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Digitalization in the new era of Higher Education

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Abstract. The number of people choosing full-degree programs from institutions of higher education is trending downwards. This is because the previous motivations of attending a degree program have been challenged. Industry is now more willing to accept relevant certifications and courses that come at much lower costs and can be attained over a much shorter period. Many of these courses, while they effectively close the academia-industry gap are not standardized or regulated. This paper proposes theoretically that academic public-private partnerships; not through infrastructure but in the academic core of higher education; that integrate into the lifecycle of a learner are the solution to this issue.

Key words: higher education, public-private partnerships, dynamic Innovation, digital economy, micro-credentials, digitalization, strategic partnership .

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Научная статья

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Цифровизация в новую эру высшего образования

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Аннотация. Количество людей, выбирающих программы полного образования в высших учебных заведениях, имеет тенденцию к снижению. Это связано с тем, что предыдущие мотивы посещения программы на получение степени были оспорены. В настоящее время промышленность более охотно принимает соответствующие сертификаты и курсы, которые обходятся гораздо дешевле и могут быть получены в течение гораздо более короткого периода времени. Многие из этих курсов, хотя и эффективно сокращают разрыв между академическими кругами и промышленностью, не стандартизированы и не регламентированы. В этой статье теоретически предлагается, чтобы академические государственно-частные партнерства не через инфраструктуру, а в академическом ядре высшего образования интегрировались в жизненный цикл учащегося, являясь решением этой проблемы.

Ключевые слова: высшее образование, государственно-частное партнерство, динамичные инновации, цифровая экономика, микрокредиты, цифровизация, стратегическое партнерство.

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Introduction: The economics of Higher Education (HE)

The HE institutions perform multiple roles though its activities that make the components of a higher education trilemma. Research and teaching encompass academic activities, but HE is responsible for other industry-oriented activities that aim to transfer knowledge beyond academia.

In particular, to understand the economics of higher education, we want to address a few key questions:

1. Why do we choose to go to the university? What is the economics model of higher education choices?
2. Why do governments intervene in the provision of HE? What do governments do? How does that fit into the first framework model?

3. What is the financial value of HE? How do we find out the benefit?

The first question opens up to two:

Choosing to go to HE

Get a more fulfilling job: Human capital theory [Becker 1975]

Earn more money —
College-wage premium

The joy of learning —

Choosing not to go to HE

The joy of practical work

The unwillingness of leaving
your home/ averseness
of sitting for exams

The cost of higher education

In the model of HE choices, also known as private market in HE there are two periods for the outcomes.

The first period includes two sets of people (P): those who choose to go to school or those who start working immediately.

The second period: Everyone now goes to work.

In period 1, P's income looks like:

$-F^{HE}$ (choice to go = payment of fees)

P_{1i}^{non-HE} (no go = earn a wage)

In period 2, P's income then:

P_{2i}^{HE} (HE)

P_{2i}^{non-HE} (No HE)

With the assumptions on no uncertainty about earnings. Typically, we think that the earnings that you're going to have if you do go to university are going to be higher than if you don't go to university so making going to university an investment which pays off in later life.

Incorporating the Cobb Douglas utility function:

$$U_i = Z_i C_{1i}^{1/2} C_{2i}^{1/2}$$

for consumption (C_i) periods (t) 1 and 2 and preferences value of each choice Z_i

In the case where borrowing (B_i) is involved then the function changes to accommodate budget constraints as follows:

First period: $C_{1i}^{HE} = B_i^{HE} - F^{HE}$

Second Period: $C_{2i}^{HE} = P_{2i}^{HE} - (1+r) B_i^{HE}$

Combination of the two periods $(1+r) C_{1i}^{HE} + C_{2i}^{HE} = - (1+r) F^{HE} + P_{2i}^{HE}$

Where Future value of consumption = Future value of income

Combination for non-HE:

$$(1+r) C_{1i}^{non-HE} + C_{2i}^{non-HE} = (1+r) P_{1i}^{non-HE} + P_{2i}^{non-HE}$$

This model is efficient when certain assumptions are considered.

1. HE only benefits students
2. Students can borrow at true cost of funding
3. There is perfect foresight while making optimal decisions

But this model is not efficient and that's why governments step in because the students are not the only beneficiaries i.e., positive externalities and the private market doesn't attain efficient outcome. A natural solution for government intervention has been governments borrowing for the students in period 1 and then taxing graduates to pay off in period 2.

