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THIRD WORLD DEVELOPMENT CHALLENGES IN THE MILLENNIUM: THE ROLE OF RESEARCHERS AND ACADEMICS

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ABSTRACT

The concept of development has long been contested and argued over as various interests of the different stakeholders collide, in the pursuit of their varying objectives. Various alternatives have been postulated in attempt to replace old paradigms, to right the flaws associated with those paradigms. One important paradigm shift saw the emergence of sustainable development; a concept and a theory that has gained momentum and priority on the recent development agenda. However, though it has been of recent given much attention and thought as the most effective means to attain lasting and meaningful development that would serve not only the existing generation but also generations to come, sustainable development has been faced with lots of obstacles and challenges. These challenges and obstacles are nowhere more eminent than in the third world countries. Academic institutions with strong industry-grade research bases have long been known to support quality teaching efforts and to produce the graduate of the right quality to suite the job market needs. Countries with no core industry bases can still compete satisfactorily when properly guided, initially, through partnerships with countries that have them. When India, around the Mid 50's, for instance, decided to industrialize its economy it set out by creating links with world-class academic institutions in the US. In just under three decades, India managed to get hold of a significant share of the global Software Industry market that many countries in the third world aspire to follow the Indian model. Ireland poses yet another example at transforming its economy into an industry-supported one; in just few years Ireland, with its tiny population of 3+ Million, managed to transform itself into one of the largest software exporting nations world-wide towards the late 90's. Ireland now exports around $40 Billion worth in software annually, where its economy once depended heavily on agriculture In this paper, I took a look at the natural obstacles, Artificial challenges facing development, How can the role of Universities be like towards improving industry- related Education, why is the role of the industry and other external entities so important and the role of multinational firms at fostering development in third world Nations.

INTRODUCTION

In this write up I wish to highlight the natural and the unnatural obstacles of Third World sustainable development prospects. It aims at explaining some of the barriers in third world environment preservation for sustainable development. First, what do we understand from the term sustainable development and how has it gained momentum? According to the definition of the Brundtland Commission, a United Nations agency responsible for the environment; sustainable development is development that meets the needs of the present generation without compromising the ability of the future generation to meet their own needs (Uma K. and M.Martin,2002). However, one cannot discuss sustainable development without dilating more on the environmental perspective. This is because the idea emanated from the environmental realm. As a result of the increasing environmental threats disrupting the then existing paradigms, serious considerations were made regarding the importance of environment in the development parlance. The emissions of gasses into atmosphere mainly from industries caused global warming. This devastating impact of the industrial advancement mainly in the west has been phenomenal and evoked an alarming global concern and question, regarding the credibility of development model. The mainstreaming of sustainable development in the development discourse could be interpreted as a victory for the opponents of post-war modernization theory;

the same way it could be a displacement of much the same struggle to a different terrain upon which the meaning of sustainable development is disputed between the dominant neo-liberalists and the holders of the different alternative perspectives. Each tends to define it according to their divergininterests. While sustainable development may seem to be the perfect development model and the hottest on development agenda, its application and implementation remains elusive to Third World countries and seems to have an unattainable objective for them.

NATURAL OBSTACLES

Population

One significant and critical obstacle to Third World sustainable development prospect is the growing population that continues to exponentially rise. While it could be argued that population could be positive in a development process, I am with the strong conviction that the population factor in Third World countries is to a large extent, hamper developmental efforts in general and sustainable development in particular. Nevertheless, you would come across theorists who would focus on the bright side of population in development parlance.

The fact remains that the increasing third world population results to widespread deforestation, causing declining land productivity and destruction of habitats. The ultimate result of this is the extinction of useful plants and animal species and generally, environmental degradation. Moreover, the growing trend of rural-urban migration resulting to urban-congested population leads to many hazards like urban sanitation problems, crime, mob violence, unpredictable cycles of urban industrial labour market and more importantly, mass epidemics; example cholera. The capacity of Third World countries to control their population and specifically, rural urban migration is limited. Needless to say that time has come to revive Malthusianist policies so as to contain the demographic boom.

