The strategic role of partnerships between universities and private corporations as a driver for increasing workforce competitiveness in a global economy

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Abstract. *A global economic context means increased competition as corporations face contenders from other countries, and there is a wider range of choices on the market available to consumers. This global competition drives economic actors to seek competitive edges to increase the efficiency of their operations; within this global economy, corporations seek these advantages, outsourcing their activities in order to make use of the opportunities of globalisation. The same situation can be encountered on the labour market. While the expansion of economic activities globally often means increased employment opportunities, it also means that job seekers from around the world need to become more competitive on the job market to attract better employment opportunities. Workforce competitiveness is determined by various factors, like availability and ease of access (i.e. job market legislation), level and quality of education, and cost. The level and quality of education are of particular concern, as it gauges the potential of the workforce, and is the cornerstone of the controversial “skills gap”, based on a common complaint of corporations regarding a shortage of skilled employees. Acknowledging the importance of this factor, numerous companies have concluded partnerships with local universities, leading to intimate connections between the business environment and education. Thus, in the same manner that supply and demand shape the markets for typical goods and determine the success of a market, these partnerships between universities and corporations influence the labour market, bringing together demand (i.e. the corporations seeking skilled employees) and supply (universities and education centres training the future workforce). There are numerous long-term benefits that such partnerships can bring to a country’s education sector. As such, the present paper seeks to examine the strategic importance of partnerships between academia and industry as a key driver in defining the competitiveness of the workforce, with a case study on Uzbekistan.*

Keywords: innovation, knowledge, education, competitiveness, globalisation.

Introduction

That today’s globalised landscape has led economic activity to transcend geographical boundaries is a well-known fact. This means that consumers now have access to a larger array of goods and services, thanks to more economic agents being present on the market. Information technology has greatly contributed to this state of affairs and has now permeated several facets of everyday life, including culture, society and security. One consequence of this is increased competition, meaning that a company must differentiate its services and products from its competitors and establish its image and brand in the consumer mindspace. Ergo, companies must learn to be innovative; for that end, they require people capable of working with information, also known as ‘knowledge workers’.

The market of human resources has now also grown in size, companies who branch out their economic activities abroad have access to a larger pool of job candidates, leading to increased competition among job seekers. Given the previously described employee profile, job seekers need to distinguish themselves from other candidates through the array

of skills and abilities they possess, so they need proper training and education to acquire them.

The hypotheses that the paper investigates are the following:

- Innovation is a crucial factor in increasing economic competitiveness
- If the above is true, then education is extremely important for workers in order to become more competitive
- Countries with higher levels of education would experience better economic performance;
- Conversely, a lack of a properly educated workforce in a given country would be conducive to poor economic performance

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Industry – university partnerships bring together universities as providers of education, training and knowledge, on the one hand, and employers as seekers of knowledge workers, on the other hand; therefore, they should be beneficial for both sides.

Methodology

The present paper employs a qualitative method based on deduction and induction in order to uncover the prevailing trends in the global labour market with a focus on the need for knowledge workers. The framework within which these methods are applied is that of the labour market at the intersection of the supply of labour (job candidates) and the demand of labour (businesses), with universities as an additional entity in this picture, mediating to a certain extent the relationship between supply and demand and acting in its own turn as the supply side of knowledge and skills.

Deduction and induction are used firstly on the existing body of literature to identify common trends of relevance to the paper's research goals and highlight the role of knowledge and innovation in defining competitiveness in today's economic environment; the role of industry – university partnerships in boosting employment and workforce competitiveness and benefit the economy over time.

A case study is then used on Uzbekistan, a country located in Central Asia noted for its significant natural resources, population and geostrategic position, yet confronted with several political, societal and economic issues that undermine its potential and entail several vulnerabilities. The case study analyses these vulnerabilities and using the previously indicated methods, seeks to determine the extent to which they can be alleviated via university-industry partnerships and improvements in the education sector.

The main assumptions that this paper uses are the following:

- Labour markets are determined by the binomial forces of supply and demand;
- Employers, as the demand side, seek to maximise their gains by seeking workers which can help them attain a competitive edge;
- Workers, as the supply side, seek high quality employment opportunities that best respond to their training, needs and professional goals.

