Higher Education Institutions Contribution To Research & Innovations Through Public Private Partnership (PPP)

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ABSTRACT

Uganda has pursued a Private Sector-led approach to its economic policy and management over the last three decades. This has put the Private Sector at the forefront of growth and development process of the Country. Among the important roles of Higher Education Institutions is to influence; development of improved technology, knowledge transfer, national unity, promotes democracy, as well as innovation, creativity and increased productivity. However, if Higher Education Institutions are expected to play these vital roles in society and the economy, then collaboration between private sector and Higher Education must be deftly established. However, this can never be successful without the deliberate intervention of the Public Sector in this context, to provide an enabling environment through; policy participation, continuous regulatory reforms and good infrastructure (Hendrickson, R. M., Lane, J. E., Harris, J. T., & Dorman, R. H. (2013). Therefore, the Government of Uganda through Uganda National Council for Higher Education (UNCHE) may intervene by enhancing a worth accreditation systems and promote commendable innovations in higher education. This is critical because UNCHE is responsible for provision of guidance in the establishment of institutions of higher education and assurance that quality and relevant education is delivered (Felix, 2009). Infact UNCHE's main role is to license higher education in Uganda and Accreditation is revocable at the discretion of UNCHE. The Private Sector partnership with higher education institutions in collaboration with Public Sector can energise organisation and prioritise the need for continuous improvement (Bartell, M. ,2003). Most organisations focus on protecting their niche processes and become reluctant to change. Partnership can be a great catalyst for incredible innovation because more learning opportunities are created (Goldsmith, S.,2010). Researchers and Scientists, provide a philosophical and comfortable backdrop. Meanwhile students; fetch spanking new ideas, inimitable perspectives, unrestrained energy, and seemingly boundless drive. Therefore, this paper, illuminates the contribution of Higher Education Institutions Partnership with the Private Sector Entrepreneurial Mindset in collaboration with public sector as a driver in; research, new knowledge creation, innovation and hence enhanced productivity of the economy.

Keywords: Private Sector, Public Sector, Partnership, Higher Education Institutions, UNCHE.

1. INTRODUCTION

Historically, higher education institutions have been praised for their contribution to creating new knowledge, advancing the technology frontier, fostering economic development, and being agents of change in the local and regional communities (Vidican, 2009). Given the larger global dynamics the Private Sector partnership with higher education institutions in collaboration with Public Sector can energize organization and prioritize the need for continuous improvement, this paper explores the contribution of higher education institutions to research & innovations through public private partnership (PPP) (Bartell, M., 2003).

Higher education institutions contribution to innovation and economic development has been widely documented (Tilbury, D., 2013). Preceding studies demonstrate that the manner in which higher education institutions foster innovation is contingent on the technology that is being developed and on industry characteristics (B. Singhal and Martin, 2005). In addition, public policy and regional growth trajectories influence the contribution which Higher Education Institutions make towards economic development (Vidican, 2009). However, the way in which Higher Education Institutions contribute to sustainable development and innovation through public private partnership (PPP) has not been exhaustively recognized. Given the specific context created by global dynamic needs of society, the continued evolving of technological advancement, and the trends that could change the way business owners interacts with consumers, its expected that the role played by Higher Education Institutions, needs to be re- examined.

The paper draws on the rich literature on innovation in different sectors in order to identify differences in the way Higher Education Institutions contribute to innovation across sectors. Besides, the paper examines the nature of collaborations with the Private and the public sector in enhancing Research & Innovations. The current study strongly believes that Higher Education Institutions play a key role in both technology advancement and economic development, and conjecture that the way in which the goals are achieved depends on the specifics of the sector(Koremenos, B., Lipson, C., & Snidal, D.,2001).   The paper confirms earlier research that Higher Education Institutions are critical for innovation and economic growth. However, the mechanisms, through which Higher Education Institutions contribute to Research and Innovation in the private and public sector are different. This is very much attributed to the emerging nature of the private sector led industry, where almost all technological innovations are being developed by organisations in-house. However, Higher Education Institutions are critical in advancing   the technological cutting edge and in setting up the schema for future Research and Innovations, by providing legroom where; researchers, the private and the Public sector, can come in concert to explore technology and industry passageways. In addition, universities are instrumental in creating new domains of knowledge that support the development of new innovations in all sectors and address larger societal concerns regarding sustainability.

