

# The Lost Workforce

## Upskilling for the Future

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# Executive Summary

Many companies are desperately looking for candidates to fill their increasing job vacancies. Meanwhile hundreds of millions of unemployed, overqualified or under-skilled workers do not, or no longer have, the relevant skillsets required to fulfil specific roles. This lost workforce represents an incredible loss in growth and economic prosperity.

It is apparent that most research projects and policies to date have been designed around a knowledge creation approach that centres on higher education. Very few countries have designed and implemented a truly holistic national skills strategy that aligns with new needs produced by massive corporate investment in technology.

This paper addresses the innovative, ambitious and practical solutions of various government policies aimed at increasing the skills portfolio of its untapped talent pool. It provides a roadmap that is backed by thorough research and substantiated by multiple examples from across the globe. After over a year of investigation, which included workshops with corporate executives, employees and officials of the Luxembourg Ministry of Labour, a new generation policy toolbox was designed. It has been tested through a national pilot project: the Luxembourg Skills Bridge. Large-scale, accelerated workforce upskilling has also been tested and proven across multiple sectors, such as manufacturing, financial services, construction, the craft industry and professional services.

The outcome of the research indicates not only the need for national skills foresight, but also government involvement in enabling support structures and assistance to corporations.

Upskilling is a solution that can be tailored to resolve issues for countries, regions, industries, corporations and individuals. It is extremely powerful but requires the correct execution strategy, a supportive regulatory framework and a vibrant job market. Successful upskilling is achieved by completing six steps, in a specific sequence:

The process is fortified with strategy assessment and a communication plan. This continuous cycle of improvement (monitoring, evaluation and policy) provides the bedrock for the methodology.

The solution outlined in this paper, provides a cost-effective framework of core modules that can help governments and corporations develop and implement a market-driven skills strategy and policy. If applied correctly, it can engender sustainable growth, employability and social inclusion.







# 1. Introduction





# Introduction

If ever there was a time for governments, business and social society to work together it is now. The skills gap is widening. As certain skills become increasingly obsolete, the demand for other, newer skillsets are not being met by the available workforce. Multiple industries are suffering massive layoffs due to the evolution of core skillsets, while simultaneously falling short in resourcing key jobs and/or areas that are critical to success. The implications of high unemployment rates – especially in youths and older workers – coupled with increasing job vacancies are undeniable.

The current situation being experienced by most developed countries, and increasingly in developing countries, impacts business and GDP. It is forcing populations to migrate and businesses to move. Governments are reconsidering their structure, policies and systems. The impact on society is far-reaching. A ready example is the number of youth, emerging from years of education that is not tied to market projections or needs, who find themselves unemployed and unemployable. The cost of failing to upskill the population is massive and is comprised of different elements such as:

- high percentages in NEET (youths Not in Employment, Education or Training) – leading to a disenfranchised and demotivated youth
- vocational training inefficiencies and wasted training funds as people participate in knowledge or skills acquisition in the wrong domain
- higher unemployment insurance – increasing subsidy and support costs, impacting mental health and well-being of a large segment of the population
- losses in tax base and revenue caused by vacant positions, and migration of jobs and industries to regions or countries where skilled workers are more available – impacting regional economic well-being (personal and corporate tax loss)

Faced with new realities in the workforce market, Ministries of Labour, Economy and Education are finding that what worked in the past is not adequate. As they struggle with ineffective curative solutions for unemployment, they must now find a balance between ‘the expected’ and providing visionary leadership for upskilling that centres around the elusive and constantly evolving ‘future jobs’ market.

The message is clear: change now, or become obsolete. Governments, business and individuals must work together to implement a holistic and sustainable solution that distributes power and accountability. The time is now, not five years from now.

## The Upskilling Roadmap

An upskilling and requalification policy is proven to provide sustainable professional career development avenues to low skilled workers. Yet it requires an unquestionably professional methodology and new-generation toolbox to quickly transition people (in a few months) to a relevant knowledge and skills portfolio that leads to a concrete profession. The visionary minority already understand that a sustainable, continuous upskilling model, paired with an effective upskilling strategy is the only recourse. Governments have no time to wait for a hypothetical transformation of current education systems that seem more and more disconnected from the labour market. The activities and milestones important to the successful implementation of upskilling initiatives are relatively straightforward. This model requires government, business and individual workers to question their habits. It obliges the key stakeholder groups to put away ineffective agendas and

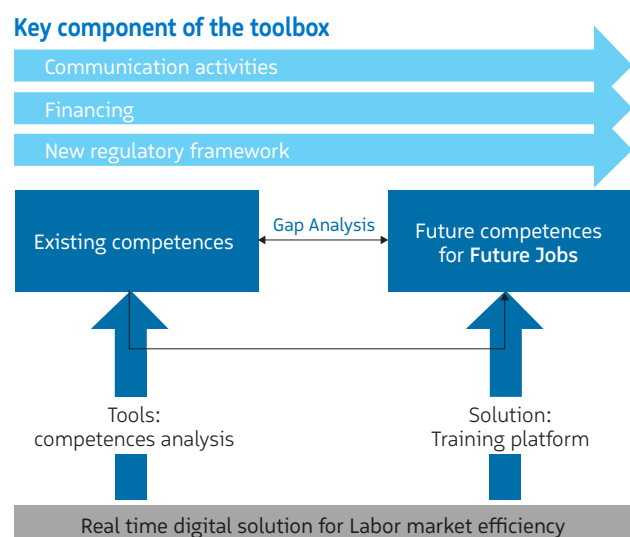
antagonistic strategies. It compels everyone to have conversations that will create understanding and buy-in for the new paradigm. At the heart of this model, like most organisational change initiatives, is engagement and accountability. Working together to create sustainable economic opportunities and jobs demands that leaders and sponsors act as role models.

Fundamental to every journey is a map that points the way. Our roadmap, although perhaps complex at first glance, is built on simple organisational change management principles.

tax-payer funds, improve GDP, empower the underrepresented, and attract commerce and industry to job centres of excellence. In an indirect manner, it strengthens democracy. For each euro invested in upskilling, the government and business could save or generate at least €2 respectively (see section number three).

**FIGURE 1**

Upskilling Toolbox



Source: PwC Analysis, 2017

## Success in Numbers

The numbers are clear. Over the last 50 years, public and private upskilling initiatives have clearly demonstrated positive impact from labour, social and economic perspectives. This model, correctly implemented, allows companies and countries to become more competitive, save corporate and





# 2. The Skills Gap: A Paradigm Shift





# The Skills Gap: A Paradigm Shift

The digital revolution has become a fixture today, invading both our private and professional lives. The ongoing acceleration of new technology introduction enables drastic productivity improvements, but it also challenges governments, individuals and corporations to learn an ever-growing number of applications, and to adapt to new and increasingly frequent, technology updates. Some element of almost every job in the marketplace is being transformed or usurped by innovative hardware and/or software solutions. This acceleration of the 'technologically unfamiliar' is intensifying the challenge of finding workers who are qualified to fill openings, and capable of working effectively in the shifting digital landscape. It is transforming not just the workers' profiles but the organisation itself.

## Corporations and the Workforce

Corporations are faced with the paradigm of out-dated knowledge and skills obsolescence. This section examines this phenomenon from the stakeholders' point of view, and provides observations on how different stakeholder groups are responding to this 'obsolescence crisis'.

Knowledge obsolescence is now a tangible issue for economies and business. It carries the risk of massive layoffs while, at the same time, the difficulty in finding qualified workers for specific areas means that many jobs remain vacant indefinitely. For organisations to address these challenges, the management, CEO and whole C-Suite must be conversant in every element of the business, and with the technology that is influencing it and its markets.

Belgium's 2018 GDP growth rate was suffering at only a portion (1.69%) of other OECD GDP growth

(2.55%) and far below some other economies.<sup>1</sup> The Belgian Prime Minister's response was that over 130,000 jobs remained vacant in Belgium. This could be due, in large, to the lack of the correct technical skills or appropriate competencies in the workforce. The EU white paper on the Growth of Europe, (2017) estimates a potential gap of 700,000 IT workers in the EU by 2025-30.<sup>2</sup> If countries and companies are not able to source talent that is capable of running their factories, processes, and sales, competitors elsewhere in the world will. This is our new market – driven by competence and the ability to quickly acquire technical skills.

The 2017 PwC CEOs Survey<sup>3</sup> indicates that CEO's number one priority is availability of talent. The report also confirms that 80% of the CEOs surveyed are concerned with the availability of digital skills in their workforce. Everywhere, there is an increasing awareness that technology is in the process of, or soon will be, disrupting business. Despite organisational efforts to upskill their professionals, business still struggles to develop a clear vision of future jobs requirements, especially in sectors that are mostly populated by Small- and Medium-sized Enterprises (SME). Although 67% of CEOs state that they have a responsibility to reskill their workforce, the 'people agenda' seems to have stalled. This is postponed even more in the SME sector, with employees in that sector at even greater risk.

