

MISSION TALENT **MASS UNIQUENESS**

A GLOBAL CHALLENGE FOR ONE BILLION WORKERS



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The global skills gap has recently turned into a key issue in the world's policy agenda.

The growing mismatch in the labour market with graduates and mid-career professionals struggling to find jobs whilst, ironically, employers spend years struggling to fill crucial roles, is not something that began overnight. There is no shortage of evidence that the digital revolution, complete with radical advances in robotics and artificial intelligence, is accelerating the pace of change. Current training and talent management programmes can no longer keep up.

The skills gap is a worldwide problem that is affecting all industries. In a decade or so from now, when the last of the baby-boomers ride into the sunset, the supply left behind for the labour market will be insufficient to keep up with market demands - this is not only likely to be a threat to economic growth but, worse still, to human lives.

Universally, in order for a corporation to grow there needs to be a high-level of human capital.

We feel this acutely at ROSATOM, as we expand our operations globally and actively participate in developing, training and upskilling specialists in order to ensure that we have the right people with the right skills. We highly value our workforce and so are striving towards finding the best practices that can help to alleviate the skills gap.

This is why, in the search for a truly global solution to the problem, we are pleased to have sponsored global research, culminating in this comprehensive report which focuses on a "human-centred" approach to ensure that nobody is left behind in this fast-paced technological and digitally advancing environment.

We hope that all will benefit from reading this report as much as we did. Let's put a stop to the looming global skills crisis.

Sincerely,

*Alexey Likhachev,
CEO of the ROSATOM State Corporation*



Dear friends!

We are pleased to present to you the result of long and very hard work that we have completed prior to the 45th WorldSkills Competition – WorldSkills Kazan 2019.

The idea of this research arises from the recognition of two facts. On the one hand, we live in a world where changes with unprecedented speed bring adjustments to the reality surrounding us every day – technological progress, globalization, automation, and other global trends – this is what certainly influences everyone, and significantly influences the labor market and the system of vocational training.

On the other hand, these global changes have a different influence in various parts of our planet. WorldSkills movement gathers more than 80 countries and regions from all continents and includes representatives of different economies and cultural traditions – each of them has to face this challenge in their own way. Could there be a common solution here?

Initially, our hypothesis was stating that there is no such unique solution applicable to anyone, but there can be common approach to find a solution. However, if you select a number of countries that have similar characteristics – meeting the same challenges – have similar economic structures, training systems and labor markets – the solutions for clusters of these countries can be similar.

Later on, we focused on the skills mismatch challenge and began to look for both: common approach to respond this challenge and best practices that are used in the world-wide community to overcome it.

As a result, we are ready to present you our vision of the answer to the challenge of skills mismatch. This answer suggests transition to human centricity and mass uniqueness, implying the perception of a person as not only a workforce element or a passive consumer of educational services, but also as an equal partner and active creator of society and the economy of the future.

We tried to make our research practical and useful for WorldSkills members and for a broader audience. We hope that acquainting with this Report will motivate you to turn to the Navigator of the best practices, where we have collected practical examples from and for all participants of the talent development process – governments, educational institutions and employers. We would be glad if these projects will be useful for you and will promote improvement of training systems in your country or organization. We also encourage you to share your successful practices – together we can do more!

Ekaterina Loshkareva
*WorldSkills Russia R&D Director,
WorldSkills International Board Member Elect, OD*



Over a decade ago, the international community uncovered one of the key challenges to innovation and economic growth: the skills gap. Inspired by the speed of economic change and technology adoption, academic, country and business leaders around the world engaged in analysis and dialogue to better understand how to secure enough talented managers, big data specialists, product developers, etc. Over 200 reports and research papers created a field of knowledge now referred to as the Future of Work and Future of Education.

This work undertakes to study an important contributor to the global skills gap: inefficient human capital allocation. A skills gap simply means that employers cannot find labor with the required competencies. This needed labor often exist somewhere else – perhaps in another industry or geography. The authors of this research call this a skills mismatch and offer an actionable solution.

An OECD study shows that one out of every three workers employed is either under- or over-qualified for their job and could provide much greater output and live happier and more fulfilled lives if they moved to another job. This is in essence a hidden productivity cost inherent in the labor market and education models today. A labor force trained with standard skills and lacking access to opportunities beyond the closest and most

obvious job openings is bound to fall into a skills mismatch trap in a world where 2.5 years is now enough to change a whole technology cycle. Growing global GDP loss of over US\$5 billion annually shows that we can hardly afford this.

The good news, however, is that this research has identified dozens of successful solutions around the world aimed at reducing the skills gap and ensuring that both employers and employees can have their needs met. The experts brainstorming and exploring these solutions are trying to build a world where governments, employers and education providers create an ecosystem for success for each and every employee—and the employee strives to use this ecosystem for his or her life-long development and career. This is a world that we call human-centric.

It is my hope, and also confidence, that this work will spark a higher degree of innovation and collaboration among employers, governments, education systems, and workers to make a human-centric world and the Future of Work a reality today.

J. Puckett

Managing Director and Senior Partner in the Dallas office of The Boston Consulting Group.

Leader of BCG's Organization Practice in the Americas and, member of the Americas Leadership Team.

Leader of BCG's global Education Practice.

INTRODUCTION

IF WE GATHERED REPRESENTATIVES from four different generations in the same room – baby-boomers born during the dawn of the space age, Generation X'ers who appeared together with personal computers, millennials who caught the proliferation of mobile phones, and the digital natives of Generation Z – we would see a group of completely different people with different interests, values, knowledge and competencies, different life experiences and ambitions. However, they are all integrated in the country's overall human capital: they all actively participate in its economic and social life, get trained or retrained, have a job or try to find a job, retire or seek new ways of development.

There are many global trends that influence the efficiency of the use of human capital in an economy: the speed of technological change and the depth of its penetration into all spheres of life, the world's changing social and demographic map, economic and geopolitical challenges, continuing urbanization, and the emergence of new business formats. Today, we can already see that 5% to 45% of employees in different countries participate in the so-called gig economy¹; by 2025, Generation Z'ers², who have entirely new demands for their employers, will account for 26% of the employed population, and by 2030, an additional one billion people will have moved to the cities³.

Given the high rate of change and the increasing complexity of processes, it is not easy to find a universal solution that would unlock the full potential of each person – their knowledge, skills and competencies. Increasingly, employers cannot find the talent they need. Companies have to either accept the fact that it takes a long time to fill vacancies, or, much more often, hire people who do not have the necessary competencies and experience and invest in their retraining. However, the state continues to “order” talent whose skills and competencies are no longer in demand or are already in excess on the labor market, while educational institutions often produce talent whose training was based on the requirements that, by the time of graduation, have already changed significantly. At the same time, people with sufficient work experience cannot find a job because their skills are no longer required by the market, and they are not able or willing to get the additional training demanded by employers. This problem, the so-called “skills gap”, exists in every country. It is discussed and monitored at different levels using a variety of indicators: unemployment rates, job vacancy rates, job filling rates, etc.

1. Employee survey performed by BCG in cooperation with Research Now SSI as part of The Future of Work, 2018

2. ILOSTAT, 2018; World Bank, 2018

3. ILOSTAT, 2018

(For example, in January 2019, UK job vacancies hit the highest level for the past 17 years at 2.9%, while the employment rate reached a record high of 75.8%⁴.)

The skills gap often forces employers to hire talent whose competencies are far from those required and they have to invest resources in reskilling them. Such a situation with labor market supply occurs when someone whose skills are not in demand agrees to take any job just to simply earn a living. Meanwhile, this person's acquired competencies remain unused or redundant, and he or she potentially occupies the place of a more suitable candidate. This problem – the skills mismatch – is much less obvious than the skills gap, as it creates the illusion of employment and economic and social stability. According to our estimates, the skills mismatch today affects 1.3 billion people, and every year the global economy pays a 6% tax in the form of lost labor productivity⁵.

The technological transformations from the industrial revolution to the digital revolution had a radical impact on the talent training system: first, the focus was on eliminating illiteracy, then, with accelerating mass production, it was necessary to massively raise the quality of education to the base level corresponding to the needs of the key sectors of the economy. Secondary and higher education became a universal currency that employees could exchange for a profession and that would last them throughout their lives. The education began to take longer, and high-quality education became more expensive. Over the past half century, the average duration of studies has increased 2.5 fold, while the cost of a four-year public education program has tripled (net of inflation) over the past thirty years⁶. The twenty-first century brought a new rate of change: ever-emerging new technologies and new business types create a demand for more new talent almost every year, while the old talent training system is unable to promptly deliver the continuously changing kaleidoscope of skills to the labor market. While in the mid-twentieth century it took ten years for technical knowledge to become redundant, today this period has reduced to two-five years⁷.

The skills mismatch is a result of how we continue to develop human capital in the same way as we did in the mid-twentieth century, in a completely different economic and social context. Mass standardization, one education and one job for life – these principles cannot work in today's world, where one needs to be capable of flexible thinking, quick and continuous learning and mobility.

As a result of the discrepancy between the needs and opportunities of the labor market and the employees, seven challenges arise, that must be answered if we want to realize the full potential of human capital and to deal with the skills mismatch problem:

4. UK Office for National Statistics (ONS), February 2019

5. BCG estimate based on OECD data, 2016

6. College Board, 2017

7. IEEE Spectrum, 2013

- Insufficient focus on training for jobs that have yet to appear
- The majority of labor force not involved in lifelong learning and continuous retraining
- Lack of motivation and accountability for personal development
- Limited access to opportunities on the labor market
- Uneven redistribution of human capital
- Locked up potential of certain categories of labor force
- Shifting values and needs of the labor force

To overcome these challenges, a new model is necessary that is different from the twentieth century approach. It is only possible to minimize the skills mismatch, increase productivity, and reduce the costs of retraining specialists within a social framework that involves unlocking one's personal and professional potential without harming others, in other words, it is a concept of human centrality, guided by the following principles: development of a fundamental skill set, creation of an environment that enables lifelong employability, self-sustainability in choosing a career path, labor market transparency, skills liquidity, inclusiveness of the labor market, and value-driven employment.

To fully unlock the potential of human capital in the context of constant change, it is necessary to shift from the mass standardization of education and activities to *mass uniqueness*, i.e., to consider the workforce not as a consolidated economic resource, but rather as individuals, and take into account the needs, capabilities, and potential of each person. Then, if we return to our room, we will no longer just see faceless human capital, but a group of distinct personalities, each making a unique contribution based on the maximal use of their capabilities.

In our study, we asked several key questions:

- **How well is the labor market prepared for the future?**

At the national level, we can assess workforce development efforts across a number of key areas: capabilities, motivation, and access to the labor market. These key areas are sets of values describing the skills and knowledge that allow people to stay in demand on the labor market, the level of motivation for personal development and adaptation to change, and the accessibility of labor market opportunities for the entire potential workforce. Based on such an assessment, we can form eight clusters of countries characterized by similar talent development challenges.

- **What needs to be done to reduce the skills mismatch?**

The reasons behind the skills mismatch may differ depending on the country. Clearly, there is no one-size-fits-all solution, but we can

consider a group number of strategies aimed at reducing the skills mismatch, i.e. improving conversion of talent development efforts and transforming them into labor productivity.

- **What can drive the transition to human centricity in talent development?**

We are convinced that overcoming the skills mismatch requires interaction between all the stakeholders in the talent development process – the state, educational system, business, and each individual. A focus on achieving one positive result for all, together with mutual accountability and openness will guarantee a successful transition to the new concept of human centricity. Such cooperation will be impossible without involving the expert community and launching new tools for sharing international experience, as well as specific solutions.



CHAPTER 1.
**THE ECONOMY
OF THE FUTURE REQUIRES
COMPLETELY NEW
HUMAN CAPITAL**



THE FUTURE IN NUMBERS¹

13%

global population growth by 2030

1/3

of professions will change by 2035 due to automation and digitalization

26%

the share of Gen Z'ers in the total workforce by 2025

85%

of the global workforce are low- and mid-skilled workers

14%

of all job tasks can already be automated today

5% to 45%

of the population in different countries are already employed in the gig-economy

1. United Nations, 2019; ILOSTAT, 2018; OECD, 2018; World Bank, 2018; Employee survey performed by BCG in cooperation with Research Now SSI in the framework of The Future of Work, 2018.

The future is already here – it's just not very evenly distributed.

– **William Gibson,**
American author

We are used to thinking of the future as a completely new stage of development that will come at some remote time. However, the speed and depth of changes in all areas – economic, political, social, technological – have reached unprecedented rates today. None of these changes are trends of the future. They are transforming the labor market around the world today – at varying speed, scale and depth, but it is happening everywhere.