Why do governments spend billions funding university public education? Why don't governments simply hand over to profit seeking firms to handle it? It has been a long growing concern that if education was completely privatized, many students would be excluded making societies worse in the greater scheme of things.

Education acts as a positive externality. This is because the benefits from education are directly experienced by learners through job and income acquisition but further, the benefits that then those learners create in society through innovation, entrepreneurship and other social aspects are ones to be accounted for as well. Education is also widely accountable for increased GDP, productivity, and improved standards of living.

According to the 'college wage premium' HE graduates, on average, earn more. Also, the unemployment rate for graduates is fairly always lower. Economists explain these observations by two arguments. The first is the "Human Capital" theory. The idea is that going to university teaches students skills that help them get higher income roles. The second is the "Signalling theory". The idea from this is that as much as students can show up in the industry and show that they are smart and hardworking, they would still need something to validate their abilities through the degree diploma [Altonji1996].

The problem comes when the validation may come in different forms due to changing times and what is acceptable in the industries change faster than what HE institutions provide. This is where the academic- industry gap fuels from. Our three factors for decision-making thus far: costs to education, time trade-off, academic validation. Digital transformation of HE has come along to help align these concerns but are institutions making the change as fast as the market requires them to?

Justifying digital transformation in HE

'Transformations are hard, digital ones are harder'
The functions of higher education (HE) are shifting.

Research and teaching remain its two traditional core missions, the third and increasingly prominent role played by knowledge in the development of a digital economy: the direct contributions made by universities to the industry [Shafiq 2017]. The increased use of digital technology that has resulted from the need to incorporate digital interactions to the traditional face-to-face encounters is now causing transformations that both challenge higher education institutions (HEs) and present them with opportunities.

There is increasing pressure for digital transformation in HE for several reasons:

- The future of work looks different (It has been changing, it is now seemingly changing much faster.)
- Technology allows for advanced interaction (As earlier feared, it seems the options offered by technology improves interaction)
- Growing options for students (Students are no longer limited to areas, timeframes, locations, and systems as a whole.)
- Cloud and mobile have accelerated access (Collaboration has been made much more efficient.)
- COVID 19 precipitated change (As part of the vision 2030, digital transformation is now being fast-tracked after the Covid era.)
- Governments are rethinking funding and policy. (Going back to its involvement in the economics of education, government seek to reap more from the positive externality of HE).

Knowing what is ahead then is required from HE Leaders:

- Understand that disruption to education sector is much more eminent
- Digitalization is now a top growth strategy for HE
- Myriad of structural model and faculty governance constraints
- Old paradigms hold back novelty
- Innovation cannot happen in areas lacking imagination, that is to education has always been done in a certain way.
- Complexity in understanding integration and implication of different systems that have competing ideas.
- Faculty readiness and skills as they are key to forging ahead and need professional development

Transformation planning as an institution-wide agenda.

The concerns from HE stakeholders shed light on one important factor. The approach on digital for HE has been wrong. Traditional HE left gaps when it came to transitioning from student to worker life. Digitalizing doesn't just solve that by back-solving technology to fit higher education. The answer to digital transformation lies in the constant in the two situations. The learner. So, the new era of HE should ideally shift from 'Technology Led' approach to a 'Learner Led' approach. This would mean a focus on the entire student lifecycle and organizational capabilities that advance the lifecycle.

Table 1. **Student Lifecycle Sections**

Key Parts of the Lifecycle	Questions they insight
Demand and Breakthrough Institutional strategy, insight, and student focus at the start of the journey. Data connects and personalizes the student experiences all through	How can we explore possibilities of credentials and micro-credentials into new markets? How can the enrollment process be optimized to give a smooth and easy student experience?
Knowledge Design Uses learner focus and outlines capabilities, emerging skill sets in designing diverse needs and environments	How can we ensure we have up-to-date and industry relevant content in the courses? How can we cater to very large group classes with personal and adaptive options?
Learner Experience This requires profiling capabilities suited to support student life in the HE processes, student community, and overall wellbeing as well as academic experience, progress, and assessment	How do we ensure students are supported in mental health, regardless of study mode? How do we offer students learning portfolios they can create over time that can be transitioned to the workplace?
Work & Continued Education Completed the student lifecycle and shows how to support them as they choose careers and change them throughout their lives with continued education needs.	How can global internship opportunities be made possible? How do you ensure students have equitable access to work and career opportunities?