Competitiveness and economic performance in the Information Age

Globalisation has facilitated an increase in connectivity among agents across vast geographic distances. In this context, a market flourished for a certain commodity exchanged via this medium: information. As technology and its prevalence in economic activity increased, so did the role of information, to the point where a new type of society

was defined, namely “the information society”, succeeding its industrial predecessor. Webster (2006: 9) stated that “theoretical knowledge/information is at the core of how we conduct ourselves these days”, referring to the information society. Webster further notes the close connection between traditional conceptual, information-intensive activities such as research and development, and other economic sectors that, despite not relying as heavily on information, make use of the input received from the former.

An adjacent concept is that of the “knowledge economy”, defined by the Organisation for Economic Cooperation and Development (1996) as an economy directly based on the production, distribution and use of knowledge and information. Peter Drucker too (1998) notes the increasing role of information as a factor of production, connected to both capital and labour. Keith Smith (2002, 5) states that knowledge investments “are not confined to high-tech sectors, and not confined to R&D”, criticising the OECD definition as being too vague to identify truly knowledge-intensive economies, arguing that information is more or less pervasive in all economies.

Fatma Utku-Ismilhan (2012) found a positive influence of higher levels of knowledge on Turkey’s economic growth. Nguyen and Nguyen (2015) analysed the economy of Vietnam, concluding that, in the absence of stronger development in terms of knowledge, the economy risked experiencing a decline, while Lorena Bătăgan (2008: 27) states that „knowledge has become the key driver of economic competitiveness and success”, adding „massive value to economic production through increases in productivity”.

Knowledge, as a commodity, has certain particular characteristics: it is immaterial, typically requiring only a material support to be communicated through, and it is not depleted upon consumption, but rather it is its own fuel, and the more knowledge is assimilated, the higher the chance to gain more knowledge through innovation and research, which can then bring added value to a company’s goods and services and therefore better economic performance. The scarcity of knowledge has, however, ambiguous effects depending on its scale and breadth (i.e. a strategic advantage for a company in its sector, but deleterious to society as a whole when widespread). Consequently, what companies value most in a workforce is its capacity for assimilating, adapting to, and working with new knowledge.

Seeing that knowledge-intensive economic activity tends to be associated with better economic performance and competitiveness, and given that human resources are a crucial part of developing a knowledge-based economy (Nguyen & Nguyen 2015, Enache et al., 2009), it is reasonable to conclude that educating and preparing a workforce capable of working with knowledge is of paramount importance to ensuring competitiveness, especially to avoid economic slowdowns or even stagnation.

The role of education in economic competitiveness

The important role of education in defining an economy’s competitiveness is well covered in economic literature. Adam Smith was one of the first authors to draw attention to the socio-economic benefits of a high level of education among the populace (Smith, 1776).

Similarly, Martin West (2012: 2) argues that educational improvements lead to an increase in the productivity of the workforce, while investments in science and engineering increase the likelihood of technological advances. In developing countries, education can effect a host of socio-economic boons, e.g. reduced crime rate, poverty and instability. Benhabib and Spiegel (1994) propose that the impact of education on the economy occurs

in two instances: through domestic innovations, and through the rate at which external innovations are integrated in domestic economic activity. Nelson and Phelps (1966) have also found that “the rate of return to education is greater the more technologically progressive is the economy” (1966: 75).

Muscalu et al. (2014) emphasise the role of knowledge workers in today’s global competition with its increased demand for highly skilled and educated employees, where education is an important factor alongside expertise and experience. The authors define the profile of a knowledge worker, whose tasks typically involve creating, distributing and applying knowledge, and state that their work performance decisively influences the performance of the organisation itself.

In the same vein, Antonio Caleiro (2011) maintains that education brings numerous individual and social benefits, such as improved health, productivity, equality of income distribution, a larger contribution to ensuring democracy, promoting peace and stability as well as increased economic competitiveness, the latter due primarily to the extent to which existing technology can be applied by the workforce. Sales Pimenta (2015), found a strong correlation between investments in education and economic growth in his analysis on the case of Brazil, stating that education lies at the foundation of sustainable growth, while Mlo Lins (2011) states in his review that, at least up to a point, a mandatory factor to ensure a certain level of economic growth.

Knowledge workers, therefore, are valuable for several reasons: the skills, abilities and knowledge that they have acquired through training, their affinity for working with novel problems and concepts, and the extent to which they lend themselves to continuous, life-long learning. These represent the key attributes that a knowledge worker must possess in order to distinguish themselves on the labour market, and ensuring an environment that favours their acquisition and development is an important public policy goal.