2. PUBLIC SECTOR MEDIATION THROUGH ACCREDITATION SYSTEMS AS A PRECURSOR TO RESEARCH & INNOVATION

For the most part institutions of advanced education play the imperative role of serving the public over and above as a spring board for innovations and creativity (Haddawy & Igel, 2006). However, if Higher Education Institutions are to play the imperative role in society and the economy, then certain measures must be established to enable them achieve the purpose(Sanyal, B. C., & Martin, M., 2,007). The Third International Barcelona Conference on Higher Education was held in November 2006 with a focal point on accreditation (Haddawy & Igel, Fostering Innovation in Higher Education, 2007). A momentous subject matter appeared in presentations

and discussions (Harvey, L., & Newton, J., 2007); that the need for accreditation systems that promote innovation in higher education cannot be underestimated.   (Sanyal & Martin, 2007) asserts that accreditation systems may, in reality, stifle innovation and (Ginkel & Dias, 2007); strongly supports this view by affirming that approaches in quality assessment and accreditation will honor diversity and promote innovation and creativity in higher education(Badat,S.,2010). Accreditation most especially in Uganda is generally a method of quality control and assurance in higher education whereby, as a result of inspection assessment and/or both (Materu, P. N., 2007); a Higher Education Institution or its programmes are recognized as meeting minimum acceptable standards(Osseo-Asare, A. E., & Longbottom, D. ,2002).Therefore, this means that Public Sector as a partner has a mandate to regulate Higher Education Institutions and preserve a fundamental responsibility in enhancing Research and Innovation in these institutions. (Adelman, Clark, & Neave(Eds), 1992) as well as (Ginkel & Dias, 2007) observe that quality in higher education cannot be seen as conformity to a standard, however, it is supposed to promote creativity and innovation and the approach to help ensure that regulations do not impede innovation(Miron, E., Erez, M., & Naveh, E.,2004). On implementation of the power conferred on the Uganda National Council for Higher Education of the Universities and Other Tertiary Institutions Act, Statutory Instruments can be premeditated to fruitfully guide the process.

3. ENTREPRENEURIAL HIGHER EDUCATION INSTITUTIONS

It is demanding to discern that private sector is dominated by Entrepreneurs who distinguish themselves through the ability to accumulate and manage knowledge, as well as the ability to mobilize resources to achieve a specific business or social goals (Kuemmerle, 2002); Austin, J., Stevenson, H., & Wei–Skillern, J. ,2006). Personal characteristics required therefore include; leadership, decisiveness, and competitiveness (Cardy, R. L., & Selvarajan, T. T. '2006). Important factors in personal style include; will power, self-discipline, comfort with the planning process, and working with others (Haddawy & Igel, Fostering Innovation in Higher Education, 2006);Schrum, L., & Hong, S. ,2020)

Flourishing entrepreneurs turn out to be; on familiar terms with an opportunity while it is still taking shape. An opportunity maybe defined as favorable juncture of circumstances with a good chance for success or progress (Renko, M., Shrader, R. C., & Simon, M., 2012). Opportunities come out for the reason that there are varying; circumstances, inconsistencies, chaos, lags, or leads, information gaps, and a variety of other vacuums (Chandler, G. N., & Hanks, S. H. (1994);and because there are entrepreneurs who can recognize and seize them (Vinturella, 1998). The process of creating or seizing an opportunity is less the result of a deliberate search than it is a mindset of maintaining a form of vigilance that is sensitized to business opportunity (Haddawy, P., & Igel, B. ,2006).

The entrepreneur is often quite different in mindset from a manager, who is generally charged with using existing resources to make an Existing business run well (McGrath, R. G., & MacMillan, I. C., 2000). The roles

of entrepreneur and manager are not necessarily incompatible, but entrepreneurs are seldom patient enough to be good managers (Haddawy, P., & Igel, B. ,2006).

Entrepreneurship is generally characterised by some type of innovation, a considerable investment and an approach that values growth (Baumol, W. J., 2005). Conversely, whilst (Drucker, 1993), advocated that innovation is the specific instrument of entrepreneurship, (Schumpeter, 1934) had thought that the embodiment of new knowledge in the innovation process is the core function of entrepreneurship (Röpke, J.,1998). Accordingly, entrepreneurship is more of an attitude than a skill or a profession (Pihie, Z. A. L., & Akmaliah, Z., 2009). There is a difference between learning how to be, and succeeding as an entrepreneur (Minniti, M., & Bygrave, W. 2001). The philosophies of entrepreneurship cannot be engrossed inertly, for the reason that they are based on the power of scrutiny and critical thinking (Brookfield, S. D., 2017). Critical thinking leads to creativity which is a springboard for Innovation.