The reformatting of the labor market is influenced by megatrends – large-scale structural changes affecting all areas of human life. We distinguish three groups of megatrends – technological, socioeconomic, and cultural (Fig. 1).

The first group of megatrends encompasses processes of **automation and technological innovations**, including such areas as augmented reality, robotics, the Internet of Things, and others, as well as **the development of big data and advanced analytics**, and everything connected with them, such as cloud computing, platform solutions, machine learning, etc.

On the labor market, this translates into the automation of routine tasks, the emergence of new and disappearance or complication of some old activities, increased requirements for employee skills, and growing productivity.

The second group of megatrends is connected with changes in the distribution of labor resources. This includes changes in demographic composition, shifts in the geopolitical and economic balance of power, and the development of megacities and agglomerations.

In particular, the **growth of the world population** from the current 7.6 billion to 8.6 billion by 2030 will be accompanied by **changes in the age structure**: by 2025, the world's

workforce will consist of 26% Generation Z'ers, 37% millennials (Generation Y'ers), 28% Generation X'ers, and 9% baby-boomers. However, changes in different countries may take different directions. On the one hand, the share of young people in the workforce structure of developing economies will grow. For the labor market, this means the need to provide them with jobs and an efficient environment for unlocking their potential. On the other hand, we see increasing life expectancy and an aging population in developed countries. As a result, the existing principles supporting pension and social security systems will no longer function, which will lead to their fundamental revision to ensure the continued participation of older people in active economic life. Another, no less important, factor for labor market quality is driven by **accelerating urbanization** and the growth of the urban population by one billion expected by 2030, as well as **geopolitical changes** caused by slowing growth in developed countries, manifestations of protectionist policies and new forms of integration at the regional level¹.

Finally, the last group of megatrends covers changes in the values and culture of the working population. The growing social demand for **diversity and inclusion** on the labor market will translate into more active involvement of women, older people, migrants, people with disabilities, and other socially vulnerable groups. For the labor market, this means potential employees will have higher requirements of employers' corporate social responsibility policies and higher demand for mobility.

In addition, for younger generations who are just joining the workforce, the key values include positive environmental impact, environmental responsibility, and sustainable development, which are already driving the development of the **green economy** today. The next megatrend from within this group is the **development of entrepreneurship and new business models**, and the further individualization of consumption, which is already visible in the proliferation of remote jobs and the so-called gig economy that employs (depending on the country) from

1. ILO, 2018

FIGURE 1 | Megatrends reshaping the labor market globally

Change driver

Megatrends

Shifts in
Technology and
Digital Productivity



Automation and
Technological Innovation



Big Data and
Advanced Analytics

Shifts in
Resource Distribution



New Demographic Mix



Shifting Geopolitical
and Economic Power



Megacities and Agglomerations

Shifts in
Workforce Values
and Culture



Diversity and Inclusion



Green Economy



Entrepreneurship and Well-Being



Inequality, Nationalism
vs Global Mindset

Source: BCG analysis.

5% to 45% of the workforce². The last on the list is the **growing inequality** in opportunities and income, and the associated manifestations of nationalism and globalism, both at the level of national policies, and among ordinary people who demand either better protection from the regulator, or, on the contrary, higher autonomy and wider opportunities for employment in other markets.

The future is already here and we are witnessing structural changes that it has brought along: the disappearance of some activities and the emergence of others, fundamentally new professions and tasks; the lack of quality jobs for new generations and inadequate conditions for a long productive life of older generations; shifting the workforce value structure towards sustainable development; local imbalances on labor markets due to ongoing urbanization and interregional labor mobility; untapped potential of social groups that are currently not included in the workforce; emergence of new models and formats of interaction between employees and employers, etc. For example, labor markets with higher technology penetration are already marked by a higher share of people involved in the gig economy and in entrepreneurship, as well as the adaptation of employers to the emerging values of potential employees, such as high social responsibility and sustainable development. In other markets, the most relevant problems will include creating high-quality jobs for young people, supporting flexible and virtual employment formats, retraining workers performing routine tasks that are highly exposed to automation, etc.

The speed and degree of development of individual processes depend on the specifics of the local labor market, socio-demographic

2. Employee survey performed by BCG in cooperation with Research Now SSI as part of The Future of Work, 2018.

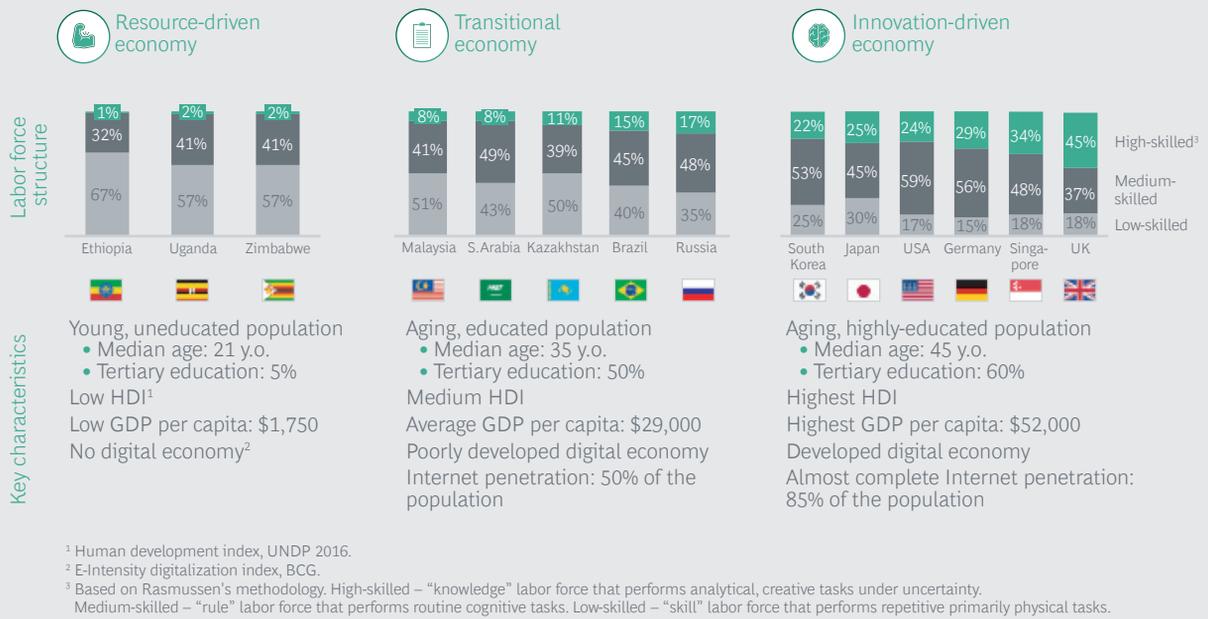
conditions, and the economic structure of each country. The efficient management of these structural changes will require varying efforts from labor market stakeholders in different countries to unlock the full potential of the national human capital.

Knowledge – a necessary condition for the economy of the future

With the rapid development of technologies and constant market transformations boosting economic growth, corresponding dynamics and high-quality improvement of human capital is required. The share of highly-skilled employees is highest in countries with high GDP per capita and an innovative economy – 22% to 45% vs. the world average of 15% (Fig. 2). On the one hand, this pattern shows that, without the development of human capital, further technical progress, solving socio-demographic problems, and associated cultural transformations will be impossible.

On the other hand, it is clear that highly-skilled and mobile talent will not suddenly emerge in an economy. The world in the twenty-first century generates new demand for the quality and diversity of competencies, but it takes time for the educational system to adapt and adjust the “historically proven” educational methods to become more focused on labor market needs. The system as a whole has already started to move towards consideration of new demand, however, it still needs to answer some fundamental questions that will bridge the gap between demand for competencies and supply of knowledge. How to develop an individual approach tailored to the needs of each person? How to foster sustainable life-long learning? How to focus on the knowledge that is really in-demand? It might take time for the educational system to answer these questions, as there are no ready and proven solutions yet.

FIGURE 2 | The increasing complexity of the economy is changing the requirements for human capital development



Sources: World Bank, ILO, The Economist, Jens Rasmussen's methodology for classification of tasks; BCG analysis.



CHAPTER 2.

GLOBAL SKILLS MISMATCH CHALLENGE



SKILLS MISMATCH IN NUMBERS¹

1.3B

workers are affected by skills mismatch

6%

decrease in labor productivity due to skills mismatch

\$5T

lost global GDP from lower labor productivity

45%

of employers have difficulties finding employees with the required skills

76%

of employees think that they should get ready for future employment challenges

2–5 years

time-to-obsolescence of technical skills in today's world

2–3 fold

training cost increase over the past 30 years

1. OECD, 2016; ILOSTAT, 2016; Manpower Group, 2018; Survey among 7 ths managers and 11 ths production workers conducted by BCG Henderson Institute, 2018; IEEE Spectrum, 2013; College Board, 2017.

THE SYSTEM FOR GENERATING human capital in any country needs to supply talent to the economy. This means that labor organizations should be able to find and employ people to perform their tasks. Employees should possess the knowledge and competencies required by their employers. However, as countries transition to an innovative economy, one of the key problems on the labor market is the impossibility of finding and employing sufficient numbers of such talent.

This problem is globally known as the *Skills Gap*.

A problem for one billion people and every second employer

One of the key causes of the skills gap is not an actual lack of employees, but a mismatch between their knowledge and competencies and the activities they need to perform. According to the OECD, with the current global workforce of 3.5 billion, more than one billion workers on the labor market have competencies that either exceed or are not sufficient for the activities they perform (see Fig.3). This so-called “skills mismatch”

affects every second employer. Today this mismatch is experienced by 1.3 billion people, and by 2030 its impact will spread to more than 1.4 billion workers¹.

Employees whose qualifications exceed the requirements of their job could become successful candidates for many activities that need high-performance talent. For example, in 1970, the percentage of US taxi drivers with a college degree did not exceed 1%, but in 2013 the share of such “high-skilled taxi drivers” in the US reached 15%². The skills and qualifications of these people could add more value for the employer, economy, and the whole society. At the same time, workers whose qualifications are not sufficient for their job underperform and require additional training or retraining, and, in some cases, they are never successfully retrained. This has a direct impact on the efficiency of employers.

1. BCG estimate based on OECD, 2016 and ILO, 2018
2. University Enrollments and Labor-Market Realities, 2013

FIGURE 3 | Skills mismatch formation

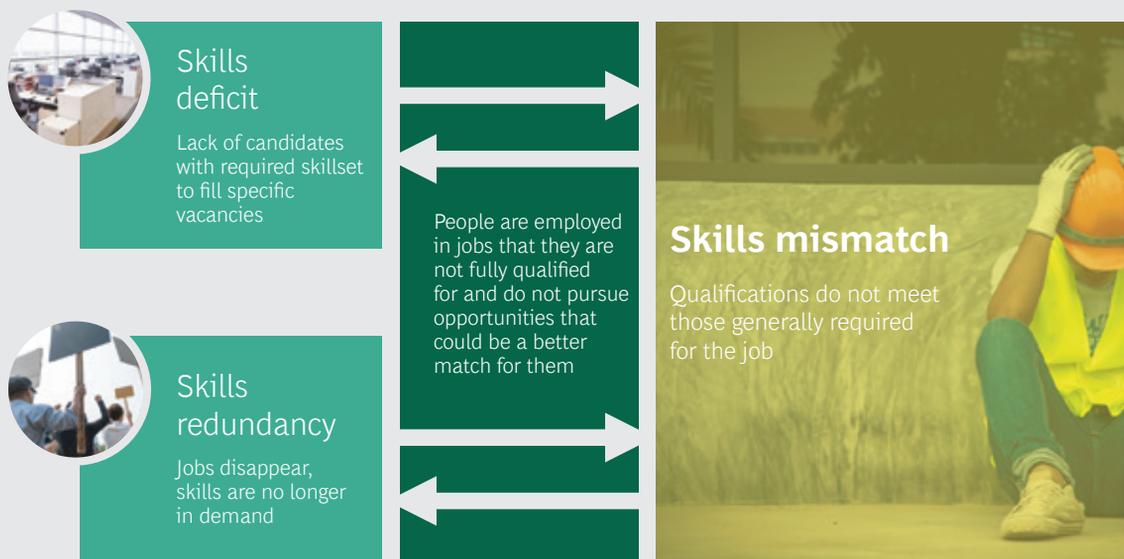


FIGURE 4 | Express survey among employers about skills mismatch

Assessment by company representatives of skills mismatch among employees



Share of employees with skills mismatch

~23%

Percentage of companies that assess skill level during the recruitment process



Sources: The survey was conducted by BCG in 2019 among representatives from large, small and medium-sized businesses from 47 countries. The survey was completed by 161 representatives who occupy senior positions, employees did not participate in the survey; BCG analysis.