For HR Directors, talent is now a top agenda topic. While most companies have or are finalising their digital plan for hardware, systems and process management tools, many still struggle to understand the widespread consequences of digital automation on their workers. There is a growing concern regarding the impact of frequent, and simultaneous, introduction of a plethora of new technologies to the workforce. Classic tools such as workforce planning provide few answers to these concerns or other critical questions.

## An 'Old Model' Vocational Training System

According to the Organisation for Economic Co-operation and Development (OECD), 30% of current jobs in member states are at stake due to automation.<sup>4</sup> France is an example of this dilemma; 35% of the working population has limited or no digital skills. A full 40% of workers there have not completed their BAC and are at high risk of losing their job due to automation.<sup>5</sup> Adult learning programmes are effective instruments to upskill people. However, on-the-job training must target the right people, at the right time. It must be organised to meet required quality objectives; to provide participants with new skills that are measurable. Low-skilled workers and those at the highest risk of losing their jobs to automation are more than three times less likely to participate in on-the-job training over a 12-month period than workers in non-automatable positions.<sup>6</sup> On average, these employees received only 25 hours of training per year as compared with the 59 hours enjoyed by the least exposed employees. This is a clear indication that training is focused on those who need it least, while exposed populations, those who have a higher than average chance

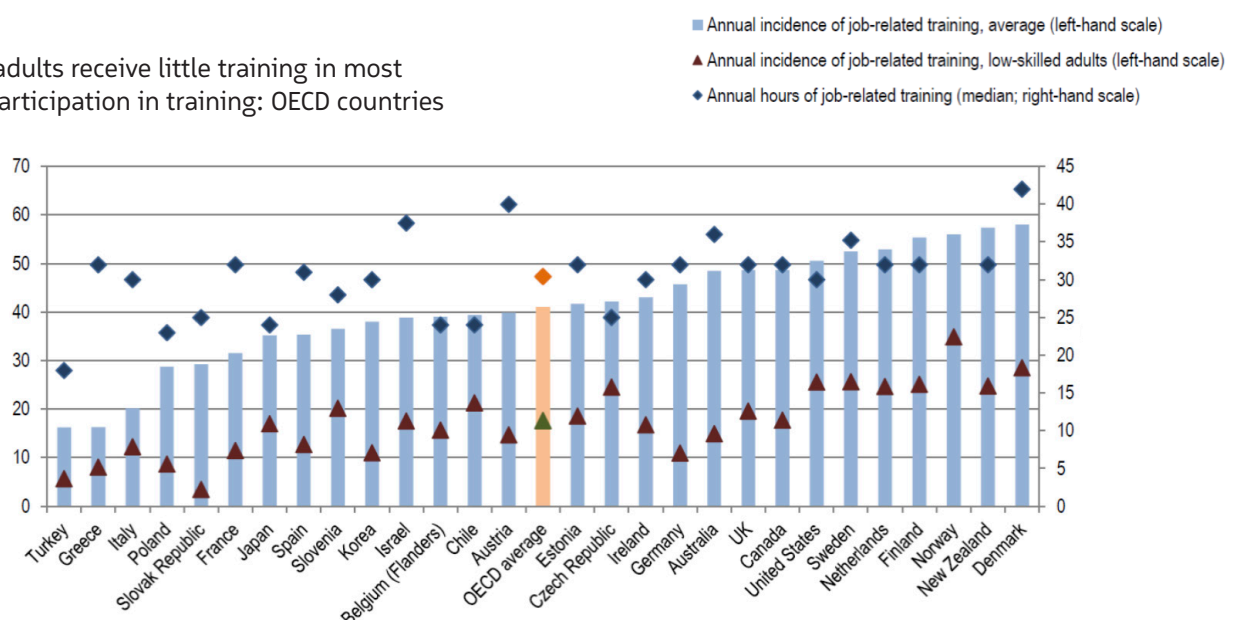
of unemployment, are going without. This is exacerbating the ever-expanding gap between the competencies available in the market and those which are needed.

Technical competencies, creative problem-solving, innovation and collaborative skills are important to success. PwC's Future of Work: A Journey to 2022,<sup>7</sup> Mc Kinsey's Future of Organisations and Work,<sup>8</sup> and Bain's Workforce of the Future,<sup>9</sup> are just a few that link adaptable technology-based capability, soft-skills development (such as innovation and creativity) and complex problem-solving, with employability. Workers with well-developed skills are an integral component of most companies' strategies. Yet the OECD Report on Automation (March 2018), indicates that only 31% of at-risk employees (job loss through automation) have received professional training in the past 12 months.<sup>10</sup>

Millions of people across Europe and the Middle East, who have already finished their formal education, find themselves out of work. They have little chance to reintegrate unless the entire process of knowledge and skills acquisition is reengineered to target sustainable jobs.

**FIGURE 2**

Low-Skilled adults receive little training in most countries – Participation in training: OECD countries



Source: OECD

## The Middle East: Lost Workforce

More than 108 million (+28%) of the Middle Eastern population is between 15 and 29 years old. This is the highest number of young people to transition to adulthood in the region's history. Five to 24 year-olds comprise approximately 20% of population in Egypt, Iraq, Lebanon, Libya, Morocco, Oman, Sudan, Syria, Tunisia, Yemen, Jordan, Algeria, and Saudi Arabia. In Arab countries, the population of young people is the fastest growing segment, with approximately 60% of the population under 25. This is one of the most youthful regions in the world.

Today, studies from around the world show that education systems are falling behind, and the UAE is no exception. The Programme for International Student Assessment (PISA) identified the UAE as having one of the most rapidly improving education systems in the world, but also noted that in mathematics, reading and science, students still perform substantially below the average levels of achievement of advanced economies. Designing a robust organisational structure that prepares the company for the future is a key priority for CEOs from the Middle East. Creating a scalable and skilled workforce will be particularly important.

## A disconnected education system

The high proportion of young people Not in Education, Employment or Training (NEET) signals the increasing disconnect between educational systems, business and society. Students and parents are losing faith in the efficacy of both teachers and teaching methods. The trust society has placed in teachers and the system is eroding quickly. Firstly their ability to provide the right knowledge is in question – a transversal set of information applicable to many different types of

jobs, and secondly their teaching style – that seems to do little to encourage student to think critically and creatively for themselves.

Most education curriculums still don't include, or encourage, teachers to focus on new cognitive or leadership skills– skills that are acknowledged to be the most likely baseline for all future jobs. Indeed, thinking outside the box, and applying knowledge to different situations and challenges, may be the most important skill one can possess at any age.

Many faculties do not provide current perspectives on potential jobs or the job market. Thousands of students are following psychology or geography programmes, for example, without knowing how many jobs are, or will be, available and the required qualifications. It is time to ask the hard questions.

The education system has a responsibility to build students' knowledge and their capacity to harness their potential for a brighter future. It must ensure that the majority of students are prepared for future jobs and the job market. Studies must allow students to become productive, functioning members of the workforce and society. General, and in many cases, out-dated knowledge being taught today must be replaced. Finland's profound education reforms are a strong testament to aligning teaching methods and subjects to societal demands through clear knowledge and skills acquisition objectives.

## Skills Governance and foresight

Leadership, responsibility and accountability are integral to successfully resolving today's unemployment and education challenges. Failure to anticipate and plan causes an inordinate level of risk, and compromises growth.



A failure to anticipate qualifications, knowledge and skills requirements endangers sustainable business development and wastes human, social and financial capital. Not only could this waste negatively impact social cohesion, it easily represents the loss of several trillion euros in revenue in Europe alone.

NEET and youth unemployment numbers demonstrate the increasing gap between what is being taught in the educational and apprenticeship systems and true market needs. Governments must redouble their efforts with skills strategies, skills banks, and other tools, to ensure that students, our future working population, have meaningful options.

This is certainly the most important societal challenge for the next 10 years. Providing the right framework to enable and support upskilling throughout at-risk populations, will support economic growth and social cohesion. Courageous and visionary leaders can initiate long-term investments in education and upskilling to support this solution.

**FIGURE 3**

OECD Skills Strategy



Source: OECD

## Unrealised Potential: Talent Shortages

The new paradox is high unemployment and NEET rates while markets struggle to find suitable workers to fill job vacancies. A recent study by the Korn Ferry Institute calculated that if the talent shortage continues to expand as predicted, by 2030 the attributable unrealised revenue could be \$8.5 trillion<sup>11</sup> – \$162 billion in the USA alone. The projections indicate that India, which would be one of few resource exporters by then, could overtake the USA as the world's number one tech giant. By 2030, China will also face a talent shortage of 12 million workers or more, while Japan may struggle to find the 18 million workers it needs to keep its economy afloat. Governments and organisations must make talent strategies a key priority. The study urges action now; citing educating, training and upskilling existing workforces as an imperative. With regard to life-long learning, Jean-Marc Laouchez, president of the Korn Ferry Institute, comments, "Constant learning – driven by both workers and organisations – will be central to the future of work, extending far beyond the traditional definition of learning and development."

