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EMPOWERING GEOSCIENTISTS WITH ENTREPRENEURIAL SKILLS – BRING BACK THE 'ECONOMICS' IN ECONOMIC GEOLOGY COURSE

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ABSTRACT

Unemployment is on a steady increase and the probability of getting a job is on a steady decline. This unemployment has caused serious economic and financial crisis, which is not restricted to the poor or developing nations of the world but has also affected the developed nations. Global trends report of 2011 shows that the global unemployment-to-population ratio declined from 61.7 in 2007 to 61.1 in 2010. Also the number of countries with falling employment-to-population ratio was still twice the number that had rising ratios. The youths are the worst hit by this, as the global youth unemployment rate stood at 12.6% in 2010, an increase from 11.8% in 2007. The geosciences sector is not exempted from this global crisis. The pending retirement of professionals and the uncertainty regarding the adequacy of this replacement with respect to quantity and quality is a major concern. This work looks at the possibility of empowering geoscientists with entrepreneurship skills to combat unemployment. Research results show that entrepreneurial skills and training is so much needed today to empower geoscientists. And the easiest means is when the 'economics' in 'economic geology' is brought back. The policy makers and geoscientists/geosciences students must all work together to see that the true elements of economics – business, trade, money, and industry is re-introduced fully into the teaching of economic geology course, as this is the fastest way to generate interest and alertness to the whole geosciences education and ensure the production of qualitative and quantitative geoscientists to replace the ageing and retiring ones. In other words, the geosciences education needs to be 'monetized'. So the 'economics' of economic geology course must be brought back.

Keywords: entrepreneur; money; trade; business; economic geology; empowerment.

INTRODUCTION

Global crisis – steady increase of unemployment: The global rate of unemployment is rising and the probability of getting a job is on a steady decline. This fact is supported by the Global Trends Report, 2011, which shows that the number of unemployed stood at 205 million in 2010, and there is little hope for this figure to revert to earlier level (Kapos and Sparreboom, 2011). This report also shows that at the global level, the unemployment-to-population ratio, which indicates whether the employment-generating capacity of a country or region is rising or falling, declined from 61.7 in 2007 to 61.1 in 2010. This means many economies are simply not generating sufficient employment opportunities to absorb growth in the working-age population. In fact data from 64 countries show that as at the 2nd quarter of 2010, the number of countries with falling employment-to-population ratio was still twice the number of countries with rising ratios. From this, it is obvious that the supposed ongoing economic recovery is not yet leading to a sufficient expansion in employment opportunities in many countries.

The worst hit by this economic and financial malaise are the youths (graduates). According to Kapos and Sparreboom, (2011), the global youth unemployment rate stood at 12.6% in 2010; an increase from 11.8% in 2007. Also across 56 countries with available data, there are 1.7 million fewer youths in the labour market than expected based on long term trends. This should not be mistaken to be as a result of job provision, but increase in discouragement. These discouraged youths (graduates) are not counted among the unemployed because they are no longer actively seeking job/work. This fact is also supported by research, which shows that graduate unemployment (unemployment among people with an academic degree) is a devastating phenomenon in the lives of graduates, which is a definite indicator of institutional ineffectiveness and efficiency (Wikipedia, 2011).

The geosciences sector is not exempted from this global crisis. Like many other professional groups, the global geosciences work force faces two major concerns (Keane and Gonzales, 2011): the pending retirement of professional; and the uncertainty regarding the adequacy of this replacement with respect to quality and quantity. And according to updates from the IUGS taskforce on the global geosciences workforce, (Keane and Gonzales, 2011), these concerns are not limited to developing countries but also acute in developed nations. According to the CIA world fact book, greater percentages (above 70) of the employed population are in the agricultural sector, while very few are in the professional/industry or service sector.

This paper is a call on the urgent need to empower our teeming graduates of geosciences with sound entrepreneurial skills so as to stop the spread of hopelessness and to alter the unenviable position our most noble profession has in the minds of the upcoming geoscientists. Lack of this empowerment has seen many of our bright brains becoming cashiers in banks, teachers of mathematics in primary and secondary schools, marketers in all sorts of places, and many other such jobs – talk of round pegs in square holes! One good thing that goes well for the geoscientists is that the training they receive makes them strong, rugged and easily adaptive hence can "*intrude*" and "*crystallize*" well in any "*formation* "and survive against all odds. It is our opinion that such doggedness and determination when "*metasomatised*" by well grounded and highly charged entrepreneurship elements will unarguably produce a special brand of Directors and Industry Captains of which the business world is yet to comprehend.