“India, like many developing economies, faces the skills mismatch problem, and this problem will grow. Especially, given that we expect to see a totally different labor market in 2022: 9% of the workforce will be involved in activities that do not exist today, and 37% will be involved in activities that will radically change the requirements for skills and competencies of employees.”

– Representative of FICCI (India)

“Skills mismatch is a problem for the South African labor market, as in today’s conditions of high unemployment highly qualified talent is forced to take less qualified jobs.”

– Representative of African Innovators (South Africa)

According to various estimates, in OECD countries 17% to 52% of the workforce, or, on average, two out of five employees, are affected by the skills mismatch problem (Fig. 5).

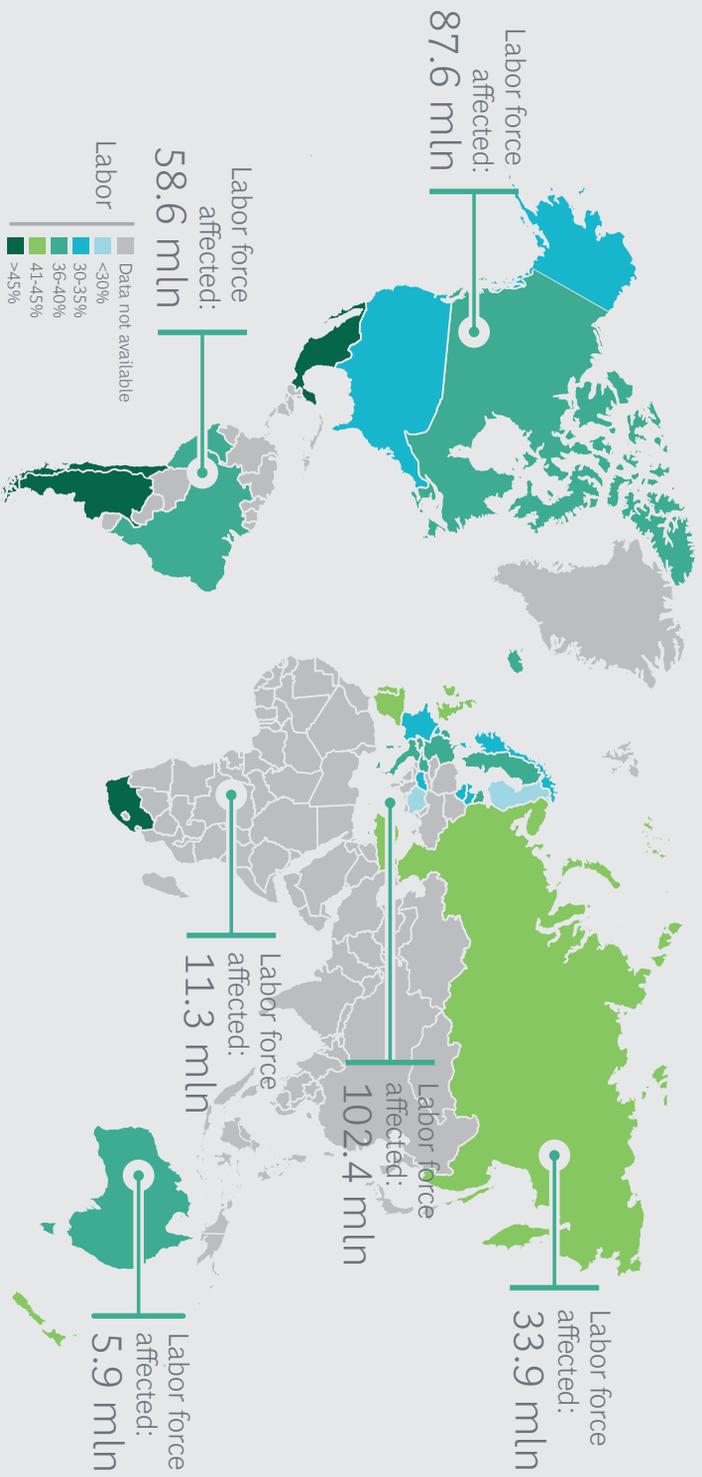
Hidden productivity tax and social risks

Skills mismatch is a serious threat to the growth of the world economy. Globally, this translates into a development slowdown and growing income loss. OECD countries in 2016 witnessed an average decrease in labor productivity due to skills mismatch of 6% (Fig. 6)

The economic consequence of the skills mismatch is a hidden tax on labor productivity. When hiring an underqualified employee, the employer loses productivity and profits, and will have to additionally train or retrain this employee. The hidden tax also applies in the opposite situation, when the company has invested in the employee’s training, but the acquired knowledge and skills are not used for a long time and the employee gradually loses the skill and motivation.

Skills mismatch is not a purely economic problem. It threatens the stability and well-being of society, causing uncertainty and concern among employees about their future employment, career development, and income. Employee concerns are amplified by the news of mass layoffs.

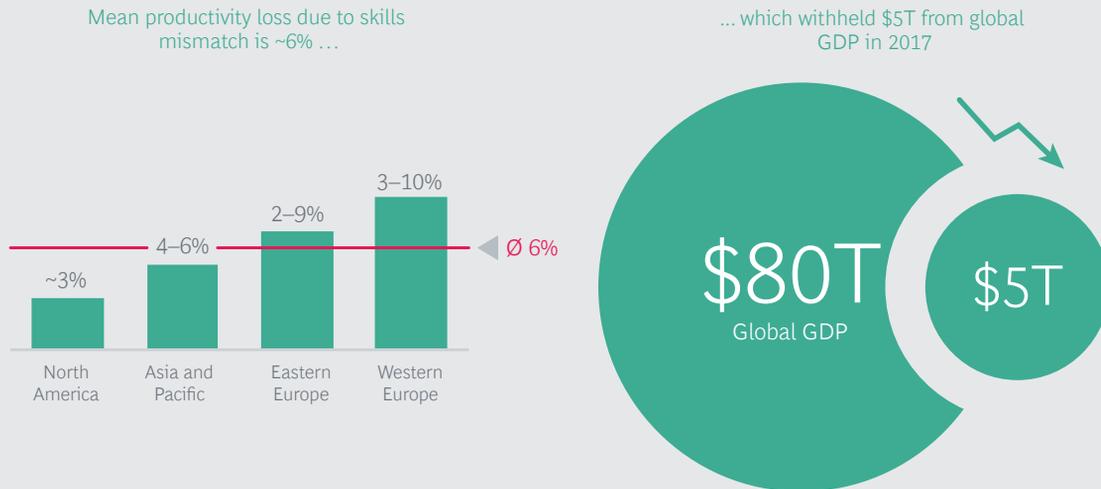
Figure 5 | The scale of the global skills mismatch problem in OECD countries¹



¹ Analysis covers 41 countries (Incl.35 OECD countries and 7 non-OECD countries – Argentina, Bulgaria, Cyprus, Peru, Romania, Russia, S. Africa).

Sources: OECD, 2016; ILO, 2016; World Bank, 2016; BCG analysis.

FIGURE 6 | Productivity loss due to skills mismatch in various regions of the world



Sources: OECD, 2015, 2016; IMF, 2017; BCG analysis.

In 2019, a global consumer goods corporation announced its plans to lay off more than a thousand employees in positions that can be automated over the next 5 years. The rationale behind the layoffs may vary: production automation, emergence of new technologies, business model innovations, changing market paradigms, removal of uncompetitive divisions, etc. But whatever the reasons, mass layoffs remain a factor in increasing social tension.

Finally, the skills mismatch problem creates risks for the state. In the mid to long term we can expect an even greater stratification of countries in terms of economic growth and global division of labor. The most competitive countries will be those with the highest readiness to work in the high-tech economy of the future.

“When we compete, this concerns not only the product markets, but also the fight for human capital: when young people see a demand for a specific profession (for example, in artificial intelligence technologies), see that a higher qualification gives better chances for employment.

EMPLOYMENT OUTLOOK SURVEY CONDUCTED BY BCG (2018):¹

- Every second employee believes that their employment opportunities will decrease in the future
- 76% of employees are convinced that they need to prepare for potential future employment challenges
- 30% of ordinary employees and managers expect an increase in job skill requirements in the next 3-5 years
- More than 30% of employees do not think that they can do anything to prepare for the impending changes

1. Survey among 7,000 managers and 11,000 production workers conducted by BCG Henderson Institute, 2018; IEEE Spectrum, 2013; College Board, 2017.

For a country participating in the competition, it is essential to attract such young talent.”

– Peter Altmaier, Federal Minister for Economic Affairs and Energy (Germany) SPIEF, joint panel discussion of Rosatom, BCG and the Young Professionals Union (WorldSkills Russia).

Skills mismatch and the educational system

The transition towards a knowledge economy requires the workforce to have both developed digital skills and the “universal of the 21st century,” including complex problem solving, adaptability and communication skills. The number of professions in the world continues to grow, with many of them having emerged in the past ten to fifteen years. Specialization is constantly getting deeper, and professional activities are growing into independent areas of knowledge. Technical skills become obsolete in two to five years, i.e. quicker than the average training period for a highly-skilled professional³.

3. IEEE Spectrum, 2013

Yet, the system for building human capital still uses an approach to training that was adopted in the twentieth century, with standardized education and centralized management of education and the labor market. As a result, it continues to massively generate a workforce with standardized knowledge and skills, who, once on the labor market, often lack the skills in demand, and therefore experience skills mismatch (Fig. 7).

While the educational system attempts to adapt to new, more sophisticated market requirements without fundamentally changing the approach to training, it is becoming ever more complex and cumbersome, and education is becoming longer and more expensive. For example, according to the College Board, over the past thirty years, the cost of a four-year course (both public and private) increased two-three fold, net of inflation. And according to research conducted by Harvard University and Korea University, the average duration of studies has increased 1.9 and 3.6 fold in developed and developing economies, respectively, over the past fifty years, and it continues to increase.

FIGURE 7 | The basis of today’s educational system dates back to the era of Industry 2.0



¹ Number of years from launch to mass distribution to 60% of households.

Sources: Harvard Business Review, 2013; Brookings Institution, 2017; BCG analysis.

The approach to the educational process that emerged in the twentieth century was largely influenced by the needs of large-scale industrial production, which demanded a workforce that would maintain work discipline and meet the employer's standardized requirements. Employees had a certain degree of freedom in making decisions regarding their own professional development and changing employers; however, it was usual to have the

same job throughout their lives. The employer "ordered" the required number of employees from the educational system, which was and still is operating as a "talent factory" producing potential employees with a standard pre-defined set of skills and knowledge. The key role of the state in this system of relations was to ensure stability and social guarantees (very modest in most countries) in the event of job loss.



CHAPTER 3. A NEW PARADIGM FOR THE LABOR MARKET AND EDUCATION: HUMAN CENTRICITY



CHALLENGES IN NUMBERS¹

27%

of new activities will emerge by 2022

30%

of employees are not sure they can prepare for the future of the labor market

49%

of the world's population do not have Internet access

30M

of the adult US population have a disability, while ...

79%

of people with disabilities in the US are not part of the workforce

1. WEF, 2018; Bureau Labor of Statistics, 2019; GfK, 2019; Survey among 7,000 managers and 11,000 production workers conducted by BCG Henderson Institute, 2018; International Telecommunication Union, 2018; Bureau of Labor Statistics, 2019; United Nations, 2019

Challenge of the 21st century: mass uniqueness

Key mechanisms for maintaining the social contract of the twentieth century include standardized professions and education, non-transparent labor market, a job for life, the concept of salary, work placements and internships, etc. Such a social contract makes it virtually impossible to overcome skills mismatch—the uneven distribution of human capital is inherent to the very idea of standardization.

This problem can only be solved through the development of a fundamentally new social contract between the employee, employer, the state, and the educational system. The key objective of such a contract is to create conditions for the workforce to consciously and rationally choose where and how to apply their labor, as well as the focus of their training or development. To this end, the educational system should act as a mediator between employers, the state and the individual, and provide a full toolkit for personalized lifelong training. The role of the employer is to select employees based on their skills and values, and to provide them with opportunities for personal self-realization in the workplace. The state should provide employment and development opportunities to each person based on their preferences.