The Manpower Group's Employment Outlook Survey indicates that talent shortages have reached a record high since 2006.<sup>12</sup> According to this study, 20% of organisations cite candidates' lack of appropriate experience, while 20% say applicants' deficiencies in either hard- or soft-skills affect their ability to do their job. The talent shortage problem is reaching critical proportion. The global average of difficulty to hire is now standing at 45% in the 43 countries surveyed. Fuelled by a lack of labour, an aging population, and immigration restrictions; it reached a record 89% in Japan in 2016. In October 2018, The Wall Street Journal reported that private-sector wages and salaries in the USA increased by 3.1% over the third quarter of 2017; the strongest year-over-year gain since the second quarter of 2008.<sup>13</sup> Higher wage demands, and more diversified jobs

offered by smaller players, are tough competition for larger companies, where nearly a third of job vacancies due mainly to lack of applicants.

Although dire, this new talent shortage affords a massive opportunity for countries with available workers to develop their skills portfolio, create a clear value proposition to attract foreign investment and meet international demands. Top priorities for decision-makers focused on new foreign investment are the availability of a skilled workforce, as well as a stable, friendly environment for their new projects.

# 3. Shaping an Upskilling Solution





# Shaping an Upskilling Solution

## Upskilling Defined

The origins of the word 'skill' can be found in Old Norse (skil), Icelandic, Faroese (skilja), and Swedish (skäl), from as early as the 12th century. The root meaning implies an ability to assess something critically; 'power of discernment', 'ability to make out, adjustment', 'to separate; understand'. Most dictionaries define 'skill' as the knowledge and ability that enables one to do something well; expertise, type of work, or activity which requires special training and knowledge. In America dictionaries, focus is sharply on outcomes: 'great ability or proficiency; expertness that comes from training, practice, etc'. As a verb, 'skill' implies training a worker to do a particular task.

Interestingly these definitions contain three thought-provoking notions: knowledge, ability, and quality of outcome. In the past, the word skill related specifically to the acquisition of applicable knowledge and a person's ability to transform it into a high-level of know-how. Craftsmanship was synonymous with this concept of superior work. For example, the craftsman's skill dictated the quality of the diamond's cut.

Although 'skill' continues to be associated with craftsmanship and manual work, today it is used to describe a high level of excellence, distinct from knowledge. It is used in both blue and white collar professions and is recognised by a diploma or professional certification. It adds the layer of ability to perform an activity or task effectively that goes above and beyond cursory or surface knowledge.

Reskilling, on the other hand, has a negative connotation. Usually associated with small groups of workers who have lost jobs due to lack of abilities. Using the word 'upskilling', defines this activity clearly and creates a distinction from the negative interpretation of 'reskilling'. Upskilling

implies a worker's clear intent to expand capability and therefore, employability, and to advance and progress their competency portfolio, including technical, soft and digital skills. By upskilling, an employee can offer more to a company and their employment is generally expected to be more interesting and sustainable. In the OECD report on Automation, close to 40% of all employees in professions with systematically lower risk of automation in Germany have undergone at least one occupational re-qualification.<sup>14</sup> Upskilling implies re-qualification, which is an important tool in the transition to jobs that are less likely to be automated.

When tested with corporate HR Directors and employee groups, there was a clear preference and positive reaction to 'upskilling' versus 'reskilling'. Finally, the underlying premise is that today realistically, the entire workforce will be required to expand or augment their skills regularly. Upskilling means a lower dependency on market conditions and increased added-value. Upskilling indicates a more positive future situation and therefore is more appropriate in this context, and for getting buy-in from employees. CEOs are clear on this as well. In the last PwC CEO survey, 80% indicated a concern with talent availability and their accountability for ensuring that current workers are requalified regularly.<sup>15</sup>

## A Time for New Solutions

This is the time for governments, business and social society to work together. Many Ministries of Labour, Economy and Education face a great challenge. Currently, most governments focus on short-term fixes for the 'unemployable' without addressing fundamental skill and capability issues that keep them out of work.

Some governments provide subsidies for non-profit organisations to hire and retain older or low-skilled workers who are unemployed for more than a year. These subsidised jobs, while decreasing the percentage of unemployed in certain regions, create a skewed picture of the economy and may be doing more harm than good. Although the subsidised programs are lowering unemployment, they are still drawing from tax coffers – and will for years. This robs other sectors of funding. Focusing government attention and resources on programmes that subsidise the unemployed can create a barrier. Programmes intended to enable the population, can block initiatives that allow the unemployed to acquire the skills needed to be hired, and paid, by the marketplace. This focus on short-term fixes produces a number of unintended outcomes including:

- prolonging unemployability as workers are not, in most cases, refreshing or learning new skills, but biding their time until retirement
- reducing the incentive for older, unemployed workers to upskill or find meaningful employment
- creating a roadblock that stops governments and business' from addressing potential 'elephants in the room' such as why organisations are permitted to lay-off older, productive employees, just to reduce their HR bottom-line and benefits costs
- leaving the average worker behind in low-skill jobs, and thus keeping the hiring organisations behind the 'digital times'
- prolonging unemployment for the younger population as not-for-profits, in many cases, start to award jobs that would normally go to entry-level employees to older workers. This produces the knock-on effect of youth being out of work longer and dependent upon aging parents for support
- diverting government funds to provide jobs for 'the unemployable' favouring this group over other segments of the population

- slowing government activities that would focus on building the skill sets required to ensure future economic success and sustainable growth of the economy, as more and more funds are poured into sustaining unemployable workers<sup>16</sup>

The challenge of developing an effective upskilling strategy has led to a void not easily filled but acknowledged by almost every government as a top priority to ensure the economic health of nations and business today. Government must find a balance between 'expected' curative solutions for unemployment, while providing visionary leadership for upskilling, that centres around that ephemeral 'future job'. Current efforts that create concrete, effective skills strategies, executed correctly, will carry us towards meaningful and inspiring work for all.

## New Challenge, New Minister

Most governments are grappling with skills governance and leadership. This challenge is reinforced by the complexity of many administrations and their focus on short-term, high-visibility solutions. Visionary governments are working effectively with all segments, to swiftly streamline or redesign processes, and to communicate the urgent need to work together to the general population. They are focused on upskilling and preparing for the future by designing government posts that can rapidly address these critical issues.

These few governments understand the importance of installing a Minister of Skills. Ireland, the UK, the UAE and India are all examples of this innovative structural evolution.<sup>17</sup> In India, the Minister of Skills Development controls the National Skill Development Fund. The ministry is responsible for enhancing, stimulating and developing the skills of Indian youth using a variety of programs that target

specific sectors. This ministry:

- coordinates all skills development efforts across the country
- removes the disconnect between demand and supply of skilled manpower
- builds vocational and technical training frameworks
- upgrades and builds new skills, and
- innovates the current thinking about existing and future jobs, yet to be created

In 2009, the Government of India set up the **National Skill Development Fund** to encourage collaboration between non-governmental bodies and to coordinate fund raising activities for skills development in the country through its Public Trust custodian. The Trust accepts cash donations or 'in kind' contributions from various government sources and other donors. The Fund is operated and managed by a Board of Trustees. The Trust's Chief Executive Officer is responsible for day-to-day administration, management and for furthering the Fund's objectives. It meets these objectives through the National Skill Development Corporation (NSDC); an industry-led, not-for-profit, which expands skill-development capacity and forges stronger links with the market. NSDC acts as a skills development catalyst by funding organisations that provide skills training. It also develops appropriate models to enhance, support and coordinate private sector initiatives.

## Clear Job Targets: Today and for Tomorrow

Upskilling is about an individual acquiring a specific competence to deliver a specific activity or task successfully. To accomplish this, new tasks and activities must be defined and described precisely. All decision-makers in the company, from HR executives, management and employees, must be able to work together to anticipate and correctly predict the level of future skills gaps.

It is already much too late if organisations wait until an individual cannot meet specific job requirements or is unable to perform activities associated with technology upgrades. For example, an industrial company buying a new line of robots, to replace a semi-automated production line, must consider upskilling as an element within the investment decision, not after the purchase is complete.

It is incumbent upon the organisation to consider the impact of the investment on workers';

- job groups and qualifications
- capabilities and skill disparities, and remediation for gaps
- job and/or activity options, in the case of inability (whether motivational or vocational) to align to job requirements

In a time where well-developed soft-skills are becoming the rule, not the exception, an organisation must demonstrate those skills as well. Management must plan for discussion and interaction with individuals and groups as the essential job-skills-matching process takes place. Management must demonstrate its high regard for the workers' know-how and knowledge.