Partnerships between universities and corporations

Inasmuch as universities are centres of producing, diffusing and generating knowledge as well as training people for the labour market, we can deduce that they can contribute greatly to bringing together the needs of employers and those of job seekers; therefore partnerships between universities and industry would lead to better communication between the demand and the supply of the labour market, and it would be beneficial for both employers in need of strong candidates, and universities in need of funding and support.

As early as the early 20th century (Wood 2014), private companies have been collaborating with universities and education centres to train specialists with the skills that best respond to their needs. Initially focused on computer science and technical education, this type of partnerships (also called “industry university partnerships”, or IUPs) has become more and more common, and is now a part of the so-called “Open Innovation” model emphasising the use of external sources of ideas to stimulate innovation and creativity.

Different authors have articulated similar views about the potential economic impact of IUPs. For example, Corzo (2015) offers a historical perspective on these collaborations, citing the success of the partnership between academic staff from the Massachusetts Institute of Technology (MIT) and Standard Oil of New Jersey, ultimately

resulting in a technological breakthrough in the petroleum industry. Corzo underscores the complementary nature of the needs of universities and corporations, with universities needing funding and logistical support, and with companies outsourcing their research and development activities in a bid to maximise efficiency and cope with budget cuts. She also points to increased economic volatility, fast-paced technological progress, growing interdisciplinarity and greater competition from emerging countries as a factor that renders such collaborations necessary. **PICBE | 1150**

Marilynn Larkin's views (2014) concur with those of Corzo, and states that despite the perceived gap between academic research and its lucrative applications, there is a trend to bridge that gap via stronger ties between academia and industry. One example she cites is that of the Max Planck Innovation centre in Germany, which submits approximately 80 patent applications per year, receives significant funding from licensing agreements (in the region of 20 to 30 million USD annually) and helped create 112 companies based around its discoveries. Another example is that of the New York-based Cold Spring Harbor Laboratory (CSHL), which "supports 52 investigator-led research laboratories, is an incubator for more than 20 biotechnology spinoffs and has 605 active patent cases pending for 280 technologies and 872 technology transfer agreements of various sorts".

IUPs typically occur on a case by case basis, centred on a single research project, often lacking an overarching structure or a strategic framework (Perkmann and Salter, 2012). Corzo (2015) notes that IUPs have mainly been conducted on a transactional basis, with minimal risks, yet also yielding little gains for universities in terms of revenue, and for companies in terms of knowledge gained. As universities provide substantial human resources and potential while companies provide modern technology and industry-related know-how, there is significant value in promoting a more structured, strategically-minded relationship between the two. Fatland (2014) also opines that in order to secure the most benefits from their collaborations, corporations and universities need to set up a strategically future-oriented framework in which job prospects for students would be significantly improved following college graduation. A joint mission statement may therefore serve as a starting point, according to Fatland, which can gradually grow from simple exchanges (such as logistical support) to deepened types of collaboration, such as joint research projects; this would, in turn, support regional economic growth.

In support of a more strategic outlook on industry university partnerships, Edmondson et al. (2012) bring to the forefront several key factors required for the success of policies in this aspect: a stable environment with transparent, predictable regulations, autonomy for universities, government incentives, rewarding and promoting the best universities to further encourage more deals between businesses and universities. Corzo (2015) is another proponent of strategic alliances with a long-term orientation, which she described as high-risk, but also high-yield with the most potential for a powerful impact. The main factors that affect the success of such alliances that Corzo cites are a clearly defined common vision, the promotion of key people in key roles, facilitating communication and the exchange of ideas, an agreement on the use of intellectual property and investments, among others.

The economic impact and benefits of such partnerships have been recognized by governments. One of the most well-known types of government programmes was the Knowledge Transfer Partnership in the United Kingdom that aim to stimulate innovation with partial funding from the British government for collaborations between companies,

higher education institutions and graduates. In order to assist policymakers in promoting these collaborations, the United Nations Education, Scientific and Cultural Organisation (UNESCO) has launched the University-Industry-Science Partnership (UNISPAR) in 1993 that aims to “improve the quality of universities in developing countries and encourage them to become more involved in the process of industrialization of their country” in order to “strengthen their capacity for innovation, so that they can embrace the knowledge economy and sustainable development”.