The challenge of mass uniqueness is the need to form a set of individual paths for personal and professional fulfillment in an ecosystem formed by the state, the employer, the educational system, and the employee. Changes in the terms of the social contract between the state, employers, educational system, and individual – from

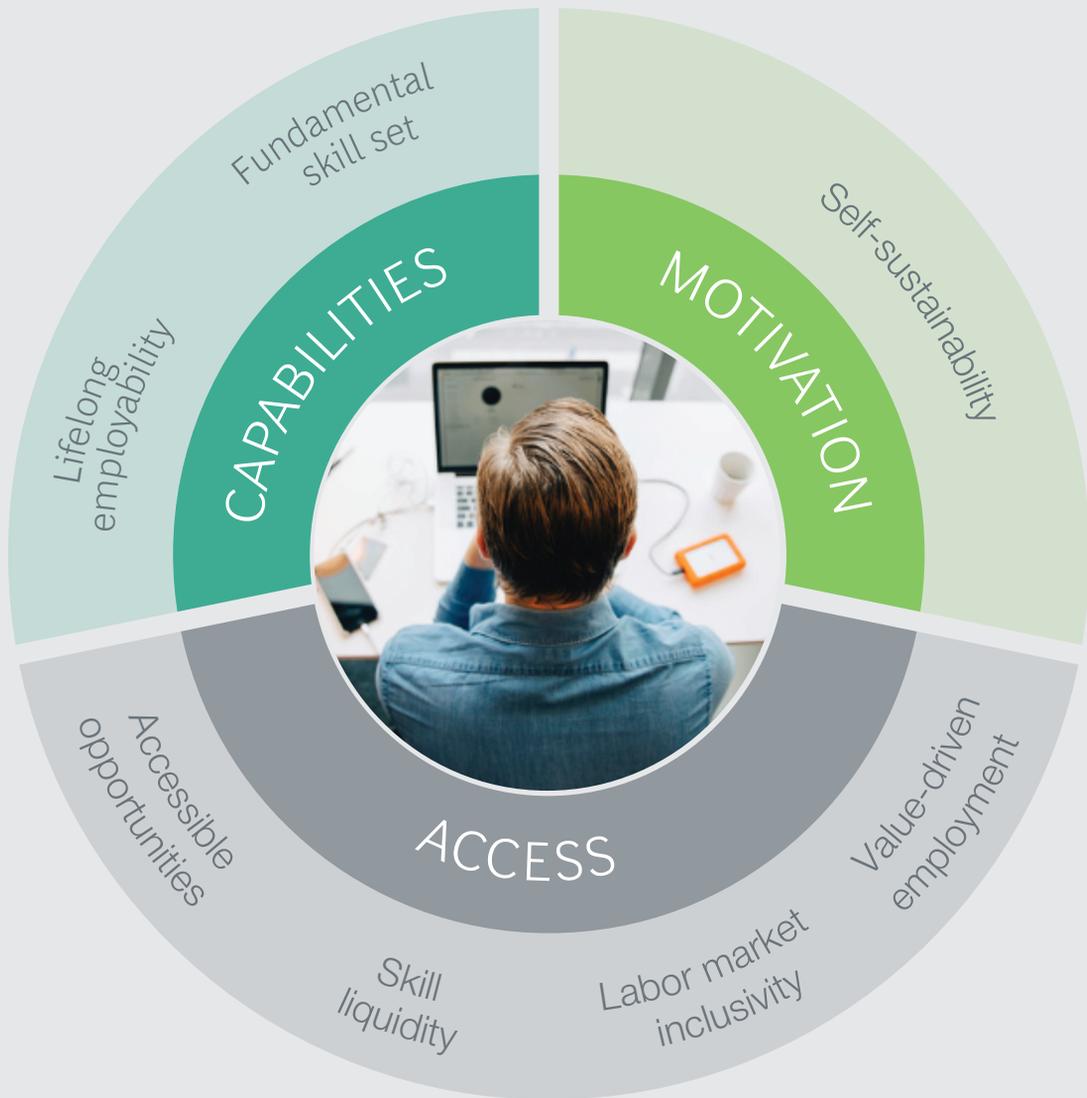
mass standardization to mass uniqueness – impose new requirements on the workforce, as well as their access to opportunities in the labor market.

Under conditions of high uncertainty, the workforce should have all the necessary cognitive and non-cognitive skills and knowledge needed to adapt to the changing requirements of employers and, thereby, stay in demand on the labor market. At the same time, they should take a responsible approach to their own professional development in order to take advantage of the opportunity to choose their own career paths and to most fully unlock their professional potential. The state should ensure equal and open access for every potential employee to development and employment opportunities on the labor market, and employers should ensure non-discriminatory hiring based on skills and competencies, taking into account the adaptation of new values imposed by employees. The role of the educational system is heading toward a search for new approaches to personalized training of potential employees, taking into account their skills and knowledge, as well as the constantly changing requirements of employers.

Realization of the seven conditions listed – acquisition of a fundamental skillset, lifelong employability, self-sustainability, accessible opportunities, skills liquidity, labor market inclusivity, and respect for the values of employees—is a fundamental part of the concept of a human-centric labor market.

Bridging the skills mismatch will require a major revision of approaches to the formation of all these elements, both at national and international levels (Fig. 8).

FIGURE 8 | The principles of human-centric system



Sources: BCG analysis.



Insufficient focus on training for jobs that have yet to appear

27% of new roles will emerge by 2022¹. Most employees see changes in the labor market, but they do not understand which professions and skills will be in demand in the future. The existing educational system cannot efficiently adapt to the rapidly changing world and does not teach people to keep up with the change and find their place in the new reality.

1. WEF, 2018



Majority of the labor force not involved in lifelong learning and continuous retraining

With the development of new technologies, new skills emerge and existing skills become obsolete at a rapidly increasing rate. While it once took 15-20 years for technical skills to become obsolete, today it only takes 2-5 years¹. This drives the demand for regular retraining and upskilling; however, the outdated and inefficient educational system cannot supply up-to date and high quality training to all those who need it.

1. IEEE Spectrum, 2013



Lack of motivation and accountability for personal development

While most employees understand that the labor market is undergoing fundamental changes, only a few are ready to assume responsibility for their own development and professional future. According to BCG research, only 28% of respondents consider using self-teaching resources, and 30% of employees did not believe that they could do anything to prepare for the coming changes¹³.

1. Survey among 7,000 managers and 11,000 production workers conducted by BCG Henderson Institute, 2018

CAPABILITIES: forming a fundamental skill set and lifelong employability

The key challenges for the existing workforce training system are training for activities that do not exist yet and continuously learning to stay in demand and maintain performance under conditions of continuous technological change.

In a human-centric approach, everyone should be provided with a fundamental skill set, including both cognitive and non-cognitive skills, required for working in conditions of uncertainty and continuous change on the labor market. Professional development of each individual should continue throughout their life and follow an individual path to ensure lifelong employability.

“A child today can expect to change jobs at least seven times over the course of their lives – and five of those jobs do not exist yet. To get a better understanding of the skills needed in these jobs of the future, we conducted a country-wide survey of almost nine hundred companies. The results confirmed that soft skills – such as teamwork, knowledge of digital tools, an understanding of rules and regulations, responsibility and commitment – are the most relevant for the future.”

– Esteban Bullrich,
Argentinian Minister of Education

MOTIVATION: ensuring self-sustainability in the definition of individual training and development paths

The system that has formed over the past several decades assigns accountability for the professional development of an individual to the customers of the “talent factory,” i.e., employers and the state, as these are the two parties to the social contract in charge of formation and efficient utilization of the workforce. For individuals, this has blurred the sense of personal responsibility for their own development. According to a survey conducted by BCG among employers, self-sustainability and motivation are one of the

most challenging development areas in 74% of countries.

The human-centric approach assumes that employees should consciously and independently choose the skills that they learn, the scope of knowledge they acquire, and the time they spend on it. The role of the state and the employers is to provide support and ensure the broadest possible access to opportunities.

“Because people tend to form beliefs about what they can achieve in life at a young age, the development of positive motivation to achieve at school is a prerequisite for success in life.”

– OECD, **Students’ Motivation to Achieve, 2017**

ACCESS: competence-based hiring taking into account the employee’s values

Human potential cannot be unlocked if access to opportunities on the labor market is limited, for example due to a lack of information about vacancies, the employer’s bias regarding the formal training of a potential employee, or because of special personal circumstances or values that potential employers are unable or unwilling to take into account when hiring. Such barriers create a vacuum around an individual, reduce chances for self-fulfillment and reaching maximum performance, or push them to look for opportunities in other markets – in other industries or geographies.

Human centricity means accessible labor market opportunities, i.e., hiring based mainly on competence rather than formal training, and maximum access to information about labor market opportunities; skills liquidity, i.e. creating favorable conditions for labor mobility, including adaptive employment formats; labor market inclusiveness, i.e. equal opportunities for successful employment regardless of life situation and social status; and value driven employment or respect for the values of each person as a competitive advantage for the personal and professional growth of each potential employee.



Limited access to opportunities on the labor market

Today, most people only have access to information about career opportunities in their city or region, but not in other countries. Information about real opportunities is usually fragmented and only available in systematized form through intermediaries – recruiters or internal resources of large companies. Most candidates find their job through an online job board (41%) or social media (14%), at the same time ~3 billion people worldwide do not have Internet access (mainly in Asia and Africa)¹.

1. Clutch, 2019



Uneven redistribution of human capital

The global labor market today characterized by a number of geographical imbalances in the distribution of human capital and opportunities for professional development. For example, in the US, employers always find 90% of candidates residing within a 100 km distance of the job location; meanwhile the pool of potential candidates increases by 2%-20% with a broader search geography¹.

1. I. Marinsecu, R. Rathelot, 2013



Locked up potential of certain categories of labor force

There are several categories of human resources that are currently not employed due to existing limitations. These include stay-at-home moms, the elderly, and people with disabilities or limited abilities. For example, in the US, people with disabilities make up 13% of the population, more than half of them are in the working age of 18-65 years old, yet only one third of them works. Creating conditions for inclusion of this category would improve GDP by 0.5-2%¹.

1. Bureau of Labor Statistics, 2019; BCG Analysis

Figure 9 | The correlation between human centricity and skills mismatch, labor productivity



Sources: OECD, Oxford Economics; BCG analysis.

“The world of work is undergoing great changes. They create many opportunities for more and better jobs. But governments, trade unions and employers need to work together, to make economies and labor markets more inclusive.”

**– Stefan Löfven,
Prime Minister of Sweden**

How far are we from human centricity?

The human-centric approach to employee development and fulfillment is not just a humanistic concept, but a real tool for increasing productivity. Individual human-centered tools are already starting to be used in business and in national strategies for developing the labor market and educational system. Yet, a complete paradigm shift is a long and fundamental process. How far are we today, in 2019, from the new paradigm?

The efforts of countries and employers to implementing the human-centric approach to human capital building and management and the results of these efforts can be measured using the seven global challenges of the labor market described in the previous chapter (we called this approach “the system’s human centricity”).¹ The BCG study, based on data from international organizations and a survey among representatives from more than thirty countries, shows that countries with a greater skills mismatch are characterized by a low level of human centricity in the labor market. In turn, the level of human centricity of a system is associated with labor productivity—countries with more human-centric systems tend to demonstrate significantly higher labor productivity rates (Fig. 9).

1. The methodology for assessing countries using the seven challenges within the human-centricity-of-the-system approach is provided in the Appendix to this document.