Upskilling for a new or modified job is unlike general, high-level training programs which provide



generic knowledge. As an example, consider that market demand for JAVA programmers in Europe is very high. A company has tried unsuccessfully to recruit well-qualified JAVA programmers. One young programmer who works for the company but is not an engineer, has started online courses to learn JAVA independently, but has not yet acquired the foundational knowledge or skills required to fill the position. Through an investigation of this person's motivation and interests, the HR team would flag the worker and offer them the job, contingent upon the successful completion of upskilling via their current JAVA training programme. If not done in a concentrated format, the ~800 hours minimum training required to gain a solid foundation in JAVA could take close to 2 years at university. Supporting this worker in achieving their goals signals that the organisation values proactivity and the worker's commitment to life-long learning will be rewarded. It demonstrates that the organisation accepts alternate forms of education – sending a message to the population to consider all their learning and development options.

Another example is a case from 2007. The Luxembourg investment industry was desperately looking for hundreds of fund accountants. An entrepreneur partnered with an industry association and a local employment agency. It offered to search for unemployed, recent graduates such as chemical engineers or statisticians, and to provide an intensive, 3-month training course for fund accounting. This allowed participants to be placed in a new job almost immediately. The program was very effective; training and engaging more than 50 people in positions within 3 months. This was a great success story for the industry and promoted rapid upskilling. With the right motivation and collaborative mind-set, much can be accomplished very quickly.

These two examples illustrate the importance of timing in the upskilling process, and the value of taking a 'sustainable jobs' perspective. They also illustrate the significant impact of purposeful, quality training design.

Complications can arise as the decision to upskill is not just the corporation's; employees must be sufficiently motivated to engage in re-skilling and invest their time in new training. The upskilling process is a strategic decision that requires six to 12 months of employee training and management support. It only works if management and employees work together to project and anticipate gaps and create a flexible plan to fill them.

### Purposeful Training Design Fit for the Job

Upskilling requires highly specialised and customised training. As mentioned previously, the job's specifications must be clearly defined; including machines, software, technical and soft-skills involved in the work. The training program may be designed by the company or, in some cases, a third party. Each module must detail clear skill acquisition milestones and work on a condensed timeframe. While the training goes forward, the trainee is, in most cases, either continuing to perform their current job, or is replaced on a short-term basis only. The abbreviated training is critical for success to both the company and employee. The fast-paced timetable is also fundamental to keeping participants' buy-in and motivation high; helping them focus on achieving program requirements.

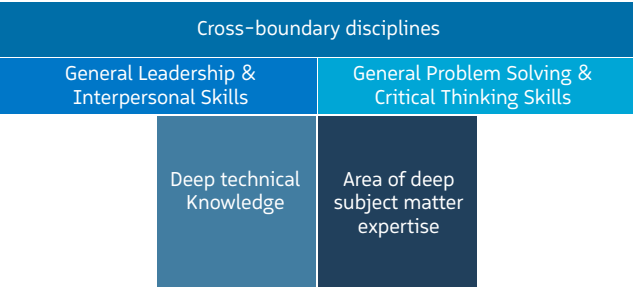
For example, a large airplane manufacturer used a 200-hour program stretching over 3 months, to train 500 employees as data analysts. Generally full-time training (at up to 40 hours/week) covers approximately 500 hours in six months. This is the equivalent of one year of university studies but is usually the maximum limit that a company will support an employee's absence. In certain circumstances, the upskilling structure can be designed to cover longer periods, allowing more balance between work and training hours.

# Which Competencies for Tomorrow?

Competency models have been used for decades to illustrate the skills required to survive and thrive in a variety of positions and work environments. From I to T to H or X-shaped models, the list is practically infinite. There are a few that seem to best express the needs of future working populations.

The I-shaped model from the mid-20th century was based only on acquiring vertical (in-depth) skills in one single area. The T-shaped skills model was first described in 1991 by David Guest and then further developed by different firms and institutions. While the vertical bar represents the depth of skills and expertise related to a single area or profession, the horizontal represents the extent of transversal skills required; for example, the ability to communicate and to collaborate effectively across disciplines. Overall, a person who has a wide horizontal bar on the T, is able to master different disciplines and systems, and adapt rapidly to constant evolutions in job/skills requirements.

**FIGURE 4**  
T-Shaped Model



Source: T-Summit.org

Boundary crossing competencies require empathy, curiosity and enthusiasm; characteristics which allow people to imagine a problem from different perspectives, engage with other stakeholders, and to design meaningful solutions. Although this model focuses on the ability to problem-solve rapidly, enjoy higher levels of innovation, and shared corporate

culture and vision more deeply, it may not be adequate for this new era. M, K, and X have appeared as new and symbolic letters for multi-shaped skills models. These new models focus on increasing one’s capability to master additional disciplines and transferable skills. Overall, their emergence is due to high-demand qualities that align with market expectations today and indicate one’s capacity to evolve. However, there may be a more human and soft-skills focused dimension for this new world, invaded by technology. The ability to learn faster and smarter is one of the most important skills required by corporations. The H- or Human-Shaped model aims to keep the individual at the heart of all activities and concentrates corporate investments as well as public policies on the success of upskilling the worker regularly. It acknowledges that there is clear advantage to engaging in open dialogue which facilitates buy-in and collaboration between different stakeholders.

The two verticals focus on:

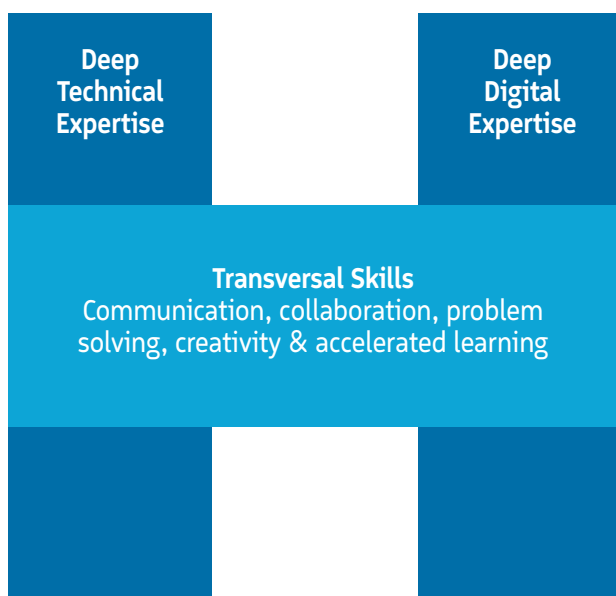
- deep technical expertise, and
- need for digital expertise in almost every job today

The transversal bar links technical and the digital elements; focusing on transversal skills, for example the ability to communicate and collaborate effectively across disciplines, as well as the individual’s capacity for enhanced and accelerated learning.

The Irish Minister for Education and Skills, M Bruton<sup>18</sup>, expressed the paradigm shift for governments well; “Our aim must be to improve the matching of the skills and needs across the board. We must focus on providing opportunities at all stages in life to all people to improve and expand their skills or change direction in their careers. We must also provide different pathways for people to reach their full potential.”

**FIGURE 5**

H-Shaped Model



Source: PwC Luxembourg

Jobs, and job vacancies do not remain in the same location forever. Eventually, when faced with no other viable option, companies move jobs to where they can easily find a skilled workforce, at good value for money. Government leaders are in the driver's seats. They can catch this unique opportunity and keep their place with other growth-oriented countries. Or, through lack of vision and effective investment in their own workforce, risk missing it. As the main economic, education, and labour policy-makers; governments must invest massively and rapidly in their workforce. The estimated cost of upskilling – which would include hundreds of hours of training, salaries and other assistance – is over €10,000 per individual participant. This is a very powerful message to citizens who are worried about losing their jobs to automation, and to companies who are suffering from a lack of a local skilled workforce.

This is also a paradigm shift for educational policy-makers who need to create a dual track system, such

the re-initiation of apprenticeship programmes coupled with the new collaboration model with business, taking place in Germany now. This is a paradigm shift that must include the vocational training system, and which would no longer support low-impact training. It is a shift that must reach across company subsidy policies, which would shift thousands of euros being invested in tangible assets. Today, a more customised approach of considered investments around intellectual capital assets is required. The approach must be informed by specific job requirements and upcoming changes in fields impacting the workers' longevity.

### Industry 4.0: No People, No Transformation

Developments in the Industry 4.0 manufacturing wave provide another perspective. Where Industry 3.0 involved automating single machines and processes, Industry 4.0 encompasses end-to-end digitisation and data integration in the value chain.<sup>19</sup> Companies moving to the Industry 4.0 model can:

- offer digital products and services
- operate connected physical and virtual assets
- transform and integrate all operations and internal activity
- build partnerships and optimise customer-facing activities

According to PwC Industry 4.0 study<sup>20</sup>, only 10% of global manufacturing companies are Industry 4.0 champions while two-third are just beginning the journey. This indicates that millions of industrial jobs will undergo a substantial transformation in the years to come. The study highlights that people are at the centre of the digital transformation; no people, no transformation.