Poverty

Probably linked to population problem is poverty. It is obvious that most if not all the third world countries are poor; hence the name third world. They cannot meet the cost of technological innovations needed to remedy the environmental threats caused by their activities, as well as other development resources that need to be taken care of. What is more certain is that the problem of the increasing third world population is not that their level of consumption is high but because they are poor.

Their poverty is what compels them to exploit the very resources that they depend on for survival. The capacity for waste to be transformed into harmless forms requires technological innovation, which most third world countries are lacking.

The general livelihood

The Third World livelihood in relation to the environment is somehow paradoxical. The perfect example is the case of the rural poor who is both an agent and a victim of environmental destruction. Because of their poverty, they depend solely and wholly on environmental resources for their daily survival.

In this case they serve as agents of depletion of environment resources. They are victims because they stand to suffer most when those environmental resources are depleted.
This explains the situation of the Third World countries, which depend largely on primary production for the growth of their economies. As such, they remain plunged into a vicious circle that cannot allow them to remedy to their situation.

Artificial challenges

Colonialism

The colonial political economy was such that few Metropolitan governments were prepared to bear the financial cost of colonial administration. It was therefore necessary to organise the productive capacity of the areas concerned so as to generate sufficient income to sustain the administration and military presence that maintained the European control in most Third world countries. There was that need to integrate the colonies in the international economy (Mark Wuyts et al, poverty and development 1990s). Within the international division of labour, colonies were made to produce commodities for export, from extractive industries and tropical agriculture.

Peasants were encouraged to grow particular crops for sale and export. Their dependence on cash crop production and primary raw material production specifically has ended up like a trap in the present capitalist system. The effect of dependence on the part of third world countries in the primary products could be vivid in making distinction between primary commodity production and secondary or manufacturing production as economic activity. Complex manufacturing which forms its products from a combination of different raw materials, offers more flexibility of resource use than primary commodity production. For instance, copper piping can be used in place of plastic or steel.

On the other hand, the composition of primary commodity production is fixed and therefore, so are the environment resources used to make it. The devastating colonial capitalist intervention has broken the third world wings for any prospect of economic viability in the international scene and has served as an instrument of neo-colonialism. This colonial tie has dampened the spirit of third world sustainable development prospects condemning them to the exploitation of the environment as the only alternative.

Environmental economics

The dominant neo liberal perspective of environmental economics is significant in highlighting third world environmental challenges. The central concern of environmental economics is that the price of environmental services should reflect their scarcity. It is obvious that this accepted global formula for environmental sustainability has, like most neo liberalist capitalist models, marginalized the third world countries, which are mostly powerless. As with all neoclassical economics, the approach assumes that competitive market will tend towards equilibrium when allocation is optimal. It deals with aggregate demand and does not address the distribution of that demand (Umar K, Martin M, 2002). The extremely unequal distribution of purchasing power internationally, especially between the third world countries and the developed first world is enormous and has serious implication for the operation of environmental management.

Furthermore, on technology transfer, the challenge is also enormous. The problem is with the Intellectual Property Rights (IPR) over climate -friendly technology. IPR confers monopoly rights and serves as a barrier for introducing or upgrading technology by private industry or public-sector agencies in developing countries, or simply curb affordable access on account of high prices. The lower the cost and the greater the ability of private or public enterprises in developing countries to make use of new climate friendly technology, the faster would be their ability to switch to the new emission stabilization and development pathway. It is obvious that a full protection of the Intellectual Property Rights in relation to climate friendly technology would be a barrier to technology transfer.

The excessive third world debt burden

It has been harder on the part of the third world to prioritize environmental protection as a result of decades-long unfair debt burdens by so called international institutions. The International Monetary Fund and World Bank, through their harsh Structural Adjustment Programmes (SAP) have opened up economies rapidly, in socially, politically, environmentally

and economically destructive ways, while requiring a prioritisation on debt repayment and cutbacks on health, education and other important social services.

They have encouraged concentration on producing just a few cash crops and other commodities primarily for export as previously mentioned; using environmentally damaging 'industrial agriculture', which reduces biodiversity, requiring costly inputs such as environmentally damaging pesticides and fertilizers.