That governments should pay particular attention to the dynamics of industry university relationships is explainable when taking into account the role that such collaborations have in driving economic growth. Mueller (2005) found that, as countries with greater entrepreneurship and innovation capacities perform better economically, and given that universities are sources of innovation, regions with collaborations between businesses and universities experienced greater economic growth, but also pointed out that innovation and generation of knowledge needs to be accompanied by policies meant to commercialise and explore new knowledge.

What we observe is that IUPs bring much promise to boost economic performance. Moreover, knowledge generated in this manner stimulates entrepreneurial initiative and attracts foreign investors, bringing greater competition among companies with its assorted benefits for the economy and the workforce. With that said, it should be taken into account that the effects of these collaborations on the local or national economy tend to be more prominent when they take place on a wider scale, within a clear, transparent framework, with support from the government.

The case of Uzbekistan’s workforce

Uzbekistan’s workforce boasts a series of qualities that can be prevailed upon to improve its economy: according to the CIA World Factbook (<https://www.cia.gov/library/publications/the-world-factbook/geos/uz.html>), its labour force amounts to approximately 18 million people out of its population of over 29 million people, with over 63% of its population aged between 15 and 54. The World Bank (<http://www.worldbank.org/en/news/feature/2015/02/02/taking-steps-to-improve-the-labor-market-in-uzbekistan>) estimated in 2015 that Uzbekistan’s labour force was projected to grow by nearly 4 million people before the year 2030. Furthermore, almost its entire populace (99.6%) is literate as reported by Index Mundi (<http://www.indexmundi.com/uzbekistan/literacy.html>), well above the world average.

However, these stats do not necessarily translate to increased economic performance and welfare. The situation of the labour market in Uzbekistan is not easy to pinpoint, given the local public institutions’ lack of transparency and the caution required in interpreting available data. For instance, the CIA World Factbook notes that, while Uzbekistan’s official unemployment rate is low, just shy of 5% (2016 estimates), at least 20% of the active workforce is underemployed i.e. works jobs that underutilise their acquired skills (one common example being over-qualification in relation to the jobs).

Another issue is elaborated upon by BBC (<http://www.bbc.com/news/blogs-news-from-elsewhere-23055365>) who reported that up to a third of Uzbekistan’s workforce seeks employment opportunities abroad, particularly in Russia, in the hopes of greater financial gains. This view is also held by Ahunov et al. (2015), whose research estimated that remittances from Russia alone amounted to over 12% of Uzbekistan’s GDP in 2013.

The same report by The World Bank estimates that over 50% of its workforce is employed in the informal sector, while another report (Ajwad et al., 2014), have found that 73% of employers in Uzbekistan complained of a lack of skilled workers, and that this was an important hurdle to the development of their businesses. A report by UNICEF (<https://www.unicef.org/ceecis/Uzbekistan.pdf>) found that only 15% of the country's population was enrolled in tertiary education, and also noted that, despite the high rates of literacy, the quality of education provided was of low quality.

The picture that emerges is that Uzbekistan is confronted with a suboptimal allocation of resources in terms of its human capital. As education in Uzbekistan is funded from both private and public sources, we see that investments are made in human resources to train them to acquire various sets of skills; nevertheless, these skills aren't subsequently capitalised upon in the labour market, and neither the state in its role as education provider, nor the individual worker manage to maximise their respective marginal utilities for the resources they invest in education and training (i.e. time and funds). Several negative, far-reaching consequences stem from this state of affairs, as Uzbekistan's poor business climate, command-based economy, brain drain and lack of proper conditions for its labour force to employ its full potential are all interlocking parts of a mechanism that hampers its chances for development.

To begin with, the trend for workers to seek job opportunities abroad has several effects: from social consequences (e.g. children maturing without the support of both parents leading to juvenile delinquency) to economic ones, that is: the outflow of workers who have marketable skills and knowledge negatively affect the host country's productive potential (Umarov, 2006). Also, the more workers turn to foreign countries for employment, the more the image of the domestic labour market deteriorates – that is to say, the population becomes disillusioned with the current state of affairs, which threatens to foster an unfavourable mentality that can impede the success of change and reform. Another problem is that, as more than half of Uzbekistan's workforce is employed in the informal sector (The World Bank, 2015), employees do not learn new skills, regardless of education levels; therefore, not only does the array of skills available not grow and diversify, but the capacity for innovation stays low.