While all dimensions have importance, HE is in the core business of teaching and learning. Design and Experience remain priority areas for digital delivery. Upskilling and supporting faculty and students in digital learning is still a significant challenge. Was digital adoption too quick? Did COVID move the priority of digital capabilities to the forefront too rapidly?

Seeking strategic partnerships to deliver digital capability has started to look like a great arrangement

and short term 'gap fill' until they can build adequate capacity set. Large universities have less interest in outsourcing. Possibly related to resource and capital abundance for internal digital projects, offering them more digital maturity.

Mapping Academic PPPs

What are academic PPPs?

HE PPPs are certainly not new, they started in infrastructure, more on student accommodation and physical assets in institutions. Progressively to share risk and accelerate growth in new areas like online programs and international students.

An academic PPP is distinctive from regular HE PPPs that have been in that the private partner is involved in academic delivery and in many cases the academic outcomes of the program. So ideally the partners are involved in the academic core of HE and not just the administrative and academic services of HE.

How do HE institutions make the strategic consideration? Build. Buy. Partner?

Table 2. Student Lifecycle Sections

	Buy	Build	Partner
Process	Procurement	Project Budget	Relationships
Speed	Medium Execution	Slow Execution	Fast Execution
Costs	Medium to Large	Medium to very large	Low Upfront risk/sharing
Talent	People and Process	Grow by project	Relationship management
Optionality	Medium term lock-in	Hard to abandon project	Steppingstone

	Buy	Build	Partner
Contracts	Subscription and service		Can be complex
Pivot/Change mind		Sunk cost mentality	Failure is difficult

What are the segmented areas that HEs can partner academically?

1. Large Online Program Managers (OPMs): These encourage long and strong partnerships. They foster experience across diverse portfolio and offer broad capabilities across all domains,
2. Specialist OPMs: These are industry, program, and geographic specialists that offer tailored input to academic programs and institutions.
3. Networks.: These have been around long and are becoming more common. They allow course and student sharing through exchanges and offer recognition of programs.
4. MOOCs as OPMs: These are MOOC delivered degrees and credential programs. MOOCs have been a growing phenomenon [Becker 1975]
5. Education as a benefit: Companies offer tuition reimbursement, online programs, and degrees for working adults as part of a benefit package to study in HE institutions.
6. Bootcamps: Growing rapidly in the past two or so years. They are intensive 12–14 weeks programs that that allow to have deep dive skill learning. Most common in education related to the IT field and Project Management industry roles.

How would these Partner models appear in the Lifecycle framework?

Table 3. PPP Partner Models

	Demand and Discovery	Learning Design	Learning Experience	Work Life
Online Program Manager	Digital recruitment channels for high value	They are dedicated to designing digital curriculums	Active programs that help learner engagement and student support	Verticals developing in industries with practical components and hiring relationships
MOOCs as OPM	MOOCs draws on a global pool of learners. Most have data to support learner insight	Programs can be created from existing ones	Platforms used for mass engagement. More intimate interactions in degree programs	Engaged with industry on credentials, skills, and upskilling programs
Bootcamps	University partner has a good pool of learners. Bootcamps are well placed to evaluate admissions	Bootcamps have advanced quality curriculums that are developed by industry partners	Have well qualified instructors experienced with the bootcamp delivery model	They maintain strong hiring partner relationships. Can be delivered at any time for employability.

As more specialists' providers enter the market to partner with universities. OPM revenue models are evolving from traditional full-service revenue share to fee for service models. Hybrid arrangements combine an upfront revenue share which converts to fee for service over time.

Revenue share model

- OPM funds costs to put program online in exchange of revenue

- Upfront investment over 1.4–4 years
- Late breakeven of 3–5 years
- Full service offering bundled services
- Benefits universities with little or no infrastructure experience

for online learning.