Higher Education Institutions that want to become entrepreneurial must transform from an institution of research and teaching to become a place where entrepreneurship is nurtured and innovation created (Nicolaides, A., 2011). Entrepreneurial Higher Education Institutions enable all members of the academic community to apply new knowledge in action rather than controlling teaching, learning, and other processes (Hannon, P. D., 2005). An entrepreneurial environment is one that encourages open dialogue and debate that welcomes change, which encourages people to take calculated risks; that is tolerant of failure, and that focuses more on the long-term process of moving the organization forward rather than on short-term outcomes (Haddawy, P., & Igel, B. ,2006). In order for an accreditation system to evaluate the degree to which institutions foster innovation, they must measure stated factors (Haddawy, P., & Igel, B., 2006). This can be done in stipulations of evaluating; processes and outcomes. There has been a strong trend recently toward the use of outcome evaluation in accreditation, particularly in terms of measuring student outcomes M. Leonard (2006); Haddawy, P., & Igel, B., 2006). The outcomes of innovation environment should rotate around introduction of new interdisciplinary programs, new pedagogical techniques, new modes of collaboration with industry, and new approaches to administration and more importantly emphasis must be placed on evaluating the structure and processes to foster innovation(Arciénaga Morales, A. A., Nielsen, J., Bacarini, H. A., Martinelli, S. I., Kofuji, S. T., & García Díaz, J. F. (2018).Specific structures and processes as advanced (Ramanathan, 2005) are:

- mechanisms to support high-risk, high-return ventures; (Zhanghuaiming, L. L. ,2005) e.g thru capital ventures
- Existence of forums for discussion of strategic directions with a broad range of stakeholders, including faculty, staff, students, alumni, and representatives from the public and private sectors ;(Hinton, K. E. ,2012). In actual sense these forums have to be formalised for efficiency and effectiveness.

- a system of leadership that empowers faculty, staff, and students to pursue innovative ideas, including those that originate outside the normal planning processes; (Fetterman, D. M. (2001). Such will be of great importance as it would encourage so many participants.

- Capability to develop expeditionary and future-oriented market intelligence for the development of new products and processes (Sparrow, P. (1995).

- Open administrative structures that foster interdisciplinary dialog and facilitate creation of interdisciplinary programs (Pharo, E., Davison, A., McGregor, H., Warr, K., & Brown, P., 2014) e.g Agriculture Faculty working with business faculty.

Some universities, colleges, and research agencies have such arrangements and procedures in place already but need to streamline further as a matter of priority (Bardach, E., & Lesser, C. (1996). This is very critical for success of not only these institutions but the entrepreneurship fraternity as well.

4. HIGHER EDUCATION COLLABORATIONS AND PRIVATE SECTOR INNOVATION

Innovation comes to businesses in many ways but relies on a diversity of thought (Wondolleck, J. M., & Yaffee, S. L. (2000). Nevertheless, differing viewpoints have been known to encourage greater innovation(Shalley, C. E., & Gilson, L. L. ,2004).Diversity of thought might be deficient, then the alternative is to gaze outside the organisation for varying point of views (Lucy, J. A. ,1992);— a likely reason why accelerators have grown in popularity (Dan Lauer, 2019). Many companies choose to establish innovation labs as a way of encouraging diverse collaboration but despite any differences in set up , the goal is the same (Sampson, R. C. ,2007): engaging a diverse group in creating sometimes-radical solutions(Falardeau, M., Raudsepp-Hearne, C., & Bennett, E. M. ,2019). This therefore providers a rare opportunity for Higher education Institutions to create even more learning opportunities (Williams, J. B., & Jacobs, J., 2004). Researchers, scientists, and other faculty members will provide a deeper and richer landscape (Gill, T. G., 2010). in the meantime, students will bring fresh ideas, unique perspectives, unbridled energy, and seemingly limitless drive (Tichy, N. M., & McGill, A., 2003). This will automatically depend on the conducive environment given to them to express their opinions and come up with new ideas.

