations, the national education policy introduced to the overcome many shortcomings

observed in previous fail attempts toward educational reform policies and to enable the education system to respond successfully to changing needs of the society. But these policies were unsuccessful due to inadequacy and lack of consideration toward government university system. Our thinking about change in higher education is out of balance, and a demonstration of how we can achieve a more balanced view of the lived realities of mass higher education. This is addressed by Trower (1998) as ‘to explore the regulatory in academics’ attitude to change’. While Sri Lanka, Bangladesh, Pakistan, Malaysia, Hong Kong, and Singapore emerging British oriented academic system, China, Japan and Thailand were never colonized and had varying degrees of independence to develop higher education policies without foreign domination. But, Sri Lanka still giving priority on this British domination for their higher education policies, rather than considering national requirements. To design adequate policy, there is a need to combine general principles and insights with a deep and thorough analysis of the specific government university system and its insertion in the national innovation system (Lundvall, 2007) with the orientation of commercialization of university products for the growth of the national economy.

In most developed countries, governments have prevailed upon higher education institutions to assist in the development of the national economy (Perorazio, 2001). Thus the relationship between higher education and government can be described as an ongoing series of ‘social contracts’ – an expectation that higher education should provide a return to the society for the public investment provided. Higher education sector in developing countries need to transform themselves into ‘developmental universities’ (Brundenius et al., 2005) and Sri Lankan higher education institutions have to think about the role in supporting local and regional economic development (Robson et al., 1998) through a verity of aspects of higher education intuitions work, such as (i) involvement in local and regional partnerships, (ii) links with local business and industry through targeted training and research consultancies, (iii) the establishment of research incubators, science parks, quasi autonomous R&D companies and commercialization of higher education research via spin-off venture creations and patents. In this regard academia should be closely integrated with industrial firms (Etzkowitz and Leydesdorff, 1995) to maximize the capitalization of knowledge. This is the third mission, which is expected especially from higher education of developing economies. Still Sri Lankan higher education sector is lack in this ‘Third Mission Philosophy’ whereas many governments of both developed and developing countries have introduced an increasing range of policies encouraging the environment of higher education institutions and Public Research Centers in Technology (D’Este and Patel, 2007) transfer the knowledge to firms.

Globalization has significantly altered patterns of research and development and production (Subotzky, 1999). Throughout the world renewed emphasis is being placed on the higher education sector as a major player in knowledge creation through formal research. Many governments are investing in institutions that have a proven track record of producing substantial research outputs. Their policy focus is increasingly on resource allocation for research and development the formation of intellectual capital through education and training the necessary management and institutional arrangements and ability to ‘capture and apply’ (Turpin et al., 1996) these

intellectual products. Sri Lanka is still lack this government intervention for research culture creation in higher education institutes and it was evident that there is no enthusiasm among academics in government universities to commercialize their research outputs to create entrepreneurial culture within the university. If there is an adequate government intervention in the initial stage of research culture creation, then government universities have to obtain research grants and other forms of funding, and are thereby being forced to focus more on applied research, which the market actors require (Sporn, 1999).

On the other hand, Sri Lankan government universities with a predominant focus on teaching usually show limited to no research activity. Institutional mission therefore has a direct impact on the intensity of emphasis on research. Some institutions are completely new in their involvement with research and others have an existing but poor history of research (referred to as Newcomers Late developers by Hazelkorn, 2004). As a result of the differences in research emphasis in institutional missions, categories of research intensity have emerged. Ball & Butler (2004) discussed three categories as 'research-led', 'research-driven' and 'research-informed' which is used to classify institutions in research orientation point of view. Data shows that, in Sri Lankan government universities, though there are concentration towards 'research-led', 'research-driven' orientation, still lacking the 'research-informed' specially due to not having the more and more applied researches.

Research, furthermore, has to be transformed into commercial products to increase the institution's income capacity. These changes result in universities becoming more sophisticated and specialized in their research efforts to address the issue of competition. This in turn leads to team-based research (largely due to cost savings and inter-disciplinarily) thereby resulting in fewer organizational units conducting research (Barnett, 2000). The research function at research-active institutions is therefore more externally focused, by virtue of the sources of funding in the market place, which in turn requires greater sophistication and specialization in attracting and managing such funds. Although research is conducted by individuals, research productivity is affected by institutional conditions (Fox, 1992) which in turn are managed in order to positively support researchers thereby increasing institutional research output and revenue.