Global solution – empowering geoscientists with entrepreneurial skills: Since it is evident that the government and the few private industries cannot provide sufficient job for the teeming geosciences workforce, it is obvious that what are needed now for a global solution are entrepreneurs. Entrepreneurs play a crucial role in promoting economic development. They drive new innovations and the market's process towards equilibration (Kirzner, 1973; Moyker, 1996). Entrepreneurship (the effort an individual or group of individuals makes to initiate economic activity under a legal form of business within the formal sector – Klapper, 2006) skills must be implanted into the youths, more so, students of geosciences. This is the empowerment they need to combat the unemployment debacle. Or put differently 'the geosciences education needs to be monetised'. Empowering geoscientists with entrepreneurship skills must be tackled from two major angles: - the authorities charged with the responsibility of making the work scheme for

geosciences education; and the students in this line of study. Culture, economic freedom, legal restrictions, start-up capital, environment and a host of other factors has been known to impede the growth of entrepreneurships. But little has been said about the role of the current educational standard and training in our higher institutions. It is these privately held beliefs, how our fallen standard of education/training, specifically the removing of 'economics' from the teaching of economic geology course, has affected the growth rate of entrepreneurs among geoscientists, that this study adds to the literature.

THE ROLE OF POLICY MAKERS – BRING BACK THE ECONOMICS IN ECONOMIC GEOLOGY

The questions that beg to be answered are: - how many geoscientists turn out to become entrepreneurs? Could it be that such skills were not part of their training in school? Can there actually be empowering of geoscientists without entrepreneurial training? It has been shown (Baumol, 1990) that the productiveness of an entrepreneur is based on their institutional environment. According to Tabelini, (2009), culture affects entrepreneurship, and that the more materialistic a culture is, the higher the rate of entrepreneurial activities (Uhlaner and Thurik, 2007). This therefore means that for geoscientists to become entrepreneurs, our educational policy makers must provide suitable academic culture and environment which promotes the zeal and desire to become entrepreneurs. This is against the background that "the opportunity to profit, will increase entrepreneurial alertness" among students (Kirzner, 1985) that is monetising the education. So it goes without saying that if the students of geosciences are taught the possibility of profitability in their chosen field outside paid employment, their alertness and interest in the studies would be enhanced. And this will help ensure better quality and quantity of professional geoscientists to replace the ageing and retiring ones (a major concern of the International Union of Geological Sciences (IUGS) taskforce on the global geosciences workforce).

The authors are of the opinion that the best and easiest way to monetize the geosciences education is to bring back the economics into economic geology. Since the mid 1950's, there has been a cry calling "who took the Economics out of Economic Geology?" Unfortunately, more than 60years later, nobody wants to bring the economic aspect back to Economic Geology. There is the utmost urgency in the need to bring back the "Economics" in our Economic Geology course in our citadel of learning. Economics as defined by the Oxford Advanced Learners Dictionary (2005) is "the study of how a Society organises its *money, trade, and industry*" and also "the way in which *money* influences, or is organised within an area of *business* or society". So the organisation of *money, trade and industry* is the focal point of economics. This therefore means that if Economic Geology is to be defined properly, it should be defined as "the study of how *the geosciences industry* organises its *money* from *trading geological materials* in the *business* world" or still as "the study of how *money influences* (demand and supply) of *geological materials* within the *geosciences business* world". With such direct and revealing definitions, how come in the study of economic geology in our schools, we hardly ever see these major elements of economics (*money*, *trade*, *industry* and *business*) come into play – talk of half baked knowledge!!

According to Prasad, (2000), "Economic Geology today has been reduced to obtaining scientific knowledge about economic minerals". Money, trade and business can never be

taken away from economics – else it ceases to be ECONOMICS. Hence the place of money, trade, and business must be emphasised in our teaching of economic geology, in short the economics of economic geology must be taught. Why would a graduate of geosciences, who must have studied economic geology, not know for example: the cost drilling a borehole in his locality using both crude and mechanised methods; the current local and foreign (international) prices of metals and gemstones which are readily available in his locality; how to do reserve estimation/evaluation in its simplest form; how to source and supply common geological materials like barite to oil industries, clay to pharmaceutical and brick industries,(or others that needs it); how to write simple business proposal and plans? These, which are by no means the only ingredients in entrepreneurial knowledge, would enhance the student's readiness and eagerness to learn and lay a solid foundation for their future.