## Global Value Chain Evolution

The analysis of the global value chain as described in the 2018 OECD report complements the investigation into corporate and manufacturing challenges.<sup>21</sup> Over the last few decades, production methods have changed. Today, most products are assembled using components sourced from all over the world. Many regions or countries have specialised in fabricating semi-finished products and/or specific components. They are part of the Global Value Chain (GVC).

According to a 2018 World Economic Forum report, most companies will review the location of their production facilities and relocate to regions that provide appropriate workforces and markets by 2025.<sup>22</sup> This is an unparalleled opportunity for countries with a young available workforce.

Clearly, a highly skilled workforce in this competitive market provides an advantage, but it also creates intense competition between those who wish to enter, remain or advance up the value chain to decrease their dependence on others. According to OECD figures, 30% of jobs in the business sector were sustained by consumers in foreign markets; over 50% in some small European countries. This highlights that the type of job performed is important and that skills play a key role in reducing workers' exposure to the risk of offshoring.

When the job involves face-to-face interaction or the need to be on-site for decision-making, it is less likely to be moved over-seas. Ensuring that workers have the correct skills enables them to more easily adapt their jobs to changing needs. The study emphasises that workers' cognitive skills, and readiness to learn, plays a fundamental role in international integration.

There is also a clear link between the level of exports, and level of workers with well-developed cognitive skills. The Heckscher-Ohlin model of international trade and other empirical studies demonstrate that a more skilled workforce enables a country to specialise

in high-skilled activities. Skills enable workers to assimilate new technologies, to adapt and to improve quality.

A study by Morrison, Pietrobelli and Rabellati, found that skills not only diffuse to firms but also to the rest of economy.<sup>23</sup> This study highlights the importance of investing in skills at the country and firm level to reap the full benefit of new technologies and to address the challenge of production fragmentation. For firms, developing a mix of skills including entrepreneurship and management skills are important to success. The study also indicates a link between the managers' and non-managers' level of education and superior management policies.

## Lack of Investment in Training

Another method to measure the skills gap is to assess training undertaken by individuals following the completion of their 'formal education'. According to Eurostat, EU adult participation in lifelong learning (% of population aged 24 to 64) was 10.8% in 2016.<sup>24</sup> We see major differences between Nordic countries, where 25% to 30% of adults are engaged in this type of learning, compared to a wide dispersal in all other countries. These numbers indicate an ineffective focus on learning that is not sufficient to meet and overcome today's challenges.

In France, although 43.5% of workers have access to continuous internal training, the average length of this type of training is only 12.7 hours per year per worker.<sup>25</sup> According to Statista.com, training received by employees in the USA varied from 42.2 to 54.3 hours per year, depending of the size of the company.<sup>26</sup> This is four times France's average. Interestingly, half of the respondents reported that on-the-job training is most common.

Although five to six days of training per year is already much better than the norm, it is not enough to meet today's learning challenges. In 2015, 23% of UK organisations provided employees with an average of 40 hours of training, but 40% gave less than 20 hours. Looking at Luxembourg statistics, the average IT training lasts five hours, job on-boarding lasts 37 hours, and language training 11 hours. It is clear that the focus is not on the development of future required skills.<sup>27</sup>

According to CVTS 3 and 4 surveys in France, 76% of workers had access to company training in 2010 which led to 47% of participants acquiring competencies.<sup>28</sup> Only 42% of the training taken focused on, or had as a main objective, developing flexibility, the ability to multi-task and/or building other soft skills competencies. 15% were focused on an activity change, for example to develop skills for a change in jobs or to avoid job loss. This category of training was 81% effective.

The majority of effective training investment is aimed at ensuring that the employee is more comfortable in their current job (49%) or to comply with new regulatory issues (31%). Only 15% focused on protecting against job obsolescence or on learning skills required to obtain new employment. For the first two objectives the efficiency and effectiveness reached 94% and 98%, compared with 81% for the latter.

These shocking numbers indicate that out of an average of five training days, companies spend merely one day on future competencies that either protect the employee from losing their job or allow them to acquire new employment. One can argue about absolute figures, but the distribution by training topic is clearly inadequate.

Often, corporate training focuses on the very short-term (technical training) or the very long-term (managerial training). This focus leads to a misalignment and a disconnect from accelerating tech waves that are substantially narrowing the lag between

decision-making and real implementation. Companies which previously had a relatively long runway between the decision to invest in new tech or factories, and the actual implementation or opening, are now working on an abbreviated schedule. The challenge for most companies is to ensure a 'future focus' for all training, keeping a keen eye on the horizon.

SAP can never be accused of being late on the uptake of technology. In an interview for McKinsey Quarterly (November 2018), its Chief HR Officer and Digital Business Services Head discussed the massive workforce skills upgrade that will ultimately encompass 20,000 employees, beginning with almost 5,000 in 2017.<sup>29</sup> Taking a strategic planning and hiring approach, the executives reviewed lessons learned and discussed the level of engagement required for a global transformation that put learning and upskilling at its core. Tips for success include;

- start early
- take incremental steps to achieve goals
- consider what support is needed for different target groups
- ensure that all stakeholders are engaged in the initiative

One of the strongest messages is the need for HR to not only support but to lead technology upskilling initiatives. They must be the first and most fervent supporters of upskilling.

## Medium-Term Training

Companies that plan to install new robotic process automation (RPA), customer relationship management (CRM), automated warehouse, or even 3D printers, must make and 'freeze' decisions about

9 to 18 months before any new technology is set up. The purchase order is signed and the selection process for the provider is under way long before anything happens on site.

Training decisions made in the medium-term (nine to 18 months) then become a key strategic factor for companies that wish to prepare workers for new technology. This type of horizon gives the project team (or HR) sufficient time to organise efficient and cost-effective training. It gives workers time to consider, commit and begin their learning journey. Waiting until just months before the new tech is set up is too late for the process to happen effectively. If the company starts too soon, for example two to three years before, it is too far in advance. Decision-making will still be uncertain, and the team will lack the burning platform required to rally workers.

One of HR's greatest challenges today is fostering the understanding of evolving competencies required by workers to remain employable and efficient on the job. This entails more and more targeted training investments. For upskilling to be effective, annual workforce planning efforts must take place and encompass current and future needs. According to our experience visiting hundreds of organisations, there is only a thin minority performing this exercise.

Talent pools in the West are shrinking and becoming more homogenous. In Europe, women represent only 42.2% of STEM graduates (2015) but this percentage is almost 50% in India.<sup>30</sup> In the USA, this figure hovers around the mid-30% with an incredibly low 2.9% of Black and 3.6% of Latina women obtaining STEM degrees. It is, therefore, predictable that women represent only 25.5% of computer science and mathematical occupations in the USA with Black, Latina and Asian women representing as little as 10% combines, when they comprise 38.3% of American females. When we consider this against the wave of new ways of working, multi-generation presence under the same roof, and career extension, we see

clearly the challenges HR faces. The Future Work Skills 2020 describes this well:<sup>31</sup>

1. **Extreme longevity:** increasing global lifespans change the nature of careers and learning
2. **Rise of smart machines:** workplace automation nudges human workers out of rote, repetitive tasks
3. **Computational world:** massive increases in sensors and processing power make the world a programmable system
4. **New media ecology:** New communication tools require new media literacy beyond text
5. **Super-structured organisations:** social technologies drive new forms of production and value creation
6. **Globally connected world:** Increased global interconnectivity puts diversity and adaptability at the centre of organisational operations

## The Worker Perspective

Companies are faced with serious challenges to find, develop and retain the skills needed for their business. So too are workers. Today, there are millions of employees whose routine jobs are soon to be automated. According to a recent PwC survey, 74% of workers interviewed feel personal responsibility for updating their skills. Workers no longer relying upon or trust their employers to actively assist them in updating their skills.<sup>32</sup>

This statistic indicates workers' reluctance to view themselves as traditional employees in classic organisational structures that may have already failed to maintain their skills. Of course, depending upon the industry or size of a company, there can be a wide variation in training and attitudes, but few organisations provide enough incentives to encourage staff to continue their learning journey.



For the full-time worker, this may raise questions and concerns. If training is not included in work objectives, or incentives such as higher pay are not linked to competency acquisition, employees may not be motivated to upskill. Communicating the importance and necessity of training and availability of programs is essential. Without an organisational focus on skills acquisition, training may be seen as a reward for the very few instead of a critical responsibility for all.

Large organisations and tech companies pay considerable attention to this very important aspect of their competitive edge. SMEs do not always have the latitude or funds available to generously offer workers training time and budget. Depending on the organisation, a workers' motivation can vary drastically. But the advent of on-line learning, lot-of-1 training platforms and MOOC's (massive open online courses) allows participants to choose their learning format and mode; to view lectures in real-time, interacting with students globally or design their own learning schedule and program. The world is full of scalable and affordable learning opportunities. One example of new learning methods are coding schools for computer applications and programmes. What most thought impossible a few short years ago, is now not only possible but becoming a global phenomenon. Someone who is not familiar at all with coding can now become sufficiently adept and knowledgeable in three months to be hired. There are multiple examples of coding schools that accept students who have little or no previous technical knowledge. Participants are selected based upon both their motivation and cognitive skills. The schools' success is due, in part, to the programme structure. Full-time training, includes daily tests, immediate remediation for students' issues, real case projects, and individual follow up, etc. At the end of the two- to three-months curriculum, most students find a job.