Commercialization of research output is still lack in accordance with the data. All these institutions don't have a strong focus on science and technology, which provides a fertile soil for new venture creation. In general they perform a traditional role in its region, in terms of both education and economic development. With regard to economic development, except very few institutes, all others do not seek to increase knowledge and technology transfer from their university to the market, to contribute to societal and economic development. Only few academics of two universities recognize the need to support efforts to spin-off new ventures from university research to transform technological breakthroughs that otherwise would remain unexploited because of their radical nature and/or early stage of development. Furthermore, the cases differ in their hierarchical setup, departmental structure and history. The myth of 'academics are originally hired to teach, and academic disciplines that traditionally have been grounded in professions or vocations with no

research traditions' (Hazelkorn, 2004), is still true for the context of Sri Lankan government universities. Universities are important source of resources for the new venture, but the access to these resources is partly dependent on a proper structure to handle spin-off processes. Many competencies needed in initial venture development can only be supported indirectly, as both the competencies and the networks to access such competencies need to be built over time. Infrastructure barriers in the university level competency were identified with primary data, such as; (1) poor collaborative networks with investors, industrial managers, government and advisory authorities, (2) lack of knowledge of identifying opportunities, (3) 'pure academic' mentality rather than entrepreneurial ideology, (4) less concentration of resource acquisition and utilization. In addition, individual motivations, opportunity recognition and development seem to be dependent on industry interaction, and the resource acquisition competency is related to the authenticity of the entrepreneurial team. Many aspects of the competencies are difficult to address by formal initiatives, at least in the short run. Thus, initiatives to stimulate an entrepreneurial culture and to establish professional routines and infrastructure at university level are crucial to release the potential of new spin-off projects emerging from university research. These competencies lead to implications for how policy initiatives can facilitate the access to competencies for nascent university spin-offs. Supported data clearly show how both cultural factors and organizational structure influence the venturing process. Although a high level of competencies are in place, the spin-off venturing process may be hindered by cultural factors such as opposed attitudes within the universities and structural factors. An opposed organizational culture may limit the access to resources within the university and hinder the connection to other sources of competencies. University-Research Institution-Industry linkage (Ikeda and Attalage, 2008) does not function well in Sri Lanka due to the lack of research skills and facilities in universities, little concern for innovation in industries and insufficient support system by the government.

On the other hand, commercialization of copyrightable educational materials has involved a rewriting of marketplace "rules" to facilitate the entry of academic institutions into the private-sector marketplace. Traditionally, it has been typical for individual academics to make their own connections to control the commercial use of their copyrightable educational products, such as books and articles. Under an academic capitalism regime, institutional policies are to be created to give universities, rather than individual academics, ownership and royalty claims relative to the intellectual products of faculty and employees.

6. CONCLUSION

A more innovative and knowledge-driven economy and a strengthening of university research effort must be underpinned by closer linkages and greater collaboration between universities, research institutes and industry. University-industry linkages can involve a wide range of activities, including: (i) Teaching and curriculum development (staff exchanges, industry involvement in curriculum setting, corporate training, student work programs & apprenticeships and

commercialization of university products), (ii) R&D activities such as contract research, cooperative and sponsored research, commercialization of university research, and business development assistance), (iii) Consultancies (formal or informal), (iv) Other activities such as industry representation on university governing boards, academic representation on industry boards, joint publications, and conferences and seminars (Vigdor et al., 2000).

The pressure on higher education institutions to increase and expand on their research activities presents an opportunity to the commercialization of knowledge. In understanding how institutional conditions differ between institutions in different phases of research development, managers are able to guide policy decisions that can assist institutions in developing or furthering their research missions. Institutions that have opted to initiate research or expand on their existing research operations will be able to locate themselves in one of the three broad phases of institutional research development. Institutions that wish to move a phase forward, can determine what management policies or actions it should put in place, in order to move to another phase, by modeling those policies or actions at achieving the characteristics stated under the particular phase.