The lack of skilled workers and a low capacity for innovation, coupled with a difficult business climate that does not offer many advantages to investors, as described in the 2016-2017 Global Competitiveness Report (Schwab, 2016) and mirrored in its Economic Freedom Index (<http://www.heritage.org/index/country/uzbekistan>), the attractiveness of Uzbekistan as a destination for foreign direct investments which it needs to develop its economy decreases substantially, and investors consequently seek opportunities elsewhere.

Uzbekistan's domestic entrepreneurs and small and medium enterprises encounter similar difficulties in conducting their economic activities; these problems, compounded with other issues that Uzbekistan is challenged with (such as corruption, poor institutional governance, and organised crime), mean that the country's private sector faces serious hurdles in its growth. In the absence of a properly developed private sector, the division of labour required for enhancing an economy's competitiveness and growth becomes an even greater challenge to achieve, thereby further leading to underemployment as well as fewer professional opportunities that correspond to the skills and knowledge available on the labour market. Mekan (2016) similarly stresses that Uzbekistan needs to develop its private

sector in order to fully use its growth potential, which can be accomplished, among others, through the development of market-relevant skills in its workforce.

Furthermore, a large number of migrants working abroad would represent a significant risk for the home country: first, it becomes particularly vulnerable to diplomatic conflicts as restrictive immigration policies imposed by the host country against workers from the home country would result in a decrease in remittances, unemployment and underemployment, as well as a potential rise in the crime rate; second, should the economy of the host country undergo a crisis, the result would be similar. **PICBE | 1153**

How can Uzbekistan use IUPs to its advantage?

The improvement of the education system must be a part of Uzbekistan's steps towards improving its market economy and developing its private sector. Here, Mekan (2016) advocates for a greater focus on reducing government intervention in key sectors such as finance, and promote privatisation through a series of measures including increasing transparency, better investor protection and improving the business climate to attract investors. These measures, says Mekan, should be coupled with private-public partnerships in certain sectors, such as infrastructure, to ameliorate the quality of their outputs. A similar view is held by Ulashov et al. (2007: 2), who believe that partnerships between the public sector and private agents can alleviate some of the risks associated with projects and reforms undertaken.

Ajwad et al. (2014) specifically address the problem of the skill gaps between the skills and knowledge of the employable population and what employers require. They mention that Uzbekistan needs to stimulate the acquisition of job-relevant skills with selective active labour market programs, which should comprise, among others, incentives for firms to offer on-the-job trainings, and helping migrants hone their professional skills in order to secure better jobs abroad and increase their remittances towards Uzbekistan, more specifically through public-private partnerships and apprenticeship programs which can also be used domestically.

In order to achieve sustainable growth, Uzbekistan's policies should focus on modernising and reforming its economy to allow for the development of the private sector, but it must also ensure the potential of its workforce is properly used. With innovation and knowledge as crucial elements for economic growth, Uzbekistan should prioritise the elaboration and application of policies that favour innovation and information generation to raise the level of competitiveness of its economy as well as stimulate local entrepreneurship and attract foreign direct investments. Education here is crucial, alongside other objectives like ameliorating the governance of public institutions, as part of a coherent strategy to improve Uzbekistan's image as a destination for business ventures. This would lead to lower underemployment, more job opportunities, an improved image of the country both internationally and domestically, and a more prominent role in the Central Asian region.

IUPs can prove to be an effective tool to complement the government's measures to modernise the quality of the education sector, to the effect of offering training and employment opportunities for Uzbekistan's human capital. Private agents may provide numerous benefits such as funds, research, logistical support, technology, training programs and employment opportunities, and higher education institutions may refine their curricula, increase the quality of education and research output.

Conclusion

The present paper started out from the assumptions that the labour market can be viewed as a typical market moved by the ebb and flow of the interaction between supply and demand. In the general sense, the commodity being traded here is labour, the supply is the workforce and the demand is the business environment. The paper briefly examined the current globalised landscape, in which information and knowledge play a central role, following which it set out to investigate the role of innovation and knowledge in defining economic competitiveness and performance in a country, the role of education in defining workforce competitiveness, and the strategic importance of IUPs. This was accomplished using the methods of deduction, induction, literature review analysis and a case study of Uzbekistan.