Partnerships with higher education institutions can rejuvenate companies, prioritizing the need for continuous improvement rather than routine best practices (Anand, G., Ward, P. T., Tatikonda, M. V., & Schilling, D. A. ,2009). Most companies focus on protecting the processes mastered and become reluctant to change (Kanter, R. M., 2003). Hence Collaboration can be a great catalyst for incredible innovation (Dan Lauer, 2019); Bustos, C. A., & Moors, E. H. (2018). A public-private partnership allows smart people at the top of their fields to collaborate toward a common goal Fogelberg, H., & Thorpenberg, S. (2012). This adds layer upon layer of perspectives, creating a diverse mindset and generating the sort of intentional friction that benefits large

corporations (Sekulova, F., Anguelovski, I., Argüelles, L., & Conill, J. ,2017). To successfully collaborate with higher education institutions, you need to first work through some processes (Kezar, A., 2005);

– **Reflect on collaborator credentialing:** Time is the most precious commodity, outweighing even capital investment (Forbes, K. J., 2002). This is especially true for academics, who often juggle teaching with research and professional practice (Boyd, P., & Smith, C. (2016). As a result, it becomes crucial to systemise the way potential collaborators are identified. Companies pitch the requirements and students pitch their unique skills (Bilén, S. G., Kisenwether, E. C., Rzasa, S. E., & Wise, J. C., 2005). Equally they have a possibility to mingle before the students rate the companies and the other way round (Carmon, Z., Wertenbroch, K., & Zeelenberg, M., 2003). Important of all is to find a match and complementary skill sets(Mitsuhashi, H., & Greve, H. R. ,2009)For example, a company weak in social media could benefit from a marketing student who specializes in social media or user experience.

– **Set goals around the innovation conduit:** Fresh perspectives filtered through intentional processes will drive innovative solutions (Di Sciullo, A. M., & Boeckx, C. (Eds.). 2011). Focus on bringing together the best and brightest individuals to solve specific problems(Hsu, S. H., & Shen, H. P., 2005). Outside submissions and viewpoints can help companies solve problems and add to the innovation pipelines, but each expert or participant must contribute toward a common goal(Hsu, S. H., & Shen, H. P., 2005); For example, most students are digital natives who have grown up with a different technological perspective than individuals in leadership. That perspective can be invaluable when held up against a roomful of longtime employees who have relied on the same processes for years Kunda, Z. (1999). In essence such a group may need to assisted to develop a positive attitude for change.

– **Give collaboration adequate time:** Given time in a collaborative setting, it becomes better able to test assumptions, discover untapped markets, and fail fast enough to learn something — and in a safe environment, no less(London, T., & Hart, S. L. ,2004). In broader terms, ample time and space must be provided for bad ideas and good ideas to sort themselves out (Bacharach, S. B.,1989). A timeline ought to be Set whilst tackling definite predicaments such as mindset, process, lack of funding/resources, and lack of time(Keevy, J., Vally, Z., & Paterson). Successful entrepreneurs are successful collaborators, and it is therefore important for everyone involved to adopt entrepreneurial mindset, upholding teamwork and suppressing individual attainments (Woolcock, M., 1998). When it comes to innovative collaboration, some of the best partnerships result from companies working with higher education institutions world over who work towards a shared goal, and unlock new and unique solutions (Green, B. N., & Johnson, C. D., 2015). Collaboration should not only be limited to only a few institutions but should be internationalized since the world is now a global village.

5. THE FOURTH INDUSTRIAL REVOLUTION AND INEVITABILITY FOR INNOVATION

The World Economic Forum (WEF) released a report in 2018, about the future of jobs (Jeyanthi, P. M. ,2018). which stated that "A cluster of emerging roles will gain significantly in importance over the coming years, while another cluster of job profiles are set to become increasingly redundant."(Androniceanu, A. M., Georgescu, I., Tvaronavičienė, M., & Androniceanu, A., 2020). Also, the Organisation for Economic Co-operation and Development (OECD) estimates that in the next couple of years, 14% of jobs are at high risk of being fully automated, while another 32% are at risk of significant change (Bolarinwa Olajire, 2019); (Arntz, M., Gregory, T., & Zierahn, U. ,2016). This means new technologies will augment human work and upgrade job quality, and this advancement in technology will lead to workforce transformation (Rüßmann, M., Lorenz, M., Gerbert, P., Waldner, M., Justus, J., Engel, P., & Harnisch, M., 2015). In the WEF report, it was stated that a range of roles that are set to experience increasing demand include

– Data analysts and scientists

– Software and applications developers

– E-commerce and social media specialists

– Artificial intelligence and machine learning specialists

– Big data specialists

– Process automation experts

– Information security analysts

– User experience and human-machine interaction designers

– Robotics engineers and block chain specialists Daniels, J., Sargolzaei, S., Sargolzaei, A., Ahram, T., Laplante, P. A., & Amaba, B. 2018).