While other aspects of sciences (like chemistry, biology, physics, and others) are seeking to incorporate courses on entrepreneurial skills into their curricular, we in the geosciences need not look for a new course to add as we have been blessed already with the course "Economic Geology". All we need is to bring back the economics in economic geology. After all, when the definition of entrepreneurship (Klapper, 2006), is juxtaposed with that of economics (Oxford, 2005), it will be seen that they both have similar elements – business, money and trade. So that one can dare say that 'economic geology' can also be called 'entrepreneurship geology'.

THE ROLE OF GEOSCIENTISTS/GEOSCIENCES STUDENTS – MONETIZE ALL KNOWLEDGE

There is a common saying that "when the student is ready, then the teacher will appear". Thus it becomes pertinent for students of geosciences education seeking empowerment to make themselves ready. In our opinion, the following would be a good starting point.

- *Strive to broaden your horizon*:- it must be understood by students that in the geosciences, the oil (petroleum) industry is not the only place to make a worthy living. Others sectors abound that one could venture into in small scale (as entrepreneurs) and make good money. Businesses like: borehole drilling; sourcing and supplying of geological materials like barite, metals, gemstones, construction materials, and numerous other solid minerals; brick making and pottery; teaching of specialised software programmes; sourcing, packaging and marketing of geologic information – both online and offline (this is a multi-million dollar industry now!); data sourcing and analysis for research students; and small scale mining of gemstones and quarrying of construction materials, are all profitable ventures for geoscientists. Lack of professional geoscientists going into these fields has seen these sectors managed or rather mismanaged by non-geoscientists and locals seeking means of survival. The geosciences student must look beyond the oil industry and broaden his horizon, be attentive to details in his surroundings and ask money, trade and business related questions in the geosciences industry.
- *Package yourself for business*:- an entrepreneur, according to Encarta dictionary (2009), is "a risk-taking person: someone who initiates or finances new commercial enterprises". So entrepreneurship is all about money, trade, and business – economics. Hence a good student of geosciences who seeks entrepreneurship skills must package himself for the business world. Get registered as a member of the local or international geological society, or other relevant bodies necessary before practicing as a geoscientist;

register a company (even if it's a business name registration). Operating as a corporate entity instead of an individual increases your "earn ability" and projects you as serious; learn to write business proposals and business plans (these are the basic tools of a true entrepreneur); study to understand basic elements of business like business management, cash flow, marketing and sales, advertising and publicity (these are not as complicated and difficult as you may think at first). This knowledge is invaluable to your survival in business.

- *Monetize your knowledge*: - knowledge in itself is worth nothing except when put to use – "applied knowledge is power". No wonder the best brain academically is not necessarily the richest financially. Geosciences entrepreneurs must seek ways to monetize (apply) all acquired knowledge from geosciences education as this is the only way to profit from them. In monetizing that knowledge, vital questions must be asked, like:
  - What do I know (about a product or information) that the world needs and would be willing to pay for?
  - What is the marketability (demand and supply) of this information at present, and is there a future growth prospect?
  - How do I fit into this whole picture (business industry) – as a producer, supplier, an agent, or a consultant?
  - Where and how can I get the best market price for this information (knowledge) without cheating myself or others?
  - What are the procedures for doing this business, how do I start and how soon can I start?

Precise and accurate answers to these questions will no doubt position the young geoscientist for business and become a seasoned entrepreneur. So in summary to be a successful geosciences entrepreneur, the student must find it (seek the knowledge), learn it (acquire the knowledge), do it (practice what you know), and sell it (market your knowledge to the world).

CONCLUSION

The elevated level of global unemployment stands in stark contrast to the recovery that has been seen in several macro-economic indicators. Similarly, there has been an uneven recovery in labour markets, with continued rise in joblessness in the developed economies and European Union regions, a steady to slightly improving unemployment picture in most developing regions. No doubt, entrepreneurs and entrepreneurial skills/training is much needed today in the geosciences profession than ever before. Also there is no better time to bring back the 'economics' in economic geology or better still 'entrepreneurship geology' course. A Chinese proverb says "the best time to plant a tree is 100yrs ago, but the second best time is now". No time can it be more urgent than now for all stake holders to come together and bring back the lost "economics" from our Economic Geology course in our schools. The geosciences education/training policy makers and the geoscientists/geosciences students must all work together to save the falling geosciences profession.

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