It has been stated in this paper that given the increased competition in the current economic landscape, the need to distinguish one's services and goods from those of other agents gains prominence, and innovation and knowledge play a central role in accomplishing this objective. Consequently, companies require workers and employees with the capability of producing innovation, and possessing the necessary skill set to manage, generate and commercialise knowledge. Parallel to the competition between companies, countries have recognised the importance of attracting investors and stimulating entrepreneurship as a driving force for economic growth. The research of this paper has found that countries with a favourable environment for innovation and knowledge generation tend to register higher rates of economic growth, whereas countries that fail to do so risk experiencing economic slowdowns or even stagnation.

One key factor in this equation is the human resource. To respond to the employers' need for knowledge workers, policymakers need to ensure that the workforce has marketable knowledge and skills, which can be achieved by developing the education sector. The analysis in the present paper has highlighted industry – university partnerships (IUPs) as a tool that can contribute to satisfying this need for skilled workers and the universities' need for funding and development, as well as bring together the demand and supply of labour. Though often project-based, these collaborations have been known to yield great benefits, and this effect is further increased when they take place within a strategic framework.

Finally, the paper tackles the case of Uzbekistan and argues that IUPs can become a powerful instrument in greatly helping the country in its need to attract investors and develop its private sector to accelerate its economic growth. However, the effectiveness of these partnerships depends on the presence of other measures that should reform Uzbekistan's economy and public governance.

To summarise, we can conclude that a properly educated workforce is gaining prominence as an important factor, and IUPs are becoming more and more instrumental in this context. Nevertheless, the efficacy of such partnerships must be viewed within the larger framework of a country's legal, political and economic system, with several conditions to be met in order for these arrangements to work as intended, such as a healthy business climate, reliable public institutions, transparency, political stability and will.

References

- Ahunov, M., Kakhkharivm J., Parviev, Z., Wolfson, I. (2015). Socio-economic consequences of labor migration in Uzbekistan, Griffith Business School Discussion Paper in Economics.
- Ajwad, M.I., Abdulloev, I., Audy, R., Hut, S., de Laat, J., Kheyfets, I., Larrison, J., Nikoloski, Z., Torracchi, F. (2014). „The Skills Road: Skills for Employability in Uzbekistan”, PICBE | 1155 volume of the staff of the International Bank and Development/The World Bank.
- Bătăgan, L. (2008). „Knowledge Dynamics and Economy Growth”, in Informatica Economică, 4(48), pp. 27-30.
- BBC, <http://www.bbc.com/news/blogs-news-from-elsewhere-23055365>.
- Benhabib, J., Spiegel, M. (1994). “The Role of Human Capital in Economic Development. Evidence from aggregate cross-country data”, in the Journal of Monetary Economics, 34: 143 – 173.
- Caleiro, A. (2011). “Educação e Desenvolvimento: que tipo de relação existe?” http://www.ela.uevora.pt/download/ELA_ensino_investigacao_cooperacao_04.pdf.
- CIA World Factbook, <https://www.cia.gov/library/publications/the-world-factbook/geos/uz.html>.
- Corzo, J. (2015). “How Academic Institutions Partner with Private Industry”, R&D Mag, <http://www.rdmag.com/article/2015/04/how-academic-institutions-partner-private-industry..>
- Drucker, P. (1998). 'From capitalism to knowledge society' in Neef, D. (ed.) (1998), The Knowledge Economy, Butterworth, Woburn, United States, p.15.
- Economic Freedom Index, <http://www.heritage.org/index/country/uzbekistan>
- Edmonson (ed.) (2012), “Making Industry-University Partnerships Work. Lessons from Successful Collaborations”, Business Innovation Board AISBL.
- Enache, E., Marin, C., Vechiu, C. (2009). “The Importance of the Knowledge Based Economy”, Annals of the University of Oradea, Economic Sciences, pp. 330 – 336.
- European University Association, <http://www.eua.be/policy-representation/research-innovation-policy/university-business-partnerships>.
- Fatland, A. (2014). “Why Universities and Corporations Need Strategic Partnerships”, <https://www.linkedin.com/pulse/20141110153212-3758357-why-universities-and-corporations-need-strategic-partnerships>.
- Index Mundi, <http://www.indexmundi.com/uzbekistan/literacy.html>.
- Larkin, M. (2014). “Building Successful Partnerships between Academia and Industry”, <https://www.elsevier.com/connect/building-successful-partnerships-between-academia-and-industry>.
- Mekan, M. (2016). “Uzbekistan Opening New Doors for Private Sector”, World Finance Review, May 2016, p. 53.
- Melo Lins, L. (2011). “Educação, qualificação, produtividade e crescimento econômico: a harmonia colocada em questão”, in “Anais do I Circuito de Debates Acadêmicos.
- Mueller, P. (2005). “Exploring the knowledge filter: how entrepreneurship and university-industry relations drive economic growth”, Freiberg Working Paper, no. 2005, 17.
- Muscalu, E., Stanit, A., Constantinescu, L.M. (2014). “Knowledge workers – drivers to organizational performance in a knowledge-based economy”, Proceedings of the 2014 International Conference on Applied Mathematics and Computational Methods In Engineering II (AMCME '14), 150 – 154.