The report therefore has opened everyone eyes to the fact that the world is changing (Drucker, P. F., 1998). And all and sundry who wants to be a partaker of the good things that it offers must follow the trends as they unfold before our eyes (Harper, M., 2008). It is only people who are equipped with future-proof skills that can take advantage of new opportunities (Meng, L. L., 2009). This will in away should direct the future educational plans and curriculum designs.

The Fourth Industrial Revolution (4IR) is simply a digital revolution, and this means that industries are set to take different routes in the adoption of new technologies (Jones, C., & Pimdee, P. ,2017). Higher Education institutions must therefore collaborate with both the public and private sector to prepare for the coming revolution (Konvitz, J., 2016).Currently, the higher education institutions in Uganda are experiencing inadequate funding and dithering enthusiasm in the work of professors and Lecturers. This is a critical condition because the Lectures may never guide the students to prepare for the dynamic society. Henceforth there is need to evaluate the education policy and other crucial areas in our educational sector (Singh, G., 2002). The review of the curriculum will help higher education institutions to adopt better ways of creativity and Innovation which will attract the Private sector to collaborate with these institutions. However this will only be possible if

education sector obtains much focus from the government for improvement. Henceforth policy-makers, government, lecturers, regulators and all stakeholders generally need to use the current trend of events to see the need to review the education sector and fund it adequately (Sultana, R. G., 2004).

More so, students need to be involved in critical thinking, analysis and solving complex problems rather than remaining stuck on Lecture notes which may not be relevant to the current trends (Felder, R. M., Woods, D. R., Stice, J. E., & Rugarcia, A., 2000). The current environment requires relevant skills like; analytical thinking and innovation(Prud'homme van Reine, P., 2017);active learning and learning strategies(Phillips, J. M. ,2005); creativity; originality and initiative; technology design and programming(Van der Wolf, P., de Kock, E., Henriksson, T., Kruijtzer, W., & Essink, G. (2004,); critical thinking and analysis;(Cottrell, S. (2017); Complex problem-solving; leadership and social influence(Ruben, B. D., & Gigliotti, R. A. ,2016); emotional intelligence; problem-solving and ideation; and systems analysis and evaluation(Siau, K., & Rossi, M. ,2011). Hence forth it should be noted that the world is gradually moving away from the old type of skills, which are memory, verbal, auditory and spatial abilities to mention but a few (Ornstein, R. ,2003). There is an urgent need for higher education institutions to review the current curricula and policies for creativity and innovation to take route rest the words will only remain redundant and perhaps will be mentioned theoretically in speeches, conferences and scholarly articles and the graduates will not be able to cope with the new dynamics and this will make the institutions immaterial (Scott, P. (1995). This will be the best feasible way to leap a giant step in the enhancement of the education sector towards practical solutions.

6. RECOMMENDATIONS FOR UGANDA'S PRIVATE SECTOR, HIGHER EDUCATION INSTITUTIONS AND THE PUBLIC SECTOR (GOVERNMENT) COLLABORATION

University researchers are making breakthroughs across a range of subject areas, like renewable energy, material science, medical technologies, and Big Data (Wang, Y., Kung, L., & Byrd, T. A., 2018). To ensure these innovations grow into job-creating commercial products and services, government, industry, and academia must collaborate throughout the innovation process (Willcocks, L. P., Venters, W., & Whitley, E. A., 2013). This would be a great strategic focus for the country. Innovation is vital to Uganda's economy desperately in need of job creation and hence this paper makes the following recommendations:

6.1 PUBLIC SECTOR/ GOVERNMENT
– *Establish funding for research:* Investments that generate new industries, products, and our national budget(Lin, J. Y. (2011). Investment in research should be made available through the National Council for Science and Technology as well as National Council for Higher Education.
– *Prioritise funding for research:* in conformity with Kintu, D., Kitainge, K., & Ferej, A. (2019) the government of Uganda must work with industry to better understand the scientific and technical gates to

the next-generation solutions, and fund research that directly relates to solving Uganda's most essential needs.