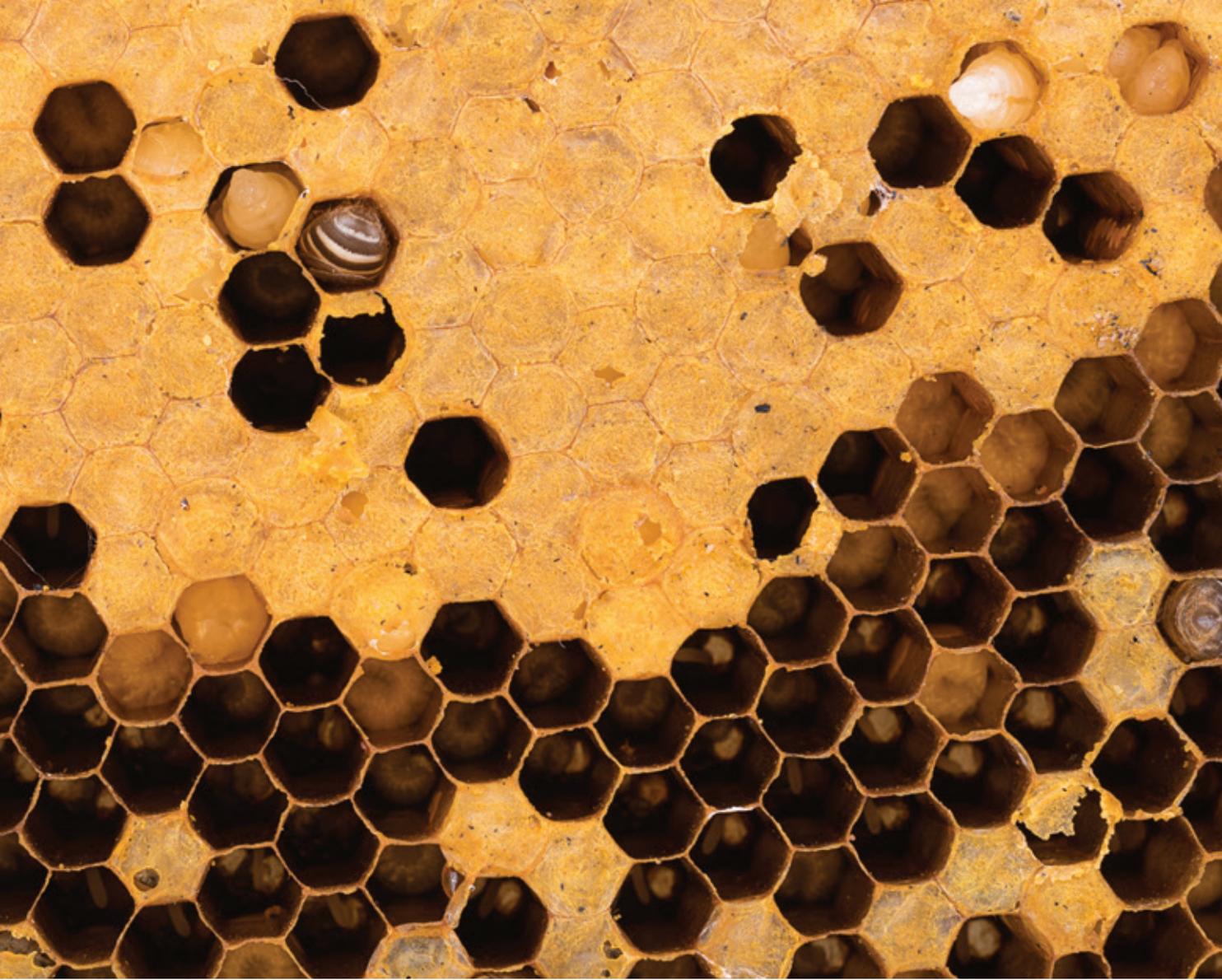
Shifting values and needs of the labor force

Every year more and more Generation Z’ers enter the labor market. Career and financial reward are not the top priorities for this generation: they place a higher importance on self-development and work-life balance. Only 36% of Generation Z’ers consider career advancement as a top priority in their job¹. Unlike previous generations, Generation Z’ers tend to change not just employers more often but also industries. The values of other generations tend to follow the same path.

1. Harvard business review (2016)



CHAPTER 4. STRATEGIES FOR A HUMAN CAPITAL FORMATION AND DISTRIBUTION SYSTEM



A CLEAR AND CONSISTENT STRATEGY should be developed to form a new paradigm and solve the skills mismatch problem. Understanding the structure of the human centrality concept and its interrelation with labor productivity will make it possible to develop and implement informed strategies at national and international levels, to define realistic ambitions and goals for such strategies, and to select really effective solutions for transforming individual elements of the labor market and education (Fig. 10).

Country segments based on the level of human centrality

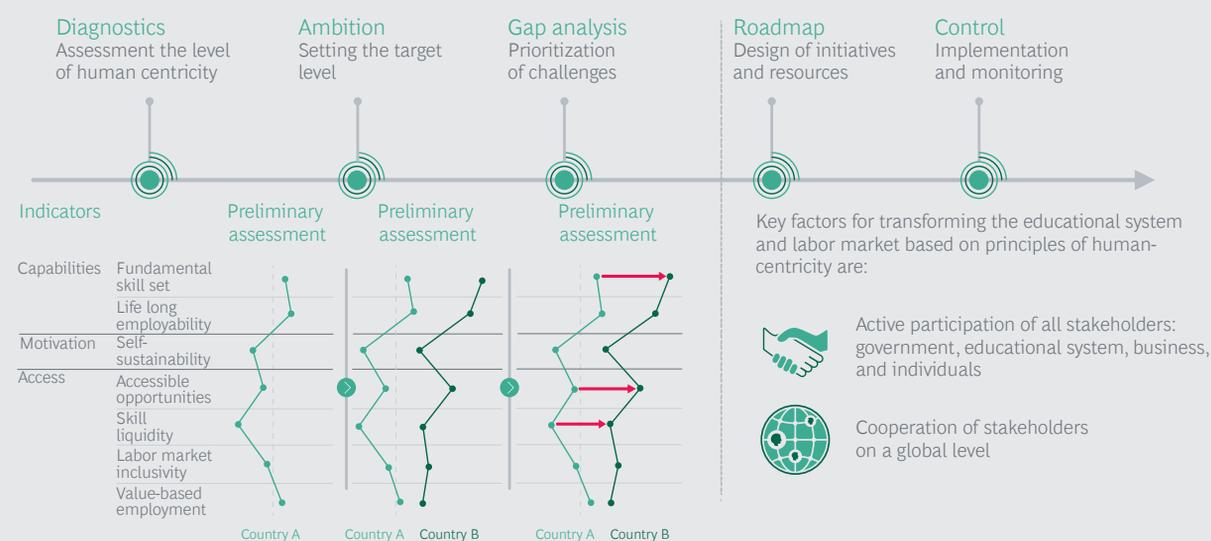
Like in many other spheres of life, it is difficult to propose a universal strategy for improving labor productivity. However, this does not mean that situations in different national labor markets do not have a certain similarity that would allow for methodologically comparable solutions to be proposed. Using the human centrality concept structure, which has three main blocks – *capabilities*, i.e. the level of development of professional skills and individual competencies of employees, and, accordingly, the level of development of education and professional training systems; *opportunities*, i.e. the availability of vacancies in the labor market and their accessibility for the population; *motivation*, i.e. the willingness of the public to en-

gage in personal development and the availability of conditions and incentives for such personal development – it is possible to suggest certain country segments for which such methodologically comparable solutions would be most relevant.

Within each block, we assessed two types of indicators: those which measure the level of development of the environment (existing legal provisions, business practices, etc.) and performance indicators of this environment (skills development level, the degree of motivation for continuous learning, prevalence of flexible employment formats, etc.). The extent of the system’s human centrality was measured for twenty-five countries taking into account the availability of a sufficient amount of qualitative comparable statistical information concerning these countries. A comparative analysis of the countries was performed for segmentation purposes separately within each block. Based on the analysis, eight clusters of countries with a unique combination of challenges across the three blocks – capabilities, motivation and access – were identified (Fig. 11). Each cluster of countries has similar conditions and challenges for implementation of the human centrality concept.

AMBITIOUS AND OPEN. Countries using such strategies usually have a highly motivated and educat-

FIGURE 10 | Approach to developing a strategy for forming and managing human capital



Sources: BCG analysis.

ed population with a high degree of social and professional mobility. People from these countries clearly understand that they are responsible for their own professional development and diversification of the skills they have, and, at the same time, they can count on the support of a well-developed training ecosystem. In addition, an open and inclusive labor market is typical for countries that have room for both local and foreign employees. These countries include, in particular, the United Kingdom, United States, Finland, etc.

They are followed by countries with **closed and self-sufficient** labor markets, such as Japan and China. People in these countries are also characterized by high motivation and activity, and they are ready to actively compete for jobs using well-developed educational and self-learning systems. However, unlike the previous group, these are rather “employer’s markets” where the demand is determined by companies and satisfied mostly by domestic resources.

We identified strategies specific to **developed and stable** markets as the third cluster (Fig. 12). They include countries such as Austria, Germany, and France. These are countries with a very strong educational base but a rather inert population, for which personal stability is much more important than growth. This situation is partly exacerbated by very well-developed and ultra-reliable social protection systems that are inherent to these countries. These mechanisms protect the population from unemployment, but also fully prevent the so-called Elop burning platform effect from forcing the workforce excluded from economic life to take more active steps to return to work. These are “employee markets” characterized by a high degree of openness and inclusion and increased attention to the interests and needs of the population.

“The social insurance system development level [in Germany] is very high, the income of an unemployed person is about 800 euros and the average salary of a low-skilled worker is about 1,300 euros, so having motivation for development is a challenge.”

— A representative from the Federal Institute for Vocational Education and Training (BiBB) – Germany

The fourth cluster of countries consists of **talent exporters** such as Russia and Kazakhstan (Fig. 13). Historically strong secondary and higher educational systems are combined here with low labor market efficiency.

A non-transparent and complicated job search process, low mobility and confused and just as non-transparent competition result in an ongoing brain drain and low motivation for the workforce that remains in the country.

“Currently it takes 7.8 months on average to find a job in Russia. I think you will agree with me that this is not a very optimistic figure. Our task is to do everything possible to reduce it.”

— Denis Vasiliev, Deputy Head Federal Service for Labor and Employment (Russia)

The fifth cluster includes **labor force exporters** (Fig. 14). The most active part of the population is trying to compensate for historically underdeveloped public educational systems and the high cost of paid education through self-education and self-training. However, the inefficient labor market and disparities in employment opportunities eventually force people to emigrate and look for work abroad. The most vivid examples of such markets are Mexico, Brazil, and South Africa.

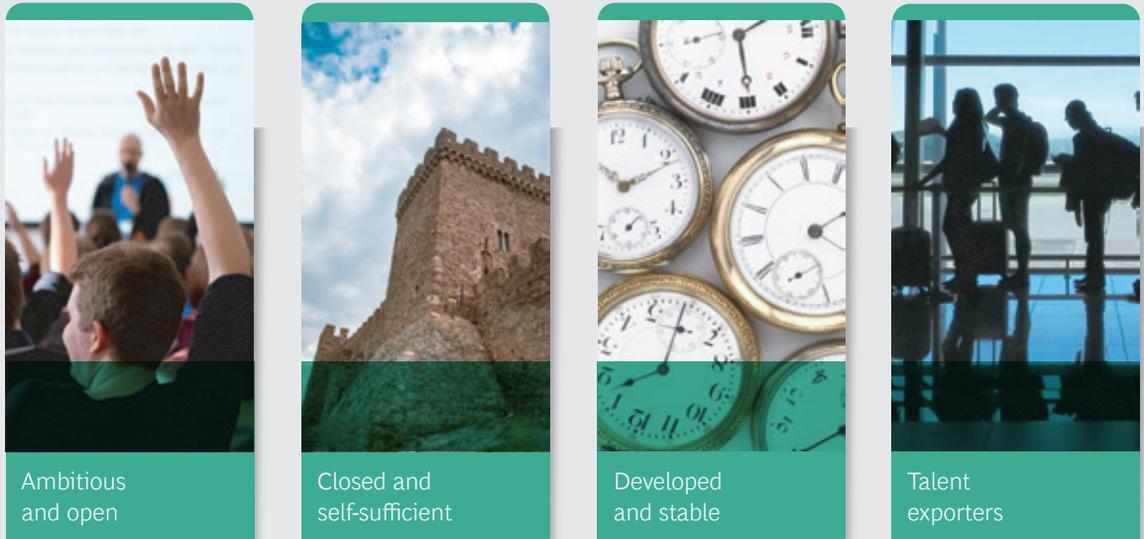
“No matter how rich or poor you are in Mexico, your education is bad or very bad.”

— An education expert from the Analytical Center, The Mexican Institute for Competitiveness (Mexico)

The sixth segment includes countries from **the growing new world**, such as India. The highly motivated local population willing to work suffers from a lack of basic education. The labor market is characterized by a high degree of activity and openness and contributes to the development of entrepreneurship, workforce migration, and the formation of new work formats.

