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EDITORIAL

Ladder of Scientific Research to Develop the Developing Nations

"*The process of scientific discovery is, in effect, a continual flight from wonde*r" - Albert Einstein

With the exponential increase in disruption of the delicate ecological balance, humankind is marching towards a new existential threat: "*ecological collapse,*" which is hardly registered in political radars. As a result, the population growth versus the resources are no longer in equilibrium since the rate of consumption of resources is multiple times greater than their availability.

In simple terms, "*Homo sapiens have morphed into mass ecological killers*". [Harari, 2018] Of all activities, the climate change caused due to massive disruption of earth's green coating upto 80% of its total global coverage is more threatening than ever before in history. Therefore, climate change is not a possibility like nuclear war but a current reality or emergency leading to expanded deserts, melting of ice caps, and extreme weather patterns. Such activities have indirectly led to irreversible cataclysm to soil, water and atmosphere. The issue is currently reaching its tipping point where even humans find solutions it may not reverse the tragedy. Even though natural resources were taken for granted for providing sustainable availability of food, potable water, and other human needs, today we face a terrifying situation. The only solutions to address this ecological meltdown and the threats faced by humankind are the promises of research, advanced science and technology and, more importantly, science-led decision making and leadership. We, humans have only very little time left until our environment move beyond the point of no-return. So we need to act fast!!!

Scientific Research, Technology and Economic Disruption

Globally, 'creative economy' has been recognized as a critical force for fostering new drivers of competitiveness and promoting new business opportunities. An inexorable parade of modern technologies is unfolding on many fronts. Over centuries, technological innovations opened up pathways for major lifestyle and market transformations, which today are referred to as "*Disruptive Innovations*". In the modern world, as the tempo continues to hasten, what disruptive "big things" are in store? Nanotechnology, artificial intelligence, and genetics are among the ever-changing long list of "next big things" in the cornucopia of research. However, not every research would lead to emerging technology and alter the business or social landscape—but some truly disrupt the status quo by altering the lifestyle of people and reshuffling value pools or they lay the basic foundation to understand mysterious scientific concepts.

It is therefore critical that we understand which technologies will matter to prioritize the needs based on the social and economic status of a country. For example, emerging technologies like nanotechnology, biotechnology, the Internet of Things, Cloud Computing, robotics, and artificial intelligence (AI) have been successfully adopted to introduce advanced and smart solutions to global food, energy and water related issues. These technologies have already been tested and adopted in developed countries, while developing countries are yet to enter the race of making its systems smart. Research leading to smartness would be a major driver in bringing the next technological revolution. For example, according to the World Bank recommendations for sustainable agriculture practices, climate-smart agriculture (CSA) is an integrated approach to managing landscapes—cropland, livestock, forests, and fisheries - that addresses the interlinked challenges of food security and accelerating climate change. CSA tries to achieve the triple win of increasing agricultural productivity, enhancing resilience, and reducing emissions simultaneously. Therefore, a synergistic approach of greener technological advancements coupled with climate-smart strategies will sooner rewrite the next agricultural revolution.

Similarly, there is an increased scientific focus on replacing fossil fuels with renewable energy sources to meet the climate-smart objectives of "zero emissions by 2050". There is an urgency to develop advanced materials and novel technology to harness alternative energies and storage mechanisms. In addition, successful applications of novel materials particularly based on carbon sources, have already reported their superior characteristics for providing potable water through desalination.

A Journal Publication: Not so Ideal Fairy Tale Ending!

Theoretically, many leaders and policymakers believe that a constant focus on research and innovations leading to social well-being based on a knowledge-based, research-driven economy should become an intrinsic part of their strategic and management plan to develop new offerings, in order to keep in pace with the ever-growing client needs. Meanwhile, in a very unfortunate manner, in many instances, the continual flight from wonder to scientific discovery ends only as a journal publication. Even though it shouldn't be like that, most scientists consider that milestone as the happy ending of their current discovery and move into the next flight of wonder. If one closely observes the world of scientific discovery, the repetition of this same

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cycle of discovery and publication is seen throughout the career of a scientist till his retirement. Indeed the, peer-reviewed scientific publications are highly imperative for the existence of a healthy world of science with accurate information. However, when the bigger picture and the greater positive impact of the scientific discoveries that should have on human lives, confining these innovations only to the pages of a journal is injustice.

