

Russo, Giovanni

**Article**

## Skill utilization at work: Opportunity and motivation

IZA World of Labor

**Provided in Cooperation with:**

IZA – Institute of Labor Economics

*Suggested Citation:* Russo, Giovanni (2017) : Skill utilization at work: Opportunity and motivation, IZA World of Labor, ISSN 2054-9571, Institute for the Study of Labor (IZA), Bonn, <https://doi.org/10.15185/izawol.409>

This Version is available at:

<https://hdl.handle.net/10419/177788>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

# Skill utilization at work: Opportunity and motivation

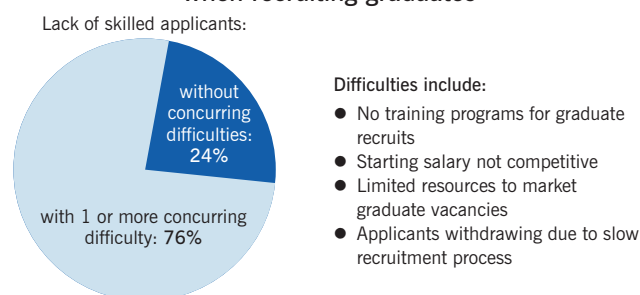
## Challenging jobs and work incentives induce workers to use their skills but make life difficult for managers

Keywords: job demands, skills, tasks, skill utilization, incentives

### ELEVATOR PITCH

Organizational characteristics and management styles vary dramatically both across and within sectors, which leads to huge variation in job design and complexity. Complex jobs pose a challenge for management and workers; an incentive structure aimed at unlocking workers' potential can effectively address this challenge. However, the heterogeneity of job complexity and the inherent difficulty in devising a correct set of incentives may result in misalignment between job demands and incentivized behaviors, and in complaints by employers about the lack of skilled workers.

### EU companies cite a range of concurring difficulties when recruiting graduates



Source: Author's own compilation based on unweighted Flash Eurobarometer Survey 304 data. Online at: [http://ec.europa.eu/commfrontoffice/publicopinion/flash/fl\\_304\\_en.pdf](http://ec.europa.eu/commfrontoffice/publicopinion/flash/fl_304_en.pdf)

IZA  
World of Labor

### KEY FINDINGS

#### Pros

- + Effective skill utilization requires complex and challenging jobs.
- + Organizations have a large amount of leeway in how to combine tasks to form jobs.
- + Skills are found in people; organizations need to offer the right incentives to unlock workers' potential.
- + Skills can be built on the job, and workplaces are great learning environments.
- + Job complexity has a motivational component that can be used to induce workers to apply and develop their skills.

#### Cons

- Complex jobs pose challenges for management.
- Organizations that adopt non-standardized technologies will likely encounter difficulties attracting appropriately skilled applicants.
- Finding the right incentives to motivate workers to use and develop their skills can be difficult, and mistakes can be costly for organizations.
- Human resource (HR) policies may not deliver the intended results due to misalignment between HR managers and line managers.
- Job complexity strains workers' cognitive and emotional resources; without adequate resources, workers may be at risk of stress-induced burnout and display counterproductive work behavior.

### AUTHOR'S MAIN MESSAGE

Technological choices, product market strategies, and other organizational characteristics affect how tasks are grouped into jobs. The design of jobs determines the skills needed by workers in order to do them effectively. However, people possess skills and organizations need to find the right incentives to motivate workers to fully apply their skills. This is not an easy task and mistakes in the design of incentives can have disastrous consequences for firms' survival. Policymakers should complement policy interventions aimed at skilling the workforce with interventions aimed at increasing skill utilization.