Revenue share model

- Upfront fee for each service but no long-term revenue share
- Institutions can focus on specific areas of interest
- Allows spread of service to multiple providers (complex for HE institution)

- Flexible to pursue short-term arrangement and maintain autonomy

- Gives time to build internal capacity without long-term commitment

Hybrid Model

- Upfront costs may be shared or covered by OPMs or shared with the university.

- Once programs break-even they switch to fee for service

- Supports development of diverse range of online programs that don't require scaling but need similar services in ongoing capacity.

The Case for Russia: Public-Private Partnership in the Russian Educational System

In On December 1, 2016 The President of the Russian Federation V.V. Putin, speaking with the annual message to the Federal Assembly, said: "I propose launching a large-scale system-wide programme to develop an economy of a new technological generation, the so-called digital economy. We will rely on Russian companies and Russian scientific, research and engineering centres to implement this programme" [Presidential Address... 2016]. After that, the development of the digital economy became a priority for the state. In 2017, Digital Economy of the Russian Federation was developed and approved by the Government of the Russian Federation [The program... 2017].

In accordance with the federal law, public-private partnerships and municipal-private partnerships are legal and fixed period-partnerships between a public partner and a private partner, based on the pooling

of resources and risk sharing to attract private investments into the economy, government and local governments for the accessibility of goods, works, services by improving their quality. Educational public-private partnerships are represented by the interaction of state-run educational institutions and private business structures on the basis of mutual interests for achieving common goals.

It is to be noted that the Russian education system is characterized by a set of training programs governed by state educational standards and educational networks, including independent institutions under supervisory and regulating bodies. The right to education is for every person irrespective of sex, race, nationality, language, origin, social status, place of residence, religion, beliefs, membership in public associations and other conditions as guaranteed in Russia.

Common availability and free of charge basis are guaranteed in accordance with the federal educational standards of pre-school, primary secondary and vocational education. Competitive basis of higher education is provided if getting an education for the first time [Takmazyan 2018; Vovchenko 2017].

The spread of educational technology might deliver serious disruptions to Russia's education system. There are about 315 edtech startups in Russia. The country's institutions have been on an upward trend. Russia has witnessed an improvement in the Times Higher Education World University Rankings and the number of its universities on the list, making its schools the fourth most represented among the emerging economies. It is also among the top five destination for international student learners. These improvements are however now being overshadowed by declining public spending over recent years. But the gains are overshadowed by a continuous decline in public spending over the past few years; a trend that is set to continue. For this reason, Academic PPPs would really keep the Russian HE institution growth stable.

Conclusion

This paper set out to explore the role of HE and how it can be propelled in its new era of unavoidable digitalization. The solution to that is strategic partnerships that go beyond support structures and are deep within the academic core of HE.

Degrees should be considered as bundles of carefully selected, sequenced, and integrated

curriculum in the lifecycle of a learner. Micro and Alternative credentials are evolving pathways, substitutes, and alternatives for learners that HE Institutions need to make space for.

Traditional models may not be suitable for evolving industry needs as well as learners and especially for continuous learning and upskilling. Many industries are now delivering and endorsing alternative learning options. The lack of digital solutions for validation and recognition remains a huge barrier for adoption. Governments continue to build national platforms for recognizing them and national qualifications frameworks are starting to allow the alternative ways of HE.

Predicting how HE markets will evolve is fraught but there are signals that point to possible future states on how the key drivers could influence HE. Possible scenarios:

1. A mixed matrix

Disaggregated part of formal education is not trusted, and traditional forms of education remain the benchmark. Government accreditation, regulation and funding favors those programs and other learning remains unrecognized and

unstandardized. This scenario continues the gap between academia and industry,

2. Professions rule the game

Industry associations, professional bodies and employers provided endorsement and accreditation for industry qualifications.

Micro-credentials are useful as a steppingstone to industry endorsed qualifications.

3. Micro- Qualifications inclusive

Here the micro-credentials become the main form of education and degrees start collapsing. They become defined, standardized as the basis for qualification frameworks.

Governments and regulators provide funding. Universities and private education providers and industry all compete in an open market for education and training.

4. Market place rules

Micro-credentials have matured to a point where a dominant set of formats are accepted. They are offered by many industries and academic provider in open market. Partnerships here are common and learner-employer rating signal quality.