This format is becoming a world-wide phenomenon, with countries including Japan, the USA and even France participating in the 'boom of web schools'.<sup>33</sup>

he attraction of this format is proving so popular that the business sector has exploded with franchising and even programme ranking.<sup>34</sup>

In 2014, Progate launched its online coding school in Japan, with a programme comprised of AI, robotics and customer interface. More than 200,000 users registered in the first three years of operation.<sup>35</sup> Its claim that it is possible to learn to code in nine to 15 weeks is substantiated with excellent employment outcomes. Success is not just limited to IT-related fields. Currently, this intense learning format is being investigated and tested via various upskilling initiatives within Luxembourg companies that are drastically modifying their production methods.

A second example is the Sheffield Skills Bank, where the training model is fully adapted to local needs. Instead of being compelled to purchase staff training from a standard catalogue, companies in Sheffield district submit a precise request to the Skills Bank.

The scheme supports and encourages Sheffield City Region employers to develop their business through savvy investments in staff skills training. It is funded with £17 million GBP from the local government and European funds. An operator, interfacing with the training market, ensures that training solutions best match the company's requirements. In addition, the Sheffield Skills Bank can fund up to 70% of training, if participants match specific eligibility criteria. Local and online resources upskill people within two to nine months. More than 2,000 people have already received training under this scheme, and another 10,000 are in the pipeline.<sup>36</sup> The success of this initiative provides evidence the positive outcomes when government and business cooperate to design the correct set-up and metrics.

Another critical element required is the willingness and motivation of a worker to embark on this rigorous learning journey. Change is not comfortable for most people. Should a job be at risk in 'company A', one might envisage that a worker could find a similar job and move to company B. The issue these days is that there is a high probability that the next job with 'company B' could also disappear in the near future. Although this will be the norm in most workplaces, many workers may still prefer to obtain a familiar job in 'company B' than to engage in three to four months of training for a more sustainable job that requires more skills. They may not be confident of their ability to achieve the required level to make it worthwhile. They may fear that they have gone too long since they were last in training or learned new skills. It is logical to look at intense training with some anxiety.

Legitimate concerns may include how to reflect upskilling time (perhaps viewed as a period of unemployment) on their CV, and if the link between upskilling and obtaining a more sustainable job is clear. Time and time again, workers demonstrate much more motivation to embark upon training when they are guaranteed a more sustainable position with lower risk of automation upon completion of their learning journey.

Quite often, companies fail to communicate major changes to their staff. Companies may fear sharing information regarding radical changes to the way people work, the technology or systems. Rationale can run the gamut of protection against industrial competition, uncertainty about the project's deployment steps, or even lack of strategic clarity in terms of the human resources side of the change. Lack of transparency does not support confidence-building and creates an atmosphere of fear and suspicious among employees. If the initiative is seen as positive and future-focused, it will be received more enthusiastically by the stakeholders. Positive communication regarding upskilling initiatives and the project that is catalysing the change is a critical factor of success.

# 4. The Solution Ecosystem





# The Solution Ecosystem

Upskilling is highly powerful but must be executed with the right strategy. It is a solution that can be tailored to resolve issues for countries, regions, corporations, industries and individuals. It is extremely powerful but requires the correct execution strategy, supportive regulatory frameworks and a vibrant job market. Successful upskilling is achieved by completing six steps, in a specific sequence:



The process is fortified with strategy assessment and a communication plan. The continuous cycle of improvement (monitoring, evaluation and policy) provides the bedrock for the methodology. Learning from extended reviews of international initiatives afforded the opportunity to understand the complexity and risks associated with upskilling. Analysing context through an experienced lens, based upon the deployment of upskilling initiatives at a territory level, provided the background to design this six-step methodology. This simple roadmap will assist leaders to strategize and execute upskilling plans successfully.

## Upskilling Sponsorship

Upskilling initiatives are initiated by visionary leaders who have reflected deeply on the long-term business and social elements that sustain growth in their country or industry. Upskilling strategies can originate from the political leaders of a country or region or can be prompted by industry or association leaders.

These leaders are deeply committed to generating sustainable growth through the development of intellectual capital and the optimisation and enhancement of workforce skills. Important to any project or initiative is the ability to find consensus around possible solutions to major challenges associated with upgrading the workforce's skills portfolio.

Gaining agreement on common and collaborative action is critical. Visionary leaders are able to gather different stakeholders around the table and mobilise the conversation.

President Macron's initiative to dedicate an enormous national budget to new vocational

training is a key example of leadership in this area. It is supported by sweeping changes to the regulatory framework that accelerate and expand upskilling. The Luxembourg government's upskilling initiative is another prime illustration of a leader's capacities to create impact. The Minister of Labour, Nicolas Schmit, launched a multi-stakeholder pilot project, which was supported by trade associations and unions. This pilot focused on upskilling 'at-risk' employees, vulnerable to the introduction of new technology.

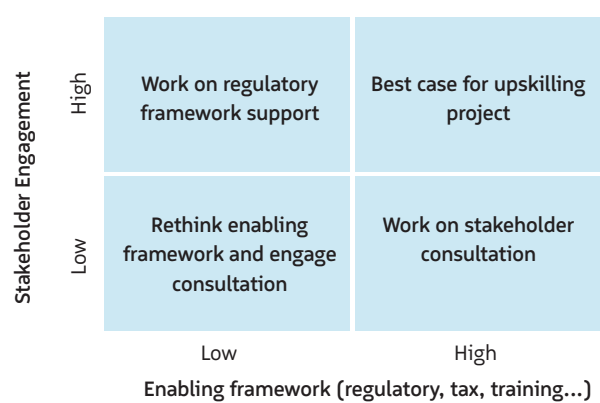
## Step 1: Analyse & Define Upskilling Initiative

Planning is synonymous with success. Preparatory steps are an essential element in the successful completion of upskilling initiatives. This step defines the upskilling strategy, for a territory, industry or corporation. The expected outcomes must be precise and must include scope, budget (with required resources details) implementation, and stakeholder engagement plans.

This step is most effective when design thinking methodology is applied. The approach allows stakeholders to imagine, co-create and prototype new products, services, strategies, and business models. It builds deep insights regarding requirements from user groups (employee, corporate and governmental). The expected outcome of this feasibility step is to define the overall enabling context according to two key dimensions: stakeholder engagement and the presence of an enabling environment.

The result of this assessment (see figure 6) and the preparatory work regarding stakeholder engagement and enabling conditions, guides the execution and determines success measures that will guide the upskilling programme.

**FIGURE 6**  
Stakeholder & Framework Matrix



Source: PwC

**Step 2: Design Corporate Workforce Skills Plan**

The acquisition of new technology significantly transforms the work in most organisations. This is especially true in terms of the number of staff engaged in new activities or jobs, and the types of competencies required for those jobs. A large proportion of companies that participated in the research and initial fact-finding experienced similar gaps in their workforce skills. An important and critical finding was that most did not translate their technology and digital investment plans into a human capital development plan. No matter the sector, there were numerous examples of this omission.

Forecasting the number of FTEs using historical data such as staff turnover, pensions, new job creation and job reductions, is no longer adequate. The new paradigm requires that the quality and quantity of competency portfolio change is tracked. An integral component of this new organisational forecasting methodology is the ‘how and where’ of competency acquisition.

HR executives can now rely upon a new generation of workforce planning tools to help forecast future needs based upon strategic direction, digital advancement, and anticipated task obsolescence. They assess the degree of automation, and job transformation. Yet, the organisation’s focus on its people and providing an engaging, streamlined upskilling process to ensure their smooth transition to new ways of work must be central to all workforce skill planning.

**Step 3: Perform Individual Assessment & Advice**

Once new jobs or new tasks are identified, and skills quantified, it is important to match employees who have the highest motivation, and profile alignment. A key element is assessment of existing skills, which enable them to rapidly transfer to the new job. Upskilling methodology dictates a full individual assessment for each employee. It measures career achievements as well as personal and professional aspirations.

This assessment also provides indicators to a variety of factors that may influence their skills portfolio, their motivation level towards the company and suitability toward future jobs. The assessment includes vertical skills definition, linked to current job activities, soft and digital skills. For instance, using a compiled assessment methodology that includes vertical feedback, digital, soft-skills analysis, and considers professional and personal career aspirations leads to quite an accurate assessment of potential. It allows an employee to share their personal interest and knowledge from domains required for new job opportunities that are potentially very different from, and not being used in, their current job.



## Step 4: Match Jobs & Engagement Workers

Once the jobs of the future have been qualified and quantified and the employees assessed on their real skills portfolio, motivation, and aspirations; new job matching tools, which use artificial intelligence, make real-time recommendations regarding best fit.