- Nelson, R., Phelps, E. (1966). "Investment in Humans, Technological Diffusions, and Economic Growth", in *The American Economic Review*, 56: 69 – 75.
- Nguyen, T.A., Nguyen, T.T. (2015). "Contribution of Knowledge to Economic Growth: The Case of Vietnam", R4D Working Paper 2015/7 of the Swiss Programme for Research on Global Issues for Development.
- Organisation for Economic Cooperation and Development (1996). "The Knowledge-Based Economy", General Distribution OCDE/GD(96)102.
- Perkmann, M., Salter, A. (2012). "How to Create Productive Partnerships with Universities", MIT Sloan Review, <http://sloanreview.mit.edu/article/how-to-create-productive-partnerships-with-universities/>.
- Porat, M. (1977). *The Information Economy: Sources and Methods for Measuring the Primary Information Sector (Detailed Industry Reports)* OT Special Publication 77–12 (2). Washington, DC: US Department of Commerce, Office of Telecommunications.
- Sales Pimenta, M.H (2015). "A importância da educação para o crescimento e desenvolvimento econômico brasileiro", monograph presented at the Course of Economic Sciences of the Pontifícia Universidade Católica de Minas Gerais.
- Schwab, K. (ed.) (2016). "The Global Competitiveness Report 2016-2017", issued by the World Economic Forum.
- Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*, electronic version available at <http://eet.pixel-online.org/files/etranslation/original/The%20Wealth%20of%20Nations.pdf>.
- Smith, K. (2002). "What is the 'Knowledge Economy'? Knowledge Intensity and Distributed Knowledge Bases", #2002-6 in the Discussion Paper Series of the United Nations Institute for New Technologies.
- Ulashov, B., Shaykov, A., Koshnazarov, S., Karabaev, F., Khaidarov, M., Khakimov, A., Khodjaev, B., Rajapov, B., Saidov, A., Talibdjano, N., Polishuk, L. (2007). "Private-public partnership in Uzbekistan: problems, opportunities and ways of introduction", Analytical Report no. 2007/06 for the UNDP.
- Umarov, K. (2006). "External Labor Migration in Tajikistan: Root Causes, Consequences and Regulation", in Rios, R.R. (ed.), *Migration Perspectives: Eastern Europe and Central Asia. Planning and Managing Labor Migration*, Vienna: IOM, 91-102.
- UNESCO, <http://www.unesco.org/new/en/natural-sciences/science-technology/university-industry-partnerships/>.
- UNICEF, <https://www.unicef.org/ceecis/Uzbekistan.pdf>.
- Utku-Ismilhan, F.M. (2012). "The Role of Knowledge on Economic Growth: The Case of Turkey, 1963-2010", Science and Technology Policies Research Centre TEKPOL Working Paper Series, STPS-WP-12/07.
- Uzmetronom, http://www.uzmetronom.com/2013/06/25/chelovek_ishhet_gde_luchshe.html.
- Webster, F. (2006). *Theories of the Information Society*, Third Edition, New York City: Routledge.
- West, Martin (2012). "Education and Global Competitiveness: Lessons for the United States from International Evidence", <https://dash.harvard.edu/bitstream/handle/1/9544459/West%20Education%20and%20Global%20Competitiveness%20chapter%20for%20DASH.pdf?sequence=1>.

Wood, M. (2014). "Getting Real in the Real World: The Latest in University-Business Partnerships", <http://www.skilledup.com/insights/getting-real-in-the-real-world-latest-in-university-business-partnerships>.

World Bank, <http://www.worldbank.org/en/news/feature/2015/02/02/taking-steps-to-improve-the-labor-market-in-uzbekistan>.