For the purpose of knowledge transfer or commercialization of knowledge, the entrepreneurial university culture should be developed among institutions. Universities should shape a university culture that reinforces academic entrepreneurship by creating norms and exemplars that motivate entrepreneurial behavior; separate spin-off processes from academic research and teaching; create university-wide awareness of entrepreneurship opportunities; stimulate the development of entrepreneurial ideas and subsequently screen entrepreneurs and ideas by programs targeted at students and academic staff; support start-up teams in composing and learning the right mix of venturing skills; give knowledge by providing access to advice, coaching, and training; help starters in obtaining access to resources and developing their social capital by creating a collaborative network organization of investors, managers, and advisors; set clear and supportive rules and procedures that regulate the university spin-off process; enhance fair treatment of involved parties. For the successful spin-off venture, competencies are important. Especially, leadership role includes developing both internal and external support and authenticity needed to carry on the venture start-up process. Academic researchers should take this responsibility followed by persons with other backgrounds. When both parties are working closely, the stronger relationships can be built where the academics and industrialists. If entrepreneurial activity is justifiable, resources will be available to explore venturing projects. Furthermore, senior researchers may be in a better position to provide this type of competency due to a more established position within the university. The difficulty of gaining support within the academics was partly related to a lack of internal role models. Thus, important factors are prior relations and networks to industry, entrepreneurial experience among academic scientists, and entrepreneurial culture in research groups.

On the other hand, relating to the finding opportunities and the ability to further develop the opportunity into a viable business concept. This can be shaped by increased understanding of the potential commercial viability of their technology through building a close working relationship with industry actors. This working

relationship was developed slowly and iteratively as they worked together to demonstrate the practical utility of the technology. However, to engage in this process required a change of working behavior for the academics. The value of prior industrial experience is important.

Another competency is that relating to the development and acquisition of resources to build the new venture. The support of the university setup and the Ministry of Higher Education (MoHE) is a common factor. Universities are seen to provide tangible resources such a laboratory space, equipment, consumables, and research support. The MoHE can provide intangible resources such as intellectual property protection, help and advice, links to potential industry partners, and links to potential sources of public funding.

Institutional research culture can be developed in three phases. The first phase, namely the *Firmly Gradual phase*, is where an institution has no or very little existing research activity, and has made the decision to include research activities as part of its mission. These institutions are also described as Newcomers and Late developers (Hazelkorn, 2004). It therefore has to inculcate research into the institutional mission and functioning. There is an acute internal focus to inculcate a research system and practices into the institution. The research focus is on stimulating research activity. In the second or *Lengthening phase*, an institution already has some noteworthy research activity and strong research outputs. The research focus is on the generation of knowledge. The research activity could predominantly occur in silos (centers for excellence) or could be more widely spread among the majority of academic departments. An institution in the second phase is, however, not highly rated externally for its research quality or excellence, although there might be some units of the university that are recognized externally. The institution therefore focuses internally, with some external focus. Institutions in the third or *Sharpening phase* have exceptionally high research activity and output, as measured against their peer institutions, nationally and internationally. The institution's research profile is of world-class standing. Academics at these institutions are engaged in research as a predominant activity. Research permeates the institution with few if any units or departments not engaged in research. Research development tends to move into a maintenance stage, despite the fact that the institution is constantly identifying new research opportunities and expanding on its existing research base. The institution is strongly externally focused on the transfer of knowledge, as opposed to merely producing knowledge. In each phase, institutions can move higher cultural levels gradually and at each stage we can see following characteristics in relation to the institutional research development.

Promoting industry-university linkages in science, technology, and research and development is of cardinal importance for Sri Lanka to be a high-performing middle income country. The country's economic advancement as a middle-income economy will depend critically on the acquisition, operation and use of technologies at increasing levels of complexity, quality and productivity, as well as the generation of a continuous stream of improvements and innovations. The research skills and capacity of universities can uniquely support firms in technology acquisition,

utilization and adaptation, as well as in innovation and knowledge creation. The promotion of such industry-university linkages in science, technology, and research and development would be greatly assisted through the development of professionally managed university business centers, technology commercialization offices and technology broker programs.

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