This disruptive innovation in HR software (e.g. riminder, dynajob, seedlink, leap, etc.) uploads full employee profiles onto a platform powered by deep machine-learning techniques which seamlessly match job vacancies to suitable candidates. These systems allow HR executives to stay apprised of developments in job or position requirements, and to be assured that the best candidates are being found and/or considered for the job.

## Step 5: Select Training & Providers

A key success factor in every upskilling initiative is ensuring that the training provided to workers is of the highest quality and is an effective and efficient way to prepare them for the new function. Ensuring a high level of employability generates massive savings for the State and for companies. High employability also engages the employee positively in the initiative, influencing their outlook and motivation. Upskilling initiatives offer us the opportunity to reverse traditional vocational training markets from a supply-based to a market-driven model; focused on the real needs of companies and people. This approach enhances teamwork and helps form a solid foundation of life-long learning.

The most successful models are comprised of State and business working together. This positive collaboration ensures required skills are correctly detailed, and training providers to easily design and align interventions. Specific objectives and measurable programmes ensure that workers upskill and return to sustainable jobs rapidly.

## Step 6: Monitoring, Evaluate & Improve Policy

This transversal phase of monitoring and continuous improvement has communication at its core. From initiation to programme completion and de-brief, communication must provide real-time information to the programme's government administrators, HR executives of the participating companies, and employees. It is supported by a digital platform that provides key performance indicators for the five steps described above. For example,

- workforce planning tools monitor corporate forecasts (employee statistics and competencies)
- individual skills assessment modules indicate the level of competencies and workforce motivation
- job matching tools provide an overview of job opportunities to all participating employees
- consolidation of individual skills development plans provides a clear overview of the required skills to fill new/vacant jobs in any given marketplace
- a training platform records the learning journey of each participant, tracks skills acquisition progress on a daily basis and captures training costs

This step provides participating governments with a full set of statistics and vital evidence of training attendance and accomplishment.

## Communication

Once the upskilling initiative enters the critical phase of on-boarding upskilled employees to new jobs, the communication strategy actively supports all success stories via a trans-media platform. Media stories that have followed individual

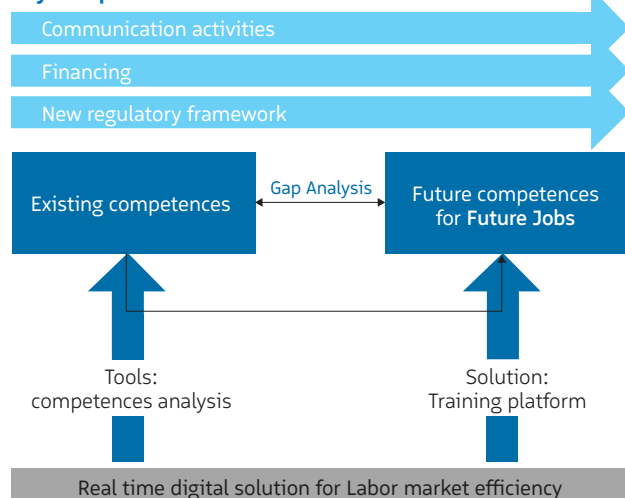
employee's progress on their upskilling journey now focus on the 'good news story' of successful job placement. Successful employees are showcased as role models to the government, participating companies and other employees as they acquire new internal and external positions and jobs. This communication strategy is key to transforming people's mind-sets.

The upskilling cycle illustrated below shows a national framework, corporate growth, and employability elements for workers. Both frames are powered by new skills and include elements that boost economic growth and social inclusion.

**FIGURE 7**

Upskilling Toolbox, Source: PwC Analysis

**Key component of the toolbox**



Source: PwC Analysis, 2017

The steps described here provide a practical, fool-proof methodology for ensuring that the working population in every country is ready and able to march forward, in tune with changing times and technology.

## Upskilling Investment: A Clear Return

Using a realistic view of financial cost to society that includes lay-off, unemployment and recruitment costs, upskilling is the most effective solution. This section discusses the merit of considering upskilling initiatives as investments rather than as standard training expenses. As well as reviewing the components of this investment, this section includes a wider and more realistic definition of costs. The importance of benchmarking and comparing accurate savings and gains such as those listed above, cannot be underestimated.

Most upskilling initiatives will only realise their potential if the government creates and activates enabling conditions. Financial support via national policy review and modification reduces barriers to participation for corporations, SMEs and employees. These policies also accelerate upskilling investment.

The paradigm shift needed, and the magnitude of investments required, will triple training costs for each participating employee to, on average, €1,356 per worker.<sup>37</sup> This is so important, according to CEDEFOP analysis, that a new technical and financial framework is required to unlock investments.<sup>38</sup>

Government alone will not solve the financial challenge. Insurers, bankers, and impact investors all have key roles to play in designing solutions for this new, intangible class of investment. Finding free or inexpensive avenues to finance upskilling initiatives and optimise cash management is the key priority for executives and is quite a sizable untapped market for financial institutions.

## Upskilling ROI: 1 euro invested, saves or generates at least 2 euro

Upskilling investment is composed of a range of elements. Each one provides a different view of the required investment and potential returns. Workforce planning exercises help define future skills and determine the number of employees required to work with the new technology which indicates the potential investment. Supplementary costs include individual employee skills and motivation assessment and professional advisors who provide independent advice and individual support during the upskilling process. These costs may be considered superfluous by some, but they influence the success rate of the upskilling initiative.

The following example provides a concrete illustration of the value of upskilling. It leaves no doubt that it is the preferred and most effective solution compared to lay-offs or recruitment plans for new employees. The return on investment (ROI) is calculated for corporations and governments with a very conservative assumption using two profiles: a low-skilled employee (John) and a high skilled employee (Paul). The salaries in these two cases vary substantially (€12,800 for John / €24,200 for Paul). These numbers illustrate the impact of the salary cost during the training (including the higher cost of training for high-skilled employees).

Upskilling investment	John		Paul	
Employee profile	low-skilled		high-skilled	
	€	%	€	%
Monthly salary	2,500		6,000	
Corporate workforce planning (20% of salary)	500	4	1,200	5
Individual assessment and support	2,500	20	3,000	12
Training: 320 hrs	4,800	38	8,000	33
2 months @ €15 & €25 respectively				
Salary cost during training	5,000	39	12,000	50
<b>Total</b>	<b>12,800</b>	<b>100</b>	<b>24,200</b>	<b>100</b>

## Examples of the Upskilling Investment Process

To truly understand the potential for savings and other organisational benefits, two examples of upskilling investment decisions can be explored.

### Example 1: Automation (Robotics) Layoffs

New robots will automate most of John and Paul's current tasks, making their jobs obsolete. In the current decision process, corporate executives would first consider laying off John and Paul. Here the upskilling investment is benchmarked against lay-off costs. In this example, the lay-off assumptions are:

Upskilling investment	John	Paul
Employee profile	low-skilled	high-skilled
Indemnity: 6 months' salary	€15,000	€36,000
Additional lay off costs (legal, outplacement, training...) representing 3 & 6-months' salary respectively	€7,500	€36,000
<b>Total layoff cost</b>	<b>€22,500</b>	<b>€72,000</b>

In practice, these lay-off costs are decidedly underestimated. According to the sector, social contracts in place, social climate, and country regulation, companies can be liable for up to 3 years of salary, which amounts to €90,000 for John and €216,000 for Paul. Since the company is recruiting new people in other departments, upskilling is a clear solution to increase mobility.

By initiating an upskilling programme, if John and Paul's skills profiles match the vacant jobs, the company stands to recoup a minimum of €9,700 for John (43% less than lay-off costs) and €47,800, for Paul (66% less than lay-off costs).

The company will save a minimum of between 43% and 66% of lay-off costs alone, before considering other benefits of upskilling such as saving to State support mechanisms. This cost could also increase



rapidly if there were problems with unions or other social factors such as increased salary premium for new joiners (in the context of talent shortage). Indirectly, the company will also save on recruitment costs for vacant positions.

	John	Paul
Employee Profile	Low-skilled	High-skilled
Monthly salary	€2,500	€6,000
Upskilling investment	€12,800	€24,200
Minimum lay off cost estimation	€22,500	€72,000
<b>Potential savings</b>	<b>€9,700</b>	<b>€47,800</b>

Based upon European research, the financial scenarios above are very conservative in terms of savings. In addition to financial benefits, the social, organisational and reputational gains from upskilling are far greater than laying off any workforce. Savings in this example do not include the potential State support in upskilling investment, which will clearly have an even more positive effect in terms of financial return.

## Example 2: New Skills not on the Market

The investment in new machines will require a full set of new skills and positions, very difficult to recruit for any market. In the current decision process, corporate executives consider external recruitment or engaging a recruitment agency first. The focus would be to hire a workforce and move it close to the factory. In this case, upskilling investment is benchmarked against revenue and marginal loss.