Taking culture aside and getting culture wrong

The nature of cultural sustainability has been elusive to most Third World countries. The fact that the West has presented itself as the normative development model upon which the Third World should look for their own development, meant disregarding cultural values and norms on the part of the third world, that looked or appeared incompatible with the development formulas given by the West.

The idea and concept of development has ever been masked in a western outfit, so that whoever wants to develop must have to become like the west - a development that has been framed with western culture. This development project of the west is dated back to the colonial expansion and imperialism era of the western colonialists, with their objective of 'civilizing' the colonies most of which were the third world countries.

Today, the third world countries follow the West like as Fanon puts it , cited in 'Poverty and Development 1990', "a colossal mass." The third world depends on the West for handouts with regard to their development at the expense of their cultural orientations. Cultural sustainability calls for the adoption of development formulas that are compatible with one's cultural environment for appropriate development.

Sustainable Development is a much loaded and buoyant phrase that, like the story of the blind people who were assigned the task of identifying the most important part of the elephant, each identified the part identical to their belief and orientation or interest. Like any development paradigm, its interpretation is highly contested, based on diverging interests. It is therefore obvious that the operation and attainment of sustainable development, from the aforementioned obstacles, are quite challenging and hard to achieve for third world countries, because of the deeply entrenched domestic and global barriers that ever remained insurmountable. With the present international power politics and economic colonization of the third world countries by the West, the Third World countries are compelled to resort to the exploitation of the environment, as well as abandoning their own traditional and cultural practices for the earning of 'Western favour or merit point

How can the role of universities be like towards improving industry-related Education?

The role of an academic entity towards improving educational outcomes under a particular discipline usually takes an early start in the process; in particular, its role starts right about the stage of admitting the student into his/her desired program of study. Universities usually admit students into their programs of study based on their achievement in the final year of high school. Countries that have fully developed educational systems confidently rely on the student achievements in the high school achievement tests, or equivalents thereof. In less developed or developing countries, the High School (or secondary school) achievement tests do not usually truly reflect the actual potentials for student candidacy to gain admission in a university system. As such, countries like these could possibly resort to international

assessment and evaluation bodies to gauge student potentials, capabilities, and suitability for admission into a university system. Even in well developed nations like the United States you would find students undergoing assessment procedures through recognized testing bodies like ETS; the Standard Aptitude Test (SAT) is one of the instruments US academic institutions rely on for admitting students into educational systems at the tertiary level. However, in a number

of cases internationally recognized/standardized testing processes might not rightly be well suited for countries whose languages of instruction are different from that of the assessing bodies. For these reasons, amongst others, countries like these have lived with their own methods of assessing students for university entry. In time, assessment processes like these tend to become obsolete and do not serve the purpose for lack of a proper review and system update due to the limited resources of the underpinning economies of these countries.

Therefore, one can readily envision the necessity for universities to design other alternatives to assess students entering the various disciplines for undergraduate study. Although such tactics are not in widespread use by universities, one tends to find a limited number of academic institutions applying such procedures on select fields of study, such as law and medicine. On the other hand, academic institutions which have standardized entry tests into all fields of study, have also instituted preparatory programs of study which some call "Readiness Programs" [4, 5, 6]. Based on the result of a student's performance on a university entry exam, the student is required to undergo a preparatory phase to tackle the areas in which the student exhibited certain deficiencies. Any preparatory, or readiness, phase fostered by an academic institution is commonly designed to treat the student weaknesses and, in certain cases, bridge the gap between a K – 12 educational system and the tertiary one. Universities which foster such readiness programs usually charge their administration to colleges of Arts and Sciences. Without a dedicated readiness phase to re-tool newly admitted students, colleges of Arts & Science have been observed in a number of cases to have done quite a sluggish job at preparing students for their major fields of study of which engineering and IT are areas of concern. Due to the large number of students who have to be serviced by colleges of Arts & Science, colleges like these

find themselves in a rather awkward position in the ways they use to prepare students for later stages of the academic process, due to limited resource and budgetary constraints.