A different situation is observed in **talent importer** countries, such as Saudi Arabia. Compared to other countries, their population has a

FIGURE 11 | Human centricity of the system: eight country clusters with unique combination of challenges



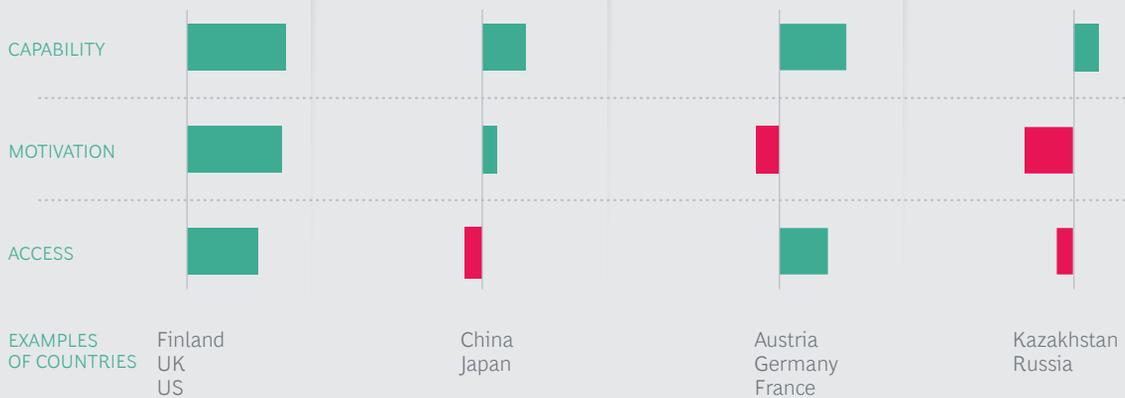
? Key issue

How to retain talent and provide opportunities for leadership?

How to provide people with the best opportunities for self-actualization?

How to motivate people for self-development?

How to retain talent and give them opportunities for development?



Sources: BCG analysis.



Labor force exporters



Growing new world



Talent importers



Protracted crisis

Key issue



How to build up an educational and labor market system?

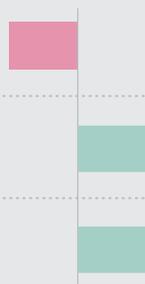
How to provide the population with skills to move to a new stage of development?

How to integrate migrants and motivate the local population?

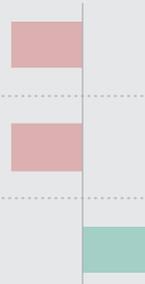
How to stabilize the situation?



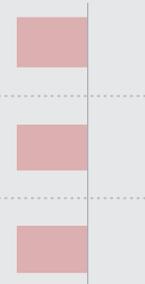
Brazil
Mexico
South Africa



India



Saudi Arabia



Venezuela

CAPABILITY

MOTIVATION

ACCESS

EXAMPLES OF COUNTRIES

■ ■ Average value of parameters for a cluster of countries
■ ■ Illustration, no data available

FIGURE 12 | Developed and stable – cluster profile using the example of Austria, Belgium, Germany, Portugal, and France



1 Human centricity of the system

Capability	☆ Fundamental skill set		The educational system focuses on creative and critical thinking development The countries are in the top 30 in development of digital skills Students demonstrate a high level of knowledge in mathematics and problem solving in groups among the top 30 countries for both skill sets The share of people aged 25-34 with a tertiary education is in line with the average for OECD countries (i.e. 44%)
	☆ Lifelong employability		The countries support employees in their professional growth and development : most countries of the cluster are in the top 25 of the rating
Motivation	☆ Self-sustainability		Most of the population places stability above growth Unemployment benefits and the minimum wage are almost the same , which results in lower motivation of the population The population's commitment to self-learning is below average
Access	☆ Accessible opportunities		The state provides the unemployed with opportunities to improve their skills for successful employment: the ratings of the countries vary from 3 to 39 out of 125 countries
	☆ Skill liquidity		Companies do not face serious difficulties searching for talent: the countries are in the top 30 in terms of ease of finding skilled employees The countries are in the top 30 in terms of attracting foreign workers
	☆ Labor market inclusivity		Most employees use opportunities of freelance and part-time employment Participation of the aged population (in same age group) in the labor force is lower than average for OECD countries (9% vs. 15.3%)
	☆ Value-driven employment		On the whole, the market provides opportunities for employment and entrepreneurship for women: the countries are above the median in the gender gap rating Companies develop a favorable social environment for employees : the average employee satisfaction indicator for the cluster is 61.6 vs. the average of 56.0 for all the countries considered

2 Skills mismatch¹

37%

¹ Average value for cluster representatives.

Sources: WEF, 2016-2018; OECD PISA, 2015; OECD 2017-2018; INSEAD, The Adecco Group, Tata Communications, 2018; World Bank, 2018; ILO 2015; UNDP, 2018; Martin Prosperity Institute, 2015; Tomson Reuters, 2018; BCG analysis.

FIGURE 13 | Talent exporters– cluster profile using the example of Russia and Kazakhstan



1 Human centricity of the system



2 Skills mismatch¹

45%

¹ Average value for cluster representatives.

Sources: WEF, 2016-2018; OECD PISA, 2015; OECD 2017-2018; INSEAD, The Adecco Group, Tata Communications, 2018; World Bank, 2018; ILO 2015; UNDP, 2018; Martin Prosperity Institute, 2015; Tomson Reuters, 2018; BCG analysis.

FIGURE 14 | Labor force exporters – cluster profile using the example of Brazil, Mexico and South Africa



1 Human centricity of the system

Capability	☆ Fundamental skill set		The educational system focuses on memorizing information rather than on development of creative and critical thinking Digital capabilities are poorly developed: the countries rank 65 and lower in a rating of 139 countries
	☆ Lifelong employability		The mathematics results of students are among the bottom 25% of the countries Only ca. 15% of the population 25-34 y.o. has a tertiary education , vs. an average of ca. 44% for the OECD countries Employers support professional growth of employees : the countries are in the middle of the rating of employee development for 125 countries
Motivation	☆ Self-sustainability		The countries are characterized by a high difference in the salary of high- and low-qualified employees (~ 222%), which motivates the population to develop their skills Population demonstrates high interest in self-learning (e.g. participation in MOOCs)
Access	☆ Accessible opportunities		Significant issues searching for talent: the countries are in the lower part of the rating for the ease of finding skilled employees The employee search and hire process is not transparent, and job search platforms have low coverage
	☆ Skill liquidity		South Africa and Mexico demonstrate high population mobility among the countries' regions – the countries rank in the top 30 among 140 countries in terms of internal mobility The countries are not oriented toward hiring foreign employees: in the rating of ease of hiring foreign labor South Africa and Brazil rank 102 and 122 out of 140 countries
	☆ Labor market inclusivity		On average, the elderly population of Brazil and Mexico actively participates in the labor market – their share in the labor market is equivalent to the OECD average (15.3%) Meanwhile, employment and entrepreneurship opportunities for women are highly limited : the countries are in the bottom of gender gap ranking
	☆ Value-driven employment		Companies strive to develop a favorable social environment for employees : the average employee satisfaction indicator for the cluster is 53.2 vs. the average of 56 for all the countries considered

2 Skills mismatch¹

51%

¹ Average value for cluster representatives.

Sources: WEF, 2016-2018; OECD PISA, 2015; OECD 2017-2018; INSEAD, The Adecco Group, Tata Communications, 2018; World Bank, 2018; ILO 2015; UNDP, 2018; Martin Prosperity Institute, 2015; Tomson Reuters, 2018; BCG analysis.

rather low level of motivation for development and personal fulfillment, interest in active self-development or career growth. The local labor market is quite active and open, but there is a significant shift towards specialists working on a temporary or project basis, and immigrants. As a rule, the educational and training system in such markets is poorly developed, although the government attempts to improve the situation by importing talents and know-how from markets more developed in this respect.

Finally, we classified countries in a **protracted crisis** in the last group. Development of the educational system and labor market opportunities is a lower priority for these countries compared to other social and economic issues that require stabilization.

Strategies for forming human centrality

Each of the clusters referred to above is, to some extent, experiencing difficulties in one or more of the three blocks of human centrality: **capabilities, motivation, or access**. The approach to strategy formulation can be considered using as an example the

clusters of countries where one of the blocks has a priority for preparation of talent for the future.

PROBLEM: CAPABILITIES

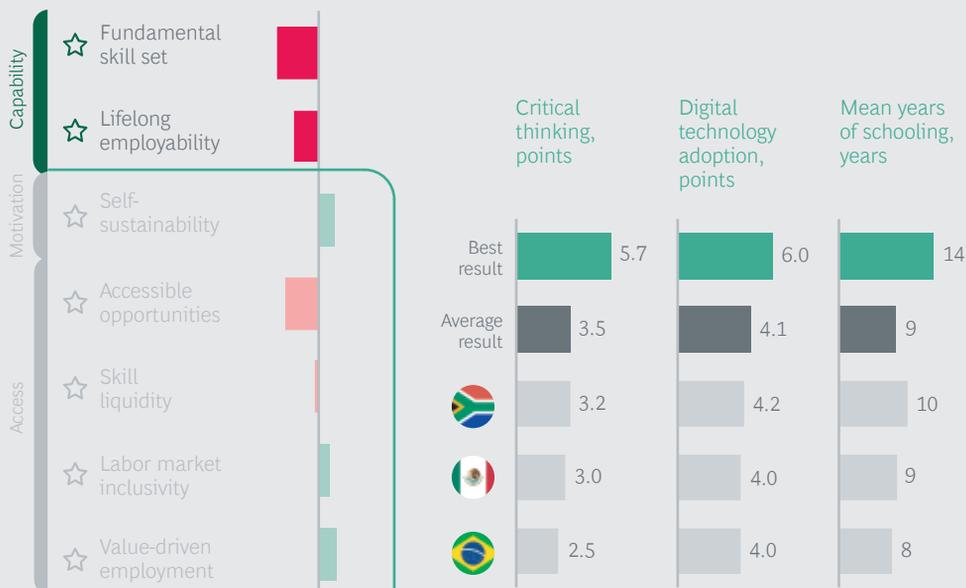
For example, the main problem for workforce exporting countries concerns the capabilities and opportunities of the educational system and the labor market. The key issues facing these markets are how to help the population prepare for a new stage of development and how to develop the educational system and the labor market. (Fig. 15).

The experience of ambitious and open, as well as developed and stable, markets that are most prepared for the future according to the Capabilities indicator, shows that an effective educational system must be developed along three strategic lines.

The first line is the **development of educational and training programs** in close cooperation with the customer, i.e. the employer. The Estonian OSKA system¹ is an example of

1. OSKA, Kutsekoda, 2019

FIGURE 15 | Human centrality challenge – Capabilities: lack of skills that are demanded by current and future labor markets



Sources: WEF, 2016-2018; UNDP, 2017; BCG analysis.

this where it is possible to monitor and predict changes in employer demand for skills in five sectors and to adjust the educational program in schools and universities. The basic principle is to abandon narrow specialization in education.

EXPERT OPINION:

“The state will always be late or go in the wrong direction. Employers should establish partnerships and guide the education in the right direction.”

— **WorldSkills International representative (UK)**

The second strategic objective is **improvement of teacher training programs.**

A teacher of the future is not a source of knowledge in a specific subject area, whose task is to transfer this knowledge to students, but a driven mentor who will help students to ask the right questions and acquire new knowledge. An example of a successful solution to this problem is the Bridge International Academies chain² in Kenya. This organization works with teachers with various qualifications, helping them to use effective teaching techniques in the least developed countries.

EXPERT OPINION:

“My personal responsibility is to learn the name of each of my students by the second lesson. [...] This way every student feels a bond with me. They think that I care, and this is true. They are more likely to attend classes and to listen more carefully.”

— **A professor from Vanderbilt University (USA)**

The third line is the creation and **improvement of teaching tools** in the context of personalization and elaboration of tailored development programs for each student.

A good example of this is Russian University 20.35³ – a state greenfield project that uses AI to assess the skills of prospective students and

builds a customized training program using different training platforms.