References

1. Altonji 1996 — Altonji J. and Pierret Ch. R. *Employer Learning and the Signaling Value of Education*. NBER Working Paper No. w5438. Cambridge, MA : National Bureau of Economic Research, 1996. DOI: 10.3386/w5438.
2. Becker 1975 — Becker G. S. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. 2nd Ed. National Bureau of Economic Research, 1975. 268 p. ISBN: 978-0-87014-513-1.
3. Etzkowitz 2000 — Etzkowitz H. and Leydesdorff L. The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university–industry–government relations. *Research policy*. 2000; 29(2):109–123. DOI: 10.1016/S0048-7333(99)00055-4.
4. Presidential Address... 2016 — Presidential Address to the Federal Assembly. *President of Russia* : website. Available at: <http://en.kremlin.ru/events/president/news/53379>. Publ. 12/01/2016.
5. Shafiq 2017 — Shafiq H. *Courses beyond borders: A case study of MOOC platform Coursera*. By Huma Shafiq, & Zahid Wani, & Iram Mahajan, & Uzma Qadri. Library Philosophy and Practice. 2017. Available at: <https://digitalcommons.unl.edu/libphilprac/1566/> (accessed 15 May 2022).
6. The program... 2017 — *The program "Digital Economy of the Russian Federation"*. Approved by the Order of the Government of the Russian Federation dated July 28, 2017 No. 1632-p. Available at: <http://static.government.ru/media/files/9gFM4FHj4PsB79I5v7yLVuPgu4bvR7M0.pdf> (accessed 15 May 2022) (in Russ.).
7. Takmazyan 2018 — Takmazyan A. S. Public-Private Partnership in the Russian Educational System. By A. S. Takmazyan & S. N. Rukina & K. N. Samoylova & K. A. Gerasimova. DOI: 10.35808/ersj/1197. *European Research Studies Journal*, 2018, vol. XXI (Special1), pages 479–485.
8. Vovchenko 2017 — Vovchenko G. N. Study of Factor Which Facilitate Increase of Effectiveness of University Education. By G. N. Vovchenko, U.A. Albekov, F.T. Romanova, V.T. Epifanova. DOI:10.1108/IJEM-02-2016-0037. *International Journal of Educational Management*. 2017; 31(1):12–20.

Список источников

1. *Altonji J. and Pierret Ch. R.* Employer Learning and the Signaling Value of Education. NBER Working Paper No. w5438. Cambridge, MA : National Bureau of Economic Research, 1996. DOI: 10.3386/w5438.
2. *Becker G. S.* Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education. 2nd Ed. National Bureau of Economic Research, 1975. 268 p. ISBN: 978-0-87014-513-1.
3. *Etzkowitz H. and Leydesdorff L.* The dynamics of innovation: from National Systems and “Mode 2” to a Triple Helix of university–industry–government relations. Research policy. 2000; 29(2):109–123. DOI: 10.1016/S0048-7333(99)00055-4.
4. Presidential Address to the Federal Assembly // President of Russia : website. URL: <http://en.kremlin.ru/events/president/news/53379>. Publ. 12/01/2016.
5. *Shafiq H.* Courses beyond borders: A case study of MOOC platform Coursera / Huma Shafiq, & Zahid Wani, & Iram Mahajan, & Uzma Qadri. Library Philosophy and Practice. 2017. URL: <https://digitalcommons.unl.edu/libphilprac/1566/>. Accessed 15 May 2022.
6. Программа «Цифровая экономика Российской Федерации» : Распоряжение Правительства Российской Федерации № 1632-р от 28.07.2017. URL: <http://static.government.ru/media/files/9gFM4FHj4PsB79I5v7yLVuPgu4bvR7M0.pdf>. (дата обращения 15.05.2022).
7. *Takmazyan A. S.* Public-Private Partnership in the Russian Educational System / A. S. Takmazyan & S. N. Rukina & K. N. Samoylova & K. A. Gerasimova. DOI: 10.35808/ersj/1197 // European Research Studies Journal, 2018, vol. XXI (Special1), pages 479-485.
8. *Vovchenko G. N.* Study of Factor Which Facilitate Increase of Effectiveness of University Education / G. N. Vovchenko, U. A. Albekov, F. T. Romanova, V. T. Epifanova. DOI:10.1108/IJEM-02-2016-0037 // International Journal of Educational Management. 2017; 31(1):12–20.

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