Historically, colleges of Arts and Science have been the entities responsible for delivering General Education (GE) packages to students before they are ready to join their desired college majors. As such these colleges have had upon their shoulders the charge of preparing students for their respective majors. It is noted, as of late, however, that at a number of universities in developing countries colleges of Arts and Science are doing a rather poor job in preparing students in fields like Mathematics, Physics, and other basic sciences that are readily applicable in other major disciplines; this is due, in part, to a lack of a proper review mechanism that would sufficiently address the needs of college majors against what is being offered in the GE courses. This means that colleges of Arts and Science are not apace with the ongoing progress in areas of applied science and technology. Should this phenomenon continue unresolved, it would directly

impact, in an adverse way, student preparations for their college majors. This issue is best addressed with the institution of the proper review mechanisms that would allow college majors like engineering and Information Technology to clearly outline their specific needs in the areas of GE, which, in turn, would dictate that colleges of Arts and Science tweak their curricula to better meet the standing demands. Furthermore, colleges of Arts and Science have it upon their shoulders to re-tool those students who got admitted with a lower High School average to accommodate certain social pressures, or those students coming from under-served schools, or students admitted into the university from an Arts stream into academic areas of science-oriented majors, by providing the needed bridging to allow students with certain academic deficiencies to cope up with their newly introduced

environments. This naturally falls under the realm of a readiness phase, which requires the student to spend up to one year taking preparatory courses in English, Mathematics, Physics, Biology, etc. Without such a preparatory phase, private universities and even state-owned institution running "parallel programs"1 will continue to have to suffer the consequences of having to accommodate poor student performance by inflating their grades [4, 6, 7]. This will have the grave consequence that the end product of the process will not be job worthy! A

recent assessment conducted in an Arab country reflected precisely just this fact! In January 2006, Jordan for the first time instituted the requirement that no university student would be eligible for graduation from their majors before undergoing what is now termed the "University Achievement Exam" [7]. Results of the exam were staggering; while Jordan is considered as one of the leading countries in engineering education in the Middle East with graduates who usually compete well for jobs locally and regionally, the arithmetic
average for students who sat this ETS exam for the first time in any Arab country were only in the 50% range! This would automatically mean that an all out review of academic curricula, in engineering and Information Technology in particular, taught at universities throughout the Arab world is in order. The issue of student preparedness for graduation from engineering and IT colleges is further complicated by the lack of students for the much needed soft skills by the job market! Interviews conducted with a number of employers in the private sector have confirmed that these businesses would have to invest some significant budgets towards building the soft skills without which engineering and IT graduates would not 1 Some state-owned institutions around Arab countries are running what they term "Parallel Programs" or "International Programs", which are essentially business generating operations within the realm of these state-owned institutions. Disadvantages of programs like these entail allowing high school graduates with grades lower than the required minimum by a university system to gain entry at
institutions of higher learning; a possibility not otherwise permitted. attain much success in their professional careers. This demonstrated weakness on the side of the soft skills has its roots naturally embedded in the poor design of the curricula of the college majors. While ABET emphasizes that a certain percentage of a curricular offering must contain 14 – 24% of courses that would broaden the student knowledge in areas other than their technical domains of expertise, you tend to see a great many number of universities in the developing world allocating less than 4% to this side of the knowledge domains. Furthermore, engineering and IT colleges at universities in the developing world are not placing sufficient emphasis on technical writing and the development of the student presentation skills, and, as such, engineering and IT graduates are not well prepared to compete globally. Major colleges, in general, and Engineering and IT colleges, in particular, ought to review their curricula, and while they do, re-design them to incorporate into courses materials that would enhance students' soft skills to bring them to a level where they can compete globally upon graduation. Universities which have already adopted compulsory readiness programs would now need to tweak their readiness plans to initiate
certain measures to fulfill certain soft skills building standards for later stages of a student's academic career.

Finally, universities ought to bring about some level of flexibility and malleability in their curricular planning by allowing room for an ongoing review process of their various curricula to keep them up-to-date with the rapidly changing market directions, and, where possible, use feedback from the market and/or conduct periodic market surveys locally, regionally and globally, and incorporate the results of their findings towards re-designing their curricula to stay abreast with the rapidly changing market needs.

Why is the role of the industry and other external entities so important?

In the industrial world, industry and academia have traditionally been closely intertwined; industry has had a marked presence in areas of significant academic concentrations, where academia always contributed their much needed consultation and R&D services. To receive solutions from the academic sector, industrialists were always supportive of academic research efforts through direct funding, or by supporting lab facilities and equipment to researchers.