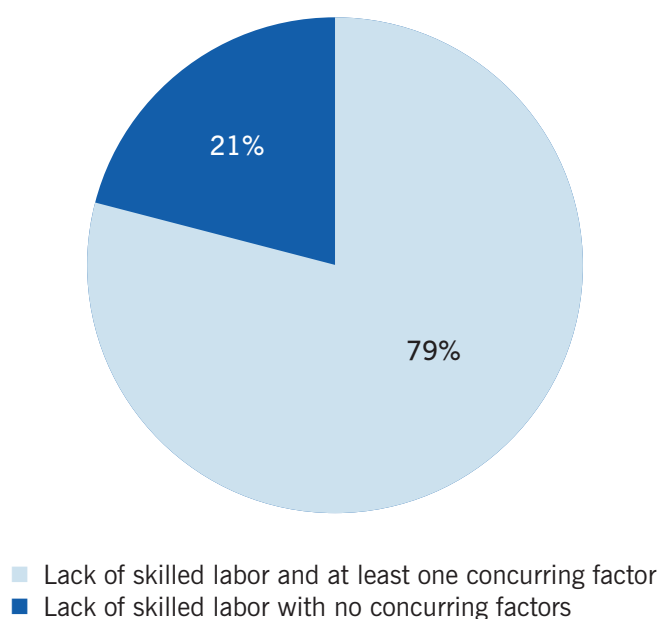
## MOTIVATION

Skills are of great importance for business success in modern economies. There is growing concern among policymakers in the US and Europe regarding the difficulties faced by organizations in sourcing the right skills, often attributed to alleged recruitment difficulties caused by a widespread lack of skilled applicants. Some selected organizations that adopt advanced and rapidly evolving technologies face difficulties finding applicants with relevant skills because the technology may not be mature enough to be codified. In these cases, the technologies have not been introduced into educational or training curricula, which leads to a lack of qualified applicants [1].

However, the weight of the evidence suggests that, all in all, a generalized lack of skilled workers may not be the critical issue; rather, organizations' recruitment difficulties may be due to a coordination problem (making it difficult to find the right applicants) and to misaligned work incentives. In particular, analyses for the US [2], [3] and Europe—the latter summarized for the overall EU in the illustration on page 1 and Figure 1—show that the vast majority of organizations declaring difficulties in finding skilled applicants also admit to experiencing troubles in three other key areas: missing work incentives (organizations offering too low wages, demanding long working hours, and offering poor career prospects), lack of training opportunities, and poor recruitment practices (workers turning down offers, promising applicants withdrawing from the selection procedure, and failure to reach and attract applicants in general).

The apparent paradox arising from organizations that claim to be seeking skilled workers but, at the same time, are ambivalent about providing training and competitive wages is a symptom of the challenges that organizations face when trying to extract the full potential from their workers' skills.

Figure 1. European firms' difficulties with skilled labor in the previous two years



*Note:* Concurring factors include: long working hours; high labor costs; poor image of industry or occupation; and only recruiting locally.

*Source:* Author's own compilation based on unweighted data from the Flash Eurobarometer Survey 304 Employers' Perceptions of Graduate Employability. Online at: [http://ec.europa.eu/commfrontoffice/publicopinion/flash/fl\\_304\\_en.pdf](http://ec.europa.eu/commfrontoffice/publicopinion/flash/fl_304_en.pdf)

## DISCUSSION OF PROS AND CONS

Organizations differ in their cultures, power structures, management styles, competitive strategies, and adoption of management practices [4], [5], [6]. These differences are reflected in how organizations make use of their workers' skills. In general, skilled workers are instrumental for firms producing or supplying high-quality, innovative, and highly customized products or services [6]. At first glance, the heterogeneity of skill utilization may be linked to workplace organization: it is low in Tayloristic workplaces that employ strict command-and-control managerial styles, and much greater in high-performance workplaces, which are characterized by varied worker tasks and high worker autonomy. However, the spectrum of workplace heterogeneity is much wider than this simple classification suggests, and it creates a moral hazard and a coordination problem that affect the quality of matches between workers and organizations.

### The management of skills

If organizations are to benefit from workers' skills, they need to recruit a solid base of skilled workers, motivate them to use those abilities, and provide them with the opportunity to do so. The motivational aspect is of fundamental importance because workers, and the human capital with which they are endowed, represent an asset over which organizations have only partial control. The motivation to use skills and the opportunity to do so should not be treated as entirely distinct elements, since the opportunity to use one's skills has a motivational component [5].

Job design incorporates the tasks and responsibilities falling under a given job title, and it reflects the importance of skills for organizations; it includes roles, behaviors, and work methods—(i.e. how work is to be organized, enacted, and experienced [5]). Job design also specifies the relationships between positions (job titles) and defines the social and personal requirements of the job holder. Ultimately, variations across organizations in terms of technology, managerial practices, organizational culture and work climate, and product market strategies will be reflected at the job level, resulting in job design heterogeneity [6].