Let us assume that the company has created a new department, recruiting two profiles with very specific new generation machine expertise; an operator and a production line supervisor. Jane and Pauline have been working in similar roles on older machines in another department.

The newly acquired machines have just been

launched on the market, so very few people have experience working on them. In fact, there are no workers on the job market. The positions of operator and production line manager have been vacant for over nine months, representing respectively a loss of revenues of €50,000 and €100,000. In addition, any new recruits must participate in orientation, trained and be on-boarded into the company.

An upskilling investment of €12,800 for Jane and €22,500 for Pauline, will allow them to be operational in 3 months. The company would have generated €50,000 and €100,000 of revenue with staff that are already integrated and who would enjoy immediate productivity with a very low risk of failure. With a gross margin of 50%, the company would have generated an additional margin of €12,200 for Jane and €27,500 for Pauline. The company would be required to fill the vacant positions left by Jane and Pauline, but since the skills requirements for the old jobs would be less difficult to find on the market, it is easier to upskill someone internally or to recruit externally.

In summary, the upskilling investment provides a higher and more rapid gross margin than external recruitment for new jobs with specific skills profiles. In six months, the gross margin generated by the jobs' production, recovers the amount of the investment for upskilling the two profiles.

Recently, several manufacturing companies with high technology investment in Industry 4.0. Their strategies pivot on upskilling and increased internal mobility, as the main job feed method. The upskilling investment is clearly above €30,000 per worker and, in some cases, above €60,000. Their return on investment is still very interesting.

	Jane	Pauline
Employee Profile	Low-skilled	High-skilled
Monthly salary	€2,500	€6,000
Upskilling investment	€12,800	€24,200
Average annual revenue generation	€100,000	€200,000
Gross margin (50%) on 6 months	€25,000	€50,000
<b>Potential gross margin</b>	<b>€12,200</b>	<b>€25,800</b>

These two very practical cases often occur in sectors today. Upskilling investment provides a robust minimum savings of 43% against a lay-off scenario and is recovered in six months in the case of a talent shortage scenario.

## Government Intervention

The financial impact of upskilling for governments has a massive impact on GDP, tax revenues and labour ministry budgets that provide protection for the unemployed. Here, we look at two key elements:

- The impact of not supporting upskilling in public expenditures
- The correct level of financial intervention that will enable and accelerate upskilling initiatives

## The Impact of Public Expenditures Supporting Upskilling

Two examples provide a clear perspective on lay-off costs and direct revenue costs.

### Example 1: Upskilling Investments Versus Lay-Off Costs

In this example the State saves unemployment costs estimated in 2012 to be between €19,000 in Spain and up to €33,000 in Belgium.<sup>39</sup> While the

study from 2012 is quite old, the magnitude of these figures remains valid. This estimate includes public support (unemployment benefits, etc.) and loss of government remittances (tax revenue, social contribution, etc.) and is quite conservative. This example demonstrated that the estimated loss of government revenue is higher than corporate upskilling costs. For purposes of illustration, the employees must succeed in their new functions thus eliminating the need to draw upon unemployment benefits.

**FIGURE 8**

Cross country overview of the average yearly cost of an unemployed (in euro)

Type of costs	Belgium	Germany	France	Spain	Sweden	UK
Public intervention						
Unemployment benefits	€ 9,493	€ 8,793	€ 10,686	€ 10,778	€ 7,475	€ 3,561
Guidance and administrative costs	€ 1,683	€ 2,020	€ 1,641	€ 242	€ 3,018	€ 1,746
<b>Total public intervention</b>	<b>€ 11,176</b>	<b>€ 10,813</b>	<b>€ 12,327</b>	<b>€ 11,020</b>	<b>€ 10,493</b>	<b>€ 5,307</b>
Potential loss of revenue						
Loss in social contribution of employers	€ 8,747	€ 4,606	€ 10,172	€ 5,756	€ 8,585	€ 2,955
Loss in social contribution of workers	€ 4,104	€ 4,893	€ 3,294	€ 1,222	€ 1,911	€ 2,539
Loss of direct taxation	€ 8,240	€ 4,463	€ 1,888	€ 1,291	€ 2,489	€ 4,498
Loss of indirect taxation	€ 1,177	€ 776	€ 1,057	€ 700	€ 3,427	€ 2,710
<b>Total potential loss of revenue</b>	<b>€ 22,267</b>	<b>€ 14,737</b>	<b>€ 16,411</b>	<b>€ 8,970</b>	<b>€ 16,412</b>	<b>€ 12,702</b>
<b>Total average cost of an unemployed</b>	<b>€ 33,443</b>	<b>€ 25,550</b>	<b>€ 28,737</b>	<b>€ 19,991</b>	<b>€ 26,905</b>	<b>€ 18,008</b>

Source: IDEA Consult

## Example 2: Direct Revenue & GDP

In addition to direct revenue loss from the public budget, a vacant job represents a loss of gross domestic product growth for the State. While so many countries are looking for additional fractions of a percentage in growth, they have an untapped pool for growth in the category of vacant jobs. Financially, there are clear benefits for governments to invest in upskilling in their region, the saving and the associated GDP gains are merely two. However, given the limited literature on the topic, government and research centres must for new studies regarding the economic impact of upskilling.

## Luxembourg Skills Bridge

The Luxembourg Skills Bridge initiative is available to any company facing a major shift in their work organisation due to technological and digital investments. It takes an anticipative approach to improving workforce employability. The financial support provided by this programme differs from any other initiative in the country. The coverage afforded via technical assistance for the company and the individual sets it apart from other initiatives. The programme absorbs up to 80% of training costs, without limit, and provides an additional 90% salary compensation during the training period. The initiative was designed around limiting the administrative burden of programme management for participating companies and reinforces company workforce planning practices. Highlights of technical and financial assistance support for Luxembourg Skills Bridge are below.<sup>40</sup>

**FIGURE 9**

Technical and Financial assistance proposed

	Support the company receives :
Technical assistance for workforce planning and employee assessment	Max. 12 days per company
Individual coaching throughout pilot	1 day per employee
Training cost per employee (reimbursement on invoices)	Internal mobility: 35%
	External mobility, same sector: 50%
	External mobility, different sector: 80%
Salary cost during training ("chômage partiel")	90% of the employee's salary, limited to a maximum of 250% of the minimum wage.

Source: [www.skillsbridge.lu](http://www.skillsbridge.lu)

## Value of a Holistic Approach

In terms of government interventions, there is a clear difference between a larger holistic approach that includes technical assistance support, and those approaches that limit the scope by only partially absorbing training costs. Given the complexity and volume of investment required,

we recommend that governments review their intervention schemes to ensure a full, holistic approach is used. To be certain that the country's workforce is truly employable over the long-term and that upskilling interventions are successful, governments must include coverage of at least 50% of overall support costs and a strong methodological approach.

Building a holistic upskilling ecosystem includes important dimensions such as regulations, role model employers and employees, workforce planning, and individual skills assessment. Streamlined upskilling administration contribute greatly to the overall success of a national or regional upskilling initiative.

## From Subsidies to Performance Fee Models

In terms of efficacy, the government has the opportunity to support training costs via a success fee model. Given the high number of vacant IT and tech-related positions on the job market, quality training providers that offer tailored programmes should be entitled to partially participate in a success fee model with higher remuneration potential.

This training success fee model can transform the economic landscape into a demand-driven market, where measures are tied to successful employment of upskilled participants. It significantly reduces the financial risk for public expenditure and also increases the return on investment for corporations and employees. The major advantage of this new business model is aligning all stakeholders involved toward the same achievement measures in the upskill process; the successful on-boarding of the upskilled employee in a new, sustainable job.



# 5. Conclusion





# Conclusion

Hundreds of millions of unemployed, overqualified, under-skilled people no longer meet company skills needs. But corporations are desperately looking for adequate profiles to fill the increasing job vacancies.

This lost workforce is causing an incredible loss of growth. The acceleration of the digital economy is causing companies in North America and Europe to struggle. Different sectors such as media, retail, and banking are faltering as they endeavour to transition their business model and workforce to the future.

Given the social, economic and financial magnitude needed to prepare workforces for future jobs, these problems may soon apply globally. Countries without the appropriate digital infrastructures and well-prepared workforce may become no-go zones as the international community sees their growth stall or slow, and their businesses downsize.

Countries with visionary leaders that support enabling conditions for the adoption of the digital economy, will encourage the design of new, innovative solutions for their educational and vocational training systems. These countries will develop more entrepreneurs and attract more investments to generate more endogenous growth.

This paper has addressed some of the innovative, ambitious and practical government policy solutions which will significantly and rapidly increase the skills portfolio of untapped talent pools in virtually every country. It provides a roadmap to feed sustainable growth, employability and social inclusion, and offers a path to upskilling workforces: thus creating a more vibrant and exciting future for all.

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## The Lost Workforce: Upskilling for the future

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