Today, no industry can survive without R&D, which cannot be separated from ongoing research efforts at academic institutions. For that reason, you tend to find huge industrial parks clustered around major academic concentrations. In the United States, for instance, Research Triangle

Park in North Carolina and Silicon Valley in California are living examples of the close coupling between the academic and industrial sectors. Here researchers from the academia can receive funding from the industry for their projects, and people who are affiliated with R&D departments around industries find it quite handy to collaborate with academic researchers. Moreover, universities nowadays rely heavily on industries for entertaining their interns.

Job markets anywhere around the world are governed primarily by the needs of the industrial and service sectors. Hence, in well developed academic programs, the various curricula are usually geared towards fulfilling the needs of these sectors. As industries evolve, academic institutions continually go about curricular reviews using feedback coming in from the industries involved. This serves both ends of the spectrum: fresh university graduates are better suited for the prevailing market needs and better prepared to readily be productive on the job; and industries no longer need to allocate significant budgets to train these new university graduates.

In the less developed world, and in their efforts to encourage links with the industrial sector, universities have gone about hosting industries right within their premises in the form of industrial (or research) incubators. These incubators are used to both train potential graduates in certain disciplines and for conducting joint research of immediate benefit to the participating industry [7]. In the Arab world, Jordan is one country that has started doing just that; at Yarmouk University, for instance, research incubators have now existed for around a decade; Jordan University of Science & Technology is now hosting a handful of industrial incubators for similar purposes. On the other hand, evolving service industries are now sponsoring labs and research facilities on university premises; Fastlink, Jordan's largest cellular service provider has already established two research/training labs at both University of Jordan and Jordan University of Science & Technology. In many Arab countries, which have realized the importance of linkage between academia and industry, you tend to find serious efforts, in many forms, taking place to

create links between the two. However, and mainly due to the still evolving nature and the disorientation in the industrial sector itself, you tend to find many of these efforts bearing little fruits, if any, or even not going to completion altogether. On another front, some Arab governments have taken it upon their shoulders to create schemas that would encourage potential university graduates to conduct research projects that readily serve the needs of the local industry or the public sector itself. Under such schemas, students with their capstone supervisor come

forward with a proposal to work on a particular project of interest to some local industry partner, which once approved, funding is granted and work on the project commences; Jordan is one Arab country which has come up with exactly one such schema under the Umbrellas of King Abdullah II Design and Development Bureau (KADDB) and King Abdullah II Fund for Development (KAFD).

The role of Multinational Firms at fostering development in Third World Nations:

The experience observed in India serves one of the most striking and living examples of industrialacademic partnerships, where multinational firms have contributed to the advancement of academy. India also provides another example of academic-academic partnerships and

cooperation. The University of Illinois at Urbana-Champaign launched a program in 1958 aimed at establishing strong educational and research institutions in India. The outcome of the cooperation resulted in several Institutions of Technology in India ranking among the best in education and research worldwide. In the meantime, prominent corporations such as Motorola, Lucent/Bell-Labs, Microsoft, SUN, Intel and many others have established industrial parks in India as well as research and development centers closely associated with technical institutes. Today, India is one of the largest suppliers of graduate students to top universities in the US.

Research and development centers at university campuses allow both faculty and students to interact with state-of-the-art projects and enrich their academic experience with real world applications.

Recently, Jordan University of Science and Technology, and Yarmouk University embarked on a program of collaboration with SUN Microsystems in the USA. As a result, SUN inaugurated a joint center of excellence for both universities. The center serves the purpose of establishing strong participation between the giant server company and the academic body of students and faculty. The center allows students and faculty to take part in real world projects, which the company undertakes in the areas of reliable computing and architecture.