EXPERT OPINION:

“Training is determined on a personal level. It is not about placing a person into the educational system, it is about the educational system adapting to his or her needs”

— **A representative from the Confederation of Swedish Enterprises (Sweden)**

PROBLEM: MOTIVATION

Ambitious and open markets were the first to encounter the greatest problem – motivation. The comfortable economic environment and high degree of social security common for these markets do not always facilitate the spread of conscious independence and active personal development among certain groups of people. Finding ways to convince them that they must continuously develop on their own is the main issue to be addressed by these and many other countries. (Fig.16)

The main difficulty is that the motivation system must take into account the particularities of the national value model, i.e., the existing mentality and cultural traditions that have emerged over centuries. There are two key strategic objectives in this block: **communication and promotion of continuous development values, and a system of incentives and support.**

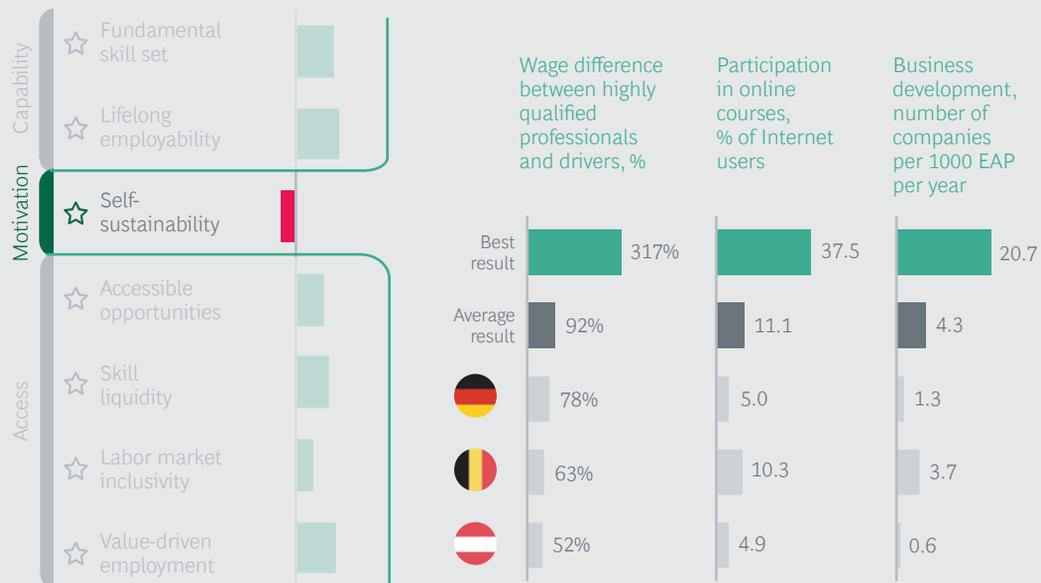
This difficulty is probably the reason why there are still few international examples of successful solutions to these two problems, and they are not widespread. In particular, the Maths Pathway⁴ program was launched in Australia. It is intended for math teachers and allows the educational program to be personalized to match the student’s knowledge level, thus forming a positive attitude to continuous improvement. Finland is trying to enhance the prestige of the teaching profession by introducing new incentives. Teachers are given a high degree of independence in determining the curriculum and teaching methods; however, teaching as

2. Bridge International Academies, 2019

3. University 20.35, 2019

4. Maths Pathway, 2019

FIGURE 16 | Human centricity challenge – Motivation: comfortable social and economic environment reduces motivation for continuous self-development



Sources: World Bank, 2016; OECD, 2013; Amazon, Alexa Internet ("Alexa") 2019; ILO, 2015; BCG analysis.

a profession requires high competencies (a master's degree), and competition for teaching jobs in educational institutions is growing – only 7% are selected⁵.

EXPERT OPINION:

“There is irrefutable evidence that learning after initial education is something for educated people. The more educated you are, the more you learn.”

– A representative from WorldSkills International

EXPERT OPINION:

“The company pays particular attention to intangible incentives, e.g celebration of achievements, public recognition. It is important to involve people – this is the key to success.”

– A representative from JP Morgan Chase (USA)

PROBLEM: ACCESS

Talent exporters lag behind in terms of job opportunity ratios. Such countries need to find answers to the following questions: how to increase the mobility of competencies and how to make the labor market inclusive, transparent and barrier-free. (Fig. 17).

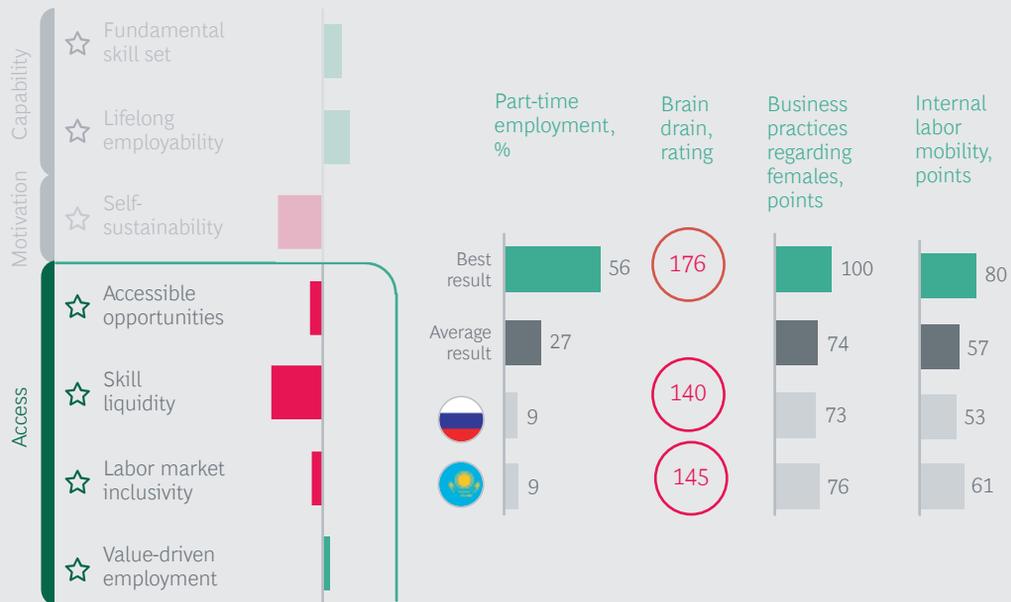
Problems in the **Access** block should also be addressed along three key lines: **development of domestic demand for talent** and creation of jobs for them, including through public-private partnership programs, **increase of the talent available in the local market and maintenance of an adequate supply and demand balance in the market.**

An example of a successful solution of the first problem is the Kryptonite Startup Challenge contest established in Russia in 2019⁶. The competition is held among tech startups at the pre-seed stage, and the twenty most promising projects are selected. The winner receives an investment of \$150,000, expert advice, and options to conclude contracts.

5. Empowered Educators in Finland: How High-Performing Systems Shape Teaching Quality, 2017

6. Kryptonite Startup Challenge, 2019

FIGURE 17 | Human centricity challenge – Access: lack of transparency and high barriers for capturing each individual’s potential in the labor market



Sources: ILO, 2016; Brain drain Index, 2018; World Bank, 2018; WEF, 2018; BCG analysis.

EXPERT OPINION:

“There are regions in the UK where the public sector dominates. For example, Newcastle, where 70% of the population works in the public sector. In such regions, investing in the development of an entrepreneurial spirit is crucial.”

– **WorldSkills International representative (United Kingdom)**

In general, the corporate sector, especially major international companies, has a wide array of tools for working with opportunities for its own employees and workforce attracted from the market. A possible solution could be to adopt many of these tools at the national level. An example of successful talent demand stimulation at the national level, similar to the corporate approach in many respects, is the intern abroad program partially sponsored by the French government⁷. This allows graduates, the unemployed, etc. up to 28 years of age to take an internship in French companies abroad.

7. France Diplomatie, 2019

The objective to increase the volume of available labor with the necessary competencies is solved through the use of a whole range of tools, including increasing staff mobility and competencies, developing virtual employment platforms, and improving flexibility and inclusion. For example, SAP has a program for employees with autism. It includes a training course for preparing for work, internships and subsequent employment for people with autism spectrum disorder. Currently, SAP employs 150 people in 23 different roles across 13 countries⁸. Another example is the American State Street Corporation. This company has integrated work schedule flexibility into its business strategy, achieving a sharp reduction in employee outflow.

EXPERT OPINION:

“We can attract talented specialists in Yekaterinburg, but without transparent processes and mobility this will be an unstable practice. The future is in virtual employment, not in the need to convince people to move from Hong Kong to Yekaterinburg.”

– **PepsiCo representative (Russia)**

8. SAP, 2019

The required supply and demand balance in the labor market is maintained, among other things, by implementation of an effective communication system. In emerging markets, the role of accessible information about labor market opportunities, required skills and places where they are needed is often underestimated. Local disbalances form on the labor market as a result of inefficient communication. For example, the recruitment company TeamLease is currently trying to solve this problem in India. It established the first private university, TeamLease Skills University⁹, which provides practical training in skills that are relevant for employers. The university now has more than two million students.

9. TeamLease Group, 2019

GENERAL APPROACH

During our study, we came across dozens of effective practices and hundreds of professionals developing and implementing human centricity initiatives across the world. Countries more focused on such initiatives have significantly higher labor productivity. Other countries could apply the proposed approach and achieve more efficient distribution of the human capital available to them and significantly reduce the skills mismatch.



CONCLUSION. COLLABORATE OR PAY



IN THIS STUDY WE raised several key questions, the answers to which will help to get closer to solving the global problem affecting one billion people:

- **To what extent is the labor market today ready for the future?**

The personnel training and management system established in the twentieth century and based on the principles of standardized training and centralized management is no longer effective in an environment of high uncertainty resulting from megatrends affecting the labor market. How much human capital development conforms to the changing labor market can be assessed separately for each country. Our analysis allows us to distinguish eight clusters of countries with unique combinations of challenges encountered by national educational systems, employers, and individuals, broken down into three blocks: capabilities, motivation, and access. Once the challenges posed by these three blocks have been resolved, the human capital of each country will be ready for the future. There are a number of tasks that each country needs to resolve to reach the level of human capital development corresponding to the challenges of the future labor market: how to ensure that workforce skills and knowledge are constantly in demand, how to maintain employee motivation for personal development, and how to make labor market opportunities available to all potential employees.

Overcoming these challenges will make it possible to reduce the national skills mismatch, which represents a hidden tax that is already being paid by every company that has filled a vacancy with a person whose skills do not match the role. It involves a loss of labor productivity in the economy of every country where human capital cannot overcome the inertia of the educational system or labor market barriers. It is the dissatisfaction felt by every person who knows their potential and cannot find ways to realize it.

- **What needs to be done to reduce the skills mismatch?**

A strategy for developing human capital based on the concept of human centrality will

make it possible to reduce the skills mismatch problem. The depth of the required transformation of the educational system and the labor market will depend on the depth of penetration of human-centered tools and solutions, as well as on the context of each specific country. Depending on how quickly decisions are made over the next ten years, such a qualitative transition to what essentially constitutes a new type of a social contract can accelerate GDP growth in different economies by 0.5%-2% (Fig. 18.)¹.

- **Who can become the driving force in the transition to a human-centric approach to talent development?**

These positive changes are based on the open collaboration of all stakeholders. The development and implementation of human-centered practices involves better integration between the employer, education, the state, and the employee than the current status quo.

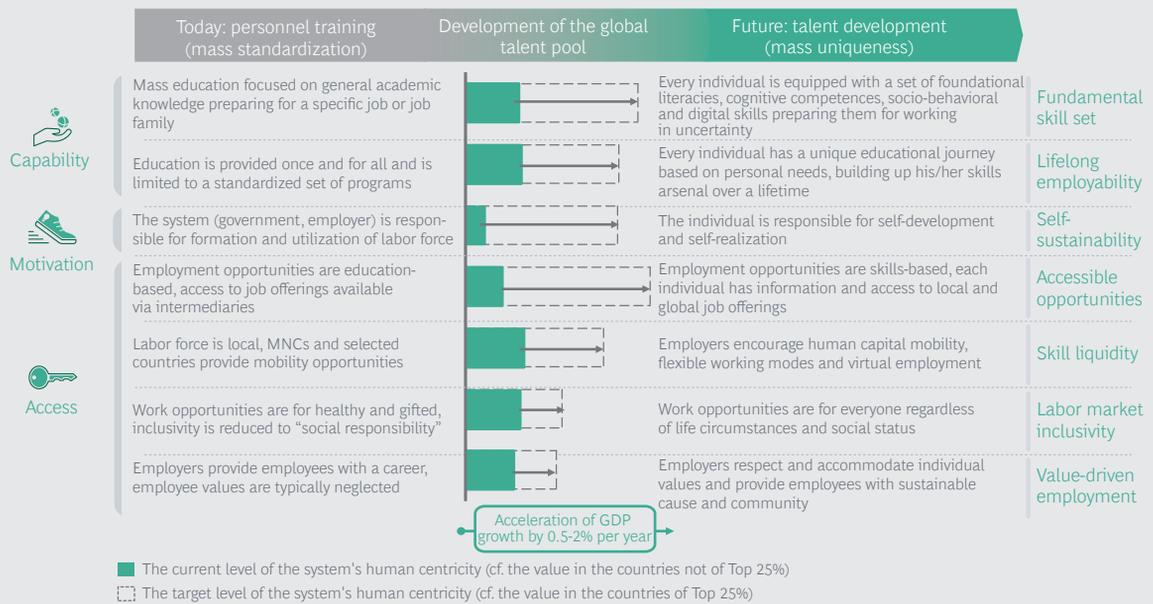
Stakeholders need to cooperate to learn how to minimize risks and to maximize the benefits offered by this integration. To fully utilize the economic potential of cooperation, it is important to reach a common understanding of the most vital problems regarding development and human capital distribution at all levels of interaction. BCG surveys conducted among employers and country representatives show that the system's participants do not always share views on labor market problems. Today, this is one of the key barriers preventing the transition to a human-centric system (Fig. 19).