– *Invest in affordable education by strengthening government investment in financial aid:* (Birdsall, N., Levine, R., & Ibrahim, A., 2005). Innovation comes from people (Humphrey, W. S., 1987). The student component of university research programs is essential (York, C. M., & Tross, S. A., 1994). A unique strength of research universities is the graduates who understand the innovations of today so well that they will continue developing the innovations of tomorrow (Christensen, C. M., & Eyring, H. J., 2011). This should be an inclination for all universities to achieve positive results.

– *Invest in MSMEs Research:* The Micro-small and Medium enterprises contribute a lot to Uganda's economy and therefore government should support Small Business Innovation Research and Small Business Technology Transfer programs at their infancy perhaps through business incubation centres, because currently they are underfunded (Chavez, T. H. (2015); limited to an extent that some cannot even mange the patent costs which makes the innovations vulnerable.

– *Support Higher Education Innovations*,: The government should provide support to both Private and Public Higher education institutions to enable them to commercialise the innovations made. In the absence of some allocation (George, G., McGahan, A. M., & Prabhu, J., 2012), towards innovation commercialisation, Higher Education Institutions most especially the private ones will have a great challenge to bring the innovations to fruition.

6.2 HIGHER EDUCATION INSTITUTIONS

– *Set straight the terms for research and partnership agreements:* Academicians must work firm to set straight for industry how to work with Higher education institutions (Moy, X. M. ,2015). The terms for each party in the collaboration must be clearly stipulated to avoid legal consequences which most of the time limit collaborations.

– *Share costly core amenities:* Higher education institutions and industry can lower the overall cost of innovation and product development by sharing expensive research facilities like Laboratories (Ertugrul, N., 2000). The laboratories which most of the time require expensive and sophisticated equipment may not be affordable for either side and hence the costs can be managed through such collaboration.

– *Provide Postdoctoral Opportunities:* In the effort to move innovative discoveries to market, higher education institutions most especially universities should find ways to hold on to the essential entrepreneurial contributions of graduate students after they complete their graduate degrees (Mcmullan, W. E., & Long, W. A. (1987). New post-doctorates can go a long way in improving and comercialising these projects, to the extent of transmitting to the industry and society.

6.3 PRIVATE SECTOR/ INDUSTRY

- *Budget and Invest in Research:* The academicians may have all it takes to research and nurture projects but the limitation in funding has a big impact on the output. The private sector support on such inititivaties will be a giant step in economic development of Uganda.

- *Give opinions on industry needs*: The private sector is very much aware of the challenges faced by industry and society and therefore can have an input on indentifying critical areas for research and innovations (Mazzucato, M. ,2018). Private sector should contribute to designing of designing experiments and research programs about the impediments in future generation product design and development.

- *Join Private sector Associations:* In Uganda we have associations like Private sector Foundation, Uganda manufacturers Association, Uganda national Chamber of commerce and industry to mention but a few . It is important to work together as private sector because this will create a formal focal point for collaboration management. Ideas for research can be consolidated by the Associations which in turn can work with government support agencies like Uganda investment Authority, Ministries of Trade and Finance, Uganda Export Promotion Board to work out a model which can enhance the collaboration with higher education institutions on the facade of research. The National Council of Science and Technology as well as National council for Higher Education should give guidance on best practices in establishing these collaborations.

7. CONCLUSION

To countenance the global innovation challenges, partnership between stakeholders from private sector, Academia, Public (government), non-governmental organizations (NGOs), Regulators (NCHE) is essential. Public and private actors are leveraging capital, resources and knowledge to develop innovative solutions to global challenges. Interdisciplinary, translational and innovative research and development (R&D) is realized in PPPs by combining different ideas, skills, and expertise in technologically demanding areas. In addition, sharing knowledge with competitors at the precompetitive—and even at a competitive—stage is increasingly considered to be both relevant and viable. Regardless of the difference in short-term expectations the different stakeholders may have, essential elements for successful R&D PPPs are trust and a shared view on the PPP's mission and long-term outcome.

Institutions in higher education must therefore adopt research and innovation to play a central role in the advancement of societies and economies Deiaco, E., Hughes, A., & McKelvey, M. (2012). This will foster economic growth, strengthen technological progress, and enhance job creation Clinton, P. W. J. (1993). The greatest probable domino effect can be attained when the institutions obtain modern and effective management.

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