Another example of fostering education by industry is a program initially designed by Motorola Inc. to promote education in the areas of reliable computing and high availability systems. The company noted that the academic sector at large does not provide enough education in the areas of reliability and high availability until later stages into graduate programs. Motorola University and several academic personnel participated in developing special programs geared at building skills in reliable computing. The program was aimed at universities both in developing countries as well as in the US. The program is still, being tested in several places around the US. The outcome is the ability to graduate engineers who can plug into certain areas deemed necessary for the industry. One of the obstacles of applying such programs in third world countries is the lack of sufficient flexibility in curricular reforms. Academic institutions such as Carnegie Mellon or Stanford University have much greater flexibility in adopting new programs than universities in Jordan or Egypt, for example. One main reason has to do with available resources. Another reason is the bureaucracy which quite often renders changes in academic programs a slow process, such that the benefit of the program loses value over time. Another issue is that academic institutions in third world countries continue to live under the pressure of accreditation, and thus prefer to live with programs that have already been established and accredited. As such, the trial of programs as pilot projects can become an accreditation bottleneck. The impact of industry on the overall progress of academia cannot be overemphasized. In order to fully utilize this opportunity, several factors have to be taken into consideration:

1. Academic systems can sometimes fall prey to excessive procedures falling under the realm of administrative bureaucracies. Any level of bureaucracy exercised in any form, and at any level within an academic domain is quite sufficient to render it ineffective and prone to eminent failures. Collaborative links between academia and industry require sufficient flexibility that would not put obstacles in the ways of progress of any collaborative measures. Competition amongst academic constituents often times manifests itself in the form of artificial bureaucracy. Any persisting collaboration between the two sectors should neither be entrusted with those who have personal stake/agendas in the matter, nor put in the hands of those who would extenuate the more qualified ones from the process altogether. One way to simplify the process of interaction between academia and industry is to create a high level office dedicated for this issue. The office should be run by personnel with high level of industrial experience.
2. In the developed world, industrial-academic collaboration takes place between parties who are equal. As such, universities in the Western world possess a minimum level of built infrastructure upon which any collaborative efforts with the industry can rest solidly. In the developing world, however, the level of infrastructure within academic institutions that would uphold any level of collaboration with the industry is either insufficient or missing altogether. As such, collaborative measures, in developing countries, between academia and industry have it as requirement that some third party sits in with some level of much needed funding.
3. Commitment at the level of the people/teams involved is of paramount importance, for without this personal/team commitment any type of collaboration between academic institutions with the industry is bound to fail. In the developed world, such collaborative processes usually take championships at both ends of the treaty to exist. As such, each

participating party would appoint some committed champion to take part in the process and lead such schema to eventual success. In the developing world, however, collaboration schemas like these usually lead to competition
amongst the constituents, which often times, leads to eventual failure of the overall process. Here, one can attribute the witnessed failures in establishing any supporting industrial collaboration with the academia to this factor alone, being the absence of personal or team commitment. To go about inducing the needed changes in the attitudes of the constituents on this issue usually takes a significant cultural revolution in the way a given society conducts itself. In the Arab world, for instance, this particular venue would require a lot of dedication on the parts of societies and governments to alter the ways individuals and groups have long found themselves into.
4. Finally, academic institutions in third world countries, e.g. the Arab world, quite often fall dependent on the prevailing political/economic system. The much needed reforms in political/economic systems have adversely impacted the progress and development of academic institutions. Corruption, political instability, police and security-oriented governments, economic weakness, and human rights violations continue to impede the growth and prosperity of academic institutions. Performance and stability of academic institutions are not immune to influences in the surrounding political/economic environment, which end up impacting the quality of their graduates.

CONCLUSIONS:

Third world countries suffer some pronounced downturns both in the quality of tertiary education and the lack of industry-grade research at the academic institutions involved. This is usually augmented with the absence of any viable industrial-academic model that would bring forth some form of core industries to the incumbent economies of these countries. Situations like these have stood in the ways of any sustainable development in the economies of the countries involved; where, in many cases, countries were relying on export of natural resources to drive their economies forward, one tends to find very few of them developing any strategic planning to foster some form of an industrial core. Research efforts were neither of the level required for supporting any local industry/ies, nor were they of the quality that would incite citation of the research work products. As such many universities within the realm of the developing world, now, lack the level of visibility that would allow them to compete globally. Here, it is well noted that without industry-grade research that would lead to real professional development

of the faculty body involved, any teaching effort, conducted in ways of developing the learning abilities of the students involved, is bound to go off-track.

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