However, as international practice shows, it is cooperation rather than protectionism in relation to one's talents that can yield significant and sustainable results. An almost direct analogy is international trade. According to the World Bank, the growth rates of economies more open to trade are almost three times higher than those of more closed economies.

Therefore, the key labor market stakeholders as well as the international community at large are currently facing a dilemma of whether to deepen cooperation in the area

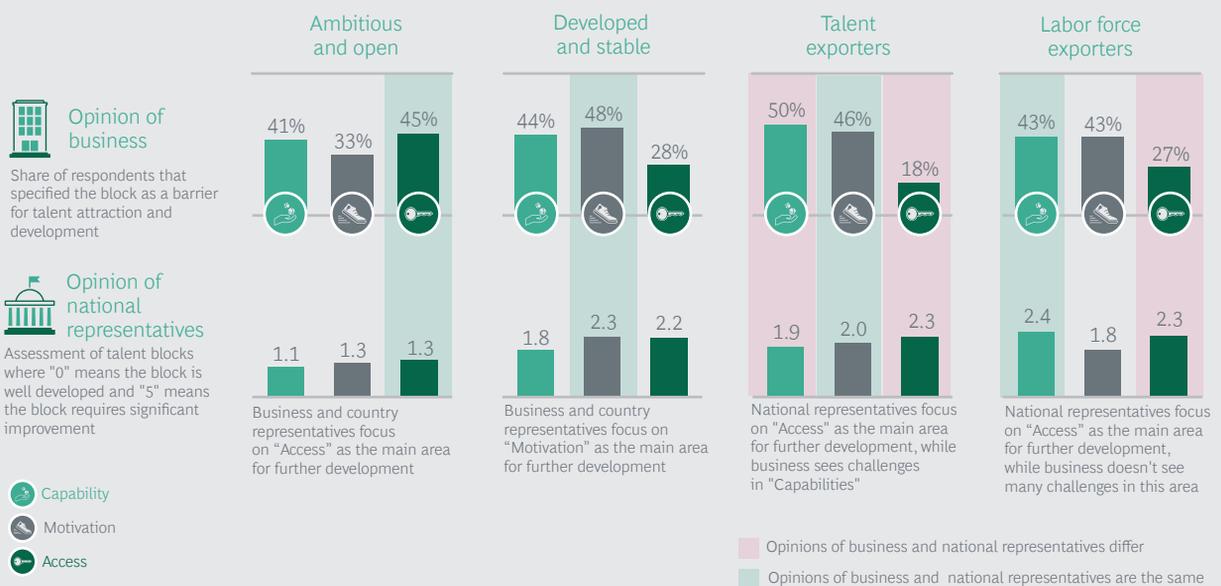
1. Analysis by BCG based on ILOSTAT, 2018 and Oxford Economics data (GDP forecast).

FIGURE 18 | GDP growth potential with transition to a talent development system based on human centricity principles



Sources: ILO, OECD, BCG analysis.

FIGURE 19 | Major issues regarding the country's talent development system according to its government and business representatives



Source: The survey was conducted by BCG in 2019 among representatives from large, small and medium-sized businesses from 47 countries. The survey was completed by 161 representatives who occupy senior positions, lower-level employees did not participate in the survey; The survey was conducted by BCG in 2019 among the leadership of the organizations involved in talent development from 30 countries; BCG analysis.

of human capital formation and utilization or to continue to lose labor productivity, and, as a result, pay for their closed nature in public welfare.

From the state's perspective, this means, first of all, the need to form a deep, full and (importantly for successful implementation) shared understanding of the development priority areas among all stakeholders in the educational system and labor market, and to create conditions for a productive international exchange of best practices. An example of such cooperation is the collaboration of G20 leaders with business leaders in their countries to formulate an agenda and develop practical solutions in the key areas of social and economic development, including changing the situation in the labor and education markets. Employers are responsible for continuous interaction with the educational system to ensure the prompt formation of human capital with relevant skills, as well as the exchange of practical solutions with other companies in order to remove barriers during employment, to align with new values and needs, to increase mobility among employees, both within the company and externally, etc. An example of successful cooperation among the professional community, business, and the educational system is the assessment of graduates and students' skills based on WorldSkills standards within the scope of the Skills Passport initiative, which allows specialists to affirm their qualifications on the international market, employers to adequately assess the skills of new employees, and the educational institution to adjust the education process. In this context, the educational system is a mediator between demand and

supply on the labor market, which must promptly respond to employers' requests, including through integration of new teaching methods and tools, create an integrated, seamless education environment within a specific country, and establish interfaces for exchanging experience – positive and negative results of approaches to the organization of the educational process at the international level. For example, cooperation of educational system representatives in the International Baccalaureate program leads to a transparent educational environment and lower international education barriers.

Interaction of all stakeholders at local and global levels will create an expert community that will act as a standard bearer in global human capital development. This expert community should aim to reduce the skills mismatch by implementing solutions on the labor market and in education designed to create a human-centric environment. One of the key goals of the expert community could be to create and develop a platform for exchanging practical solutions, making it possible to speed up the process of resolving the skills mismatch problem.

We are convinced that, by establishing such a community and the relevant practical tools, a labor market will be created where talent will be able to develop the necessary skills throughout their lives and remain in demand; employers will be able to effectively attract, develop and retain talent, and countries will fully realize their technological and human capital potential in order to create the economy of the future at the national and global level.

APPENDIX 1

GLOSSARY

Cognitive skills	Conscious intellectual effort, such as logical thinking, reasoning, imagining, or remembering, used, for example, when reading or writing texts, or solving mathematical problems.
Non-cognitive skills	A person's ability to identify emotions and to use them to stimulate thinking and to understand the intentions, motivations and desires of other people and their own in order to solve practical problems. Examples of the use of non-cognitive skills include the ability to work in a team, to establish social contacts and work under stress.
Skills	General cognitive and non-cognitive abilities, or specific knowledge and capabilities needed to perform a certain task.
Skills gap	An absence in the labor market of a sufficient number of employees with the necessary skills to meet employer requirements.
Skills deficit	A situation in which an employer is unable to find an employee with the necessary skill set.
Skills redundancy	A situation in which an employee's skills fall out of demand in the labor market because of the termination (obsolescence) of certain activities.
Skills mismatch	A situation in which an employee is employed, but their skills are insufficient or exceed those necessary for performing their work.
Underqualified employee	An employee who does not have sufficient abilities, qualities, characteristics, education, experience, etc., necessary for a particular job or task.
Overqualified employee	An employee with knowledge, skills and/or experience exceeding those necessary for a particular job or task.
Gig economy	The format of interaction between employee and employer under flexible and adaptive employment conditions (e.g., remote work). At the same time, this format of interaction is characterized by a predominance of short-term contracts or permanent contractor work.
Mass standardization	The application of uniform standards for building a system, that provide for production needs through the constant availability of interchangeable resources.
Mass uniqueness	A system consisting of a multitude of different resource blocks adaptable for production needs by combining these blocks, thereby creating a unique product.
Social contract	A tacit agreement to cooperate in order to further the benefits of the overall group, and an acceptance that limits on the individual may be required for the achievement of the larger societal good.
Human-centric system	A system of social relationships that aims to meet the needs and unlock the personal and professional potential of each person, without harming another person or the world.

APPENDIX 2

METHODOLOGY

THE ASSUMPTIONS AND METHODOLOGY used as a basis to make an expert assessment of the human centricity of the systems of twenty-five countries¹ are presented below. Theoretical and empirical methods – analytical, interrogative, and interviews – were used to formulate and test research hypotheses.

The **analytical method** involved collecting data from public statistical databases (for example, the World Bank database, OECD database, regional statistical offices, etc.) and using statistical tools for pre-testing hypotheses for blocks of the system’s human centricity – Capabilities, Motivation, Access.

A set of twenty-three indicators and methods for their measurement was determined for the key values (Capabilities, Motivation, Access) within the scope of this method. The overall set of indicators reflects the degree of the system’s human centricity for each of the twenty-five countries reviewed. The indicators are classified in two categories: indicators that define the development level of *the environment* (the existing legal provisions, business practices, etc.) and *performance* indicators of this environment. The results of the analysis allow us to formulate hypotheses regarding the relative position of the countries in terms of the extent of human centricity. Assessment of the relative position of the countries is based on the position of the country in terms of each of the twenty-three indicators against the mean value of the indicator (the mean value is calculated using all the available values of the indicator, rather than just the values of the twenty-five countries

1. Countries reviewed in the study: Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Denmark, Finland, France, Germany, Italy, Japan, Korea, Mexico, Netherlands, Norway, Portugal, Russia, Singapore, South Africa, Spain, Sweden, United Kingdom, USA.

sampled). Therefore, the assessment of the countries in terms of the extent of the system’s human centricity takes into account the indicators of countries not listed among the twenty-five countries reviewed. Cumulatively, seven indicators make up the assessment of the Capabilities block, four indicators make up the assessment of the Motivation block, and twelve indicators make up the assessment of the Access block.

Combining the Capabilities, Motivation and Access values in terms of the extent of development produced eight clusters of countries with similar systemic problems². The approach used to assess the system’s human centricity makes it possible to single out leaders both in the totality of the countries and within a specific cluster.

The **survey method** involved conducting two surveys on the research topics among country representatives (representatives from state and non-governmental organizations, educational institutions, etc.), and business representatives.

The following key topics were covered in the survey conducted among country representatives: assessment of the mean local level of development of cognitive and non-cognitive skills among the country’s working population, the prevalence of a continuous development culture, the level of motivation of the public for personal development, as well as the level of labor market transparency, its level of inclusiveness and working population mobility. Fifty-five experts from thirty countries took part in the survey conducted

2. Country clusters: Ambition and open, Closed and Self-sufficient, Developed and Stable, Talent Exporters, Growing New World, Labor force Exporters, Talent Importers, Protracted Crisis.

among country representatives. The survey results were used to make an expert assessment of the human centricity of the systems of these countries.

Heads of HR (Human Resources) and L&D (Learning and Development, personnel development) departments from 161 small, medium and large businesses from forty-seven countries took part in the survey. Within the scope of the survey, its participants were invited to give an expert assessment of the share of underqualified or overqualified employees, the share of employees who have taken skills development training, the level of employee mobility; to specify the three most difficult aspects regarding talent development and attraction based on the seven principles of the human-centric concept: development of a fundamental skill set, culture of lifelong learning, continuous development culture, self-sustainability, accessible opportunities, skills liquidity, labor market inclusivity, and value-driven employment. In this way, business's view regarding the issue of human capital development and the skills mismatch was formulated for forty-seven countries.

The **interview method** was used among expert groups: representatives of international organizations, representatives from state and non-governmental organizations and representatives from local and international business. The experts were asked about the issue of skills mismatch, the reasons for its occurrence, its prevalence and local features, as well as obstacles to its reduction. During the interviews, characteristics of countries in terms of the system's human centricity were discussed, which made it possible to test the classification of the countries into the eight clusters obtained using the analytical method, supplement cluster profiles, and to achieve a deeper understanding of the local labor markets.

The final result of the classification of the countries within clusters and a description of their development, motivation, and integration of talents in the labor market is based on a measurement of the system's human centricity values (Capabilities, Motivation, Access) using the analytical method of statistical data collection from public sources and their subsequent analysis, the results of surveys conducted among country representatives and business representatives, as well as expert interviews.

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The image features a dark green background with a white network of interconnected nodes and lines. The nodes are represented by small white dots, and the lines are thin white lines connecting these dots. The network is most dense in the top-left and bottom-right corners, with some isolated nodes scattered throughout. In the center of the image, the letters "BCG" are displayed in a bold, white, sans-serif font. The "B" and "C" are connected at their base, and the "G" has a distinctive shape with a curved bottom. The overall aesthetic is clean, modern, and tech-oriented.

BCG