Skill requirements are linked to the complexity of the tasks mandated by the design of a given job [7]. Job complexity may be articulated along three dimensions [8]. First, complex jobs involve the performance of multiple tasks (multiskilling and high cognitive demands). Task variability refers to the number and range of different tasks (and roles) of job holders; the greater the task variability in a job, the more skilled and experienced a job holder needs to be to execute the job proficiently. Second, complex jobs include non-routine tasks. Routine tasks, in which skills are honed and perfected by means of repetition, are generally easier to perform than non-routine tasks. Jobs including non-routine tasks are more difficult in that workers will face different and potentially new work-related situations to which they must find an answer. Non-routine tasks may therefore require workers to find solutions to complex problems, and they may require workers to learn new skills. The routine nature of tasks is particularly important for the decision to automate or outsource jobs; however, developments in artificial intelligence have increased the capacity of machines to cope with non-routine situations and recent evidence suggests that routine jobs are not more “offshorable” than non-routine ones. Finally, complex jobs tend to be interconnected, so that a job holder's performance is

more difficult to assess by supervisors and line managers because it is connected to that of his/her colleagues.

Firms adopting complex job design implicitly recognize that workers possess important knowledge that can be deployed alongside their skills and ability to respond to work-related situations [4]. To this end, workers in complex jobs are granted some degree of discretion in deciding how their jobs should be carried out (and possibly increased involvement in decision making at the job level).

Complex jobs are very diverse in nature since there are many different ways in which a given job can be enriched with additional tasks. For example, salespeople may be in charge of the sales of a well-established product, may be required to develop a market, and may be expected to collect intelligence on technologies and the innovations of clients and competitors. Further differences in job design may arise from the varying degrees of autonomy granted to workers. The combination of job complexity and job discretion determines the scope for skill utilization. If organizations are to obtain the full benefits from their skilled workforce, they must effectively communicate organizational goals and targets so that their employees can choose what skills and strategies they need to activate, and how to do so, in different work situations.

To perform effectively, workers need to direct their skills (via effort, concentration, and attention) to specific work tasks amid distractions, obstacles, and setbacks. Moreover, technological developments, career progression, and unplanned events may drive workers to develop their skills and learn new things. Both skill development and skill utilization require an act of volition on the part of workers that cannot be mandated by means of contractual agreements and which must be supported by motivational incentives.

Fortunately, complex job design provides motivational resources that induce workers to tap their knowledge and ability and to use their skills [5]. Job complexity provides psychological resources that enhance rewards deriving from the proper exercise of skills, thus making skills utilization sustainable [9]. These psychological resources can be traced back to the role of work in satisfying psychological needs of autonomy, relatedness, and mastery or competence [5]. For example, the use of skills needed to solve difficult (but not too difficult) problems, or to attain difficult (but not too difficult) goals is costly to workers in terms of physical and mental energy, but it can be very rewarding when a state of complete absorption is attained (a state of flow) [9]. Autonomy to decide the method of work, the sequence of tasks, and the timing of work contributes to the experience of psychological ownership of work-related activities. In this way, operational autonomy satisfies the psychological need of autonomy. Feedback from co-workers and supervisors, together with support from colleagues and managers, promote the development of a sense of affiliation to the organization. Finally, jobs that stimulate personal growth, learning, and development sustain a worker's sense of mastery.

Management can support workers' autonomy by delegating decision-making powers when they can be trusted to act in the interest of the company. Such delegation of authority can be supported by an organizational culture (the values, beliefs, norms, and assumptions that are important for a company) that guides worker behavior by facilitating shared meaning and goals, something which can be effectively transmitted via a coherent system of human resource (HR) practices [10]. It can also be encouraged by a cooperative industrial relations climate, in which unions or other forms of employee

representation cooperate with management to increase productivity. Worker autonomy is positively related to the level of trust characterizing the workplace [6] and by the presence of communication policies that clearly indicate organizational goals and objectives [4].

Performance management and other HR practices can also communicate to workers how and when to draw on their skills and deploy them in the best interest of the organization. Training and development opportunities help direct workers' human capital investments toward the skills needed in the company (provided that managers and co-workers support those willing to enroll in training). An organizational culture that values and facilitates knowledge exchanges among co-workers supports skills development through peer-learning and on-the-job learning. Finally, workers' initiative is encouraged when mistakes are effectively managed rather than being simply reprimanded [11].

Organizations can complement the set of psychological incentives through the use of monetary incentives (efficiency wages, pay-for-performance schemes, wages linked to the ability to operate multiple machines or the ability to cover various work roles, wage increases linked to promotions, and gainsharing or profit sharing schemes). Monetary incentives can effectively induce people to use initiative, work harder, and draw on their skills. The types of incentives that can be used are influenced by job design characteristics. If pay can be linked (*ex-ante*) to objective measures of performance, pay-for-performance (i.e. piece rate) incentive schemes can effectively align the interests of the workers and the company. The difficulty in implementing such incentives increases with the difficulty in obtaining an objective measure of performance, the degree of random variation in workers' performance, and the degree of risk aversion among workers (which will have to be compensated for, unless it can be filtered out by means of relative performance evaluations). Skilled workers may also be attracted to piece rates because of their higher productivity [4].

Job complexity may require multitasking. To ensure that workers focus on the entire set of tasks, a mixture of incentives should be put in place to motivate them to deliver effort along all job dimensions (e.g. a piece rate for performance on easily observed tasks, complemented by bonuses based on subjective performance evaluations regarding the hard-to-observe tasks or to incentivize desirable work behaviors). Finding the right mix of incentives is not easy, however.

In complex jobs, for which it is typically more difficult to define performance (and consequently more difficult to link pay to performance *ex-ante*), *ex-post* (i.e. subjective) performance evaluation can be used to award bonuses [4]. Certain group-level incentive pay schemes, namely profit sharing and gainsharing, are supported by organizational policies aimed at disclosing information on financial results and profitability. In turn, the transparent business environment supports the development of a climate of trust and serene industrial relations, which support skill utilization and development.

All these motivational resources, when properly aligned, support employee engagement, which is a state of sustained skill deployment [9]. However, a company may adopt different combinations of monetary and non-monetary incentives to support and direct workers' effort. The mix of incentives adopted will influence the skill set needed by workers to do well in the workplace.

Complex jobs, with high demands and rich in-job resources, induce a high degree of skills utilization, and they also support workers' motivational processes (work engagement),



resulting in high individual performance. This configuration is typical of high-performance workplaces. At the company level, an engaged workforce that is effectively drawing on its skills can result in improved business outcomes through reduced costs, increased quality, product and process innovation, and better communication supporting a more effective implementation of the business strategy [9].

### **The devil is in the details when implementing incentive schemes**

Despite the many positive aspects associated with job complexity, it also poses a significant challenge to both managers and workers.

Whilst it is often asserted by managers that the skills and commitment of their employees are their company's most valuable assets, many managers also say that they can only manage what they can measure. Job complexity can be understood as a measure of the uncertainty faced by managers regarding the best way to carry out job tasks. Consequently, job complexity and worker autonomy present a moral hazard to management because factors that may influence performance are beyond managerial control and instead under the direct control of employees. To be specific, job complexity raises two challenges for management. First, in jobs characterized by high task variety it is difficult to assess the appropriateness of workers' behavior in response to specific work situations. Second, in interdependent jobs characterized by non-routine situations and task variety it is difficult to define and assess an individual worker's performance [4]. In fact, skills utilization and the production of work effort are not directly observable to managers and supervisors (except in cases of very close monitoring), even in very simple work settings.

The presence of a cooperative work climate and high levels of trust in organizations may diminish the extent of the threat posed by moral hazard within complex jobs. However, these factors may be disrupted when organizations need to downsize or reduce wage costs. In workplaces characterized by the absence of trust or by the presence of distributional conflicts, the incentives for skill utilization will need to be carefully designed.

Concerns about the moral hazard problem can lead to the adoption of a command-and-control management style thus reducing workers' motivational resources and their opportunities to deploy skills.

Companies managing the moral hazard risk through monetary incentives that are linked to objective performance measures may set the wage rate too high or too low. Moreover, monetary and non-monetary incentives may not deliver the desired impact on workers' behavior if the workforce perceives them as a form of increased managerial control rather than a form of support (reinforced reward). For example, concerns about the piece rate being set too low can induce workers to slow down the pace of work [4]. If compensation cannot be linked to performance *ex-ante* and is instead linked to *ex-post* performance evaluations (as in the case of performance bonuses or efficiency wages), the effectiveness of these in providing worker incentives is associated with how well the job holder's and the supervisor's performance assessments match up.

In complex jobs with multiple tasks, it is often the case that the performance of each task is not equally visible to, or as easy to evaluate for, supervisors. Organizations may be tempted to make workers' performance contingent on a subset of easily observed tasks.

This strategy, however, will divert workers' effort away from tasks that are not part of their performance evaluation criterion.

Job complexity is challenging for workers as well. Complex job design imposes higher demands on workers' skills [7]. Workers must expend mental and physical energy when they apply their skills to job tasks. To sustain their effort, workers draw on various sources of energy: physical energy, emotional energy, and cognitive energy. The consequence is that workers in complex jobs without adequate resources and support may experience resource depletion over time, potentially leading to stress-induced burnout [9].

Consequently, the adoption of complex job design requires