In the current context, the target audience of scientific journals is mainly the researchers and academics of similar disciplines. The Government leaders/officials including policy makers and investors who can elevate these new discoveries into commercial scale products are not often interested in reading these journals, which are full of scientific jargon. Therefore, on many occasions the potential of converting lab-scale research to an industry-scale production which will benefit human kind will often go unnoticed. On the other hand, journalists who have the capability to provide necessary publicity for novel innovations are also not readers of scientific journals. As a result, a major portion of the new discoveries in particular arising from the developing part of the world, will be only visible within the relevant scientific community without making greater footprints with practical applications in the human society.

Role of Journal Publications as a Ladder …

On one hand, while not all scientific discoveries have commercialization potential and support policy decisions, even the ones that possess that capacity could go unobserved due to this significant black hole of scientific journal publications, where failing to reach wider important audiences outside the targeted scientific peers. It is surprising that in an era where social media and other methods of new knowledge are easily accessible and widely used, how the new scientific knowledge is not penetrated to the masses. In many cases scientists do what they do because of their personal passion for innovations and not for media attention or other personal benefits. Consequently, they are satisfied after publishing in a good scientific journal which would be sufficient for their career progression.

When it comes to the majority of the journals, they do not show much interest in portraying or communicating the contents of their journal to the general audence in a language that laymen understand. Hence, both the scientific community and journal publishers should work hand in hand in solving this knowledge gap and draw the attention of government officials and investors towards new scientific discoveries. An interesting option would be for scientists or research institutions to maintain active accounts in popular social media platforms like Twitter, Linkedin, Facebook, Instagram etc. Along with each new discovery if they can upload interesting posts and short videos of their discovery in a creative and attractive manner, on these platforms, it can reach a wider audience and grab the attention of non-experts. Also if they can penetrate into the mainstream media like national newspapers, TV and Radio channels about their new work, the chance of catching the eye of an investor or a government official is much higher. According to a research article co-authored by Prof. David H. Hsu "on average, universities only capture 16% of the revenue they help to create through ground-breaking discoveries".

Therefore, giving publicity for the new discoveries can also create opportunities for research institutions to generate more revenue. In filling this void from publication to commercialization, journal publishers can also facilitate and accelerate the process. If journal publishers can go one step ahead and try to bring the published articles to common platforms to reach the public such as social media and other mainstream media in simple language, that would also help to popularize the new innovations.

Redefining the role of researchers….

In today's context, there is an increased attention to position university research as an enabler for economic growth and leadership. Unlike in the past, the roles of universities have been redefined to accommodate "knowledge production, knowledge transmission and economic development" [Caulfield et al, 2012].

As a result, there is a paradigm shift in establishing collaborations with industry and producing research with commercial potential. Consequently, knowledge-driven start-up clusters associated with universities exponentially have increased in developing parts of the world, adopting a more entrepreneurial approach to their activities. Although the commercialization of academic research has led to moderate successes, the desire to commercialize university research is highly encouraged through establishing various tech transfer models, open innovation platforms and encouraging academic entrepreneurship as the next generation economic transformation vehicle.

REFERENCES

Yuval Noah Harari, 21 Lessons for the 21st Centuary, Jonathan Cape Publishers, London, 2018 ISBN 13579108642.

Caulfield, T., Harmon, S.H. and Joly, Y. (2012). Open science versus commercialization: a modern research conflict?. *Genome medicine*, **4**(2), 17. DOI: https://doi.org/10.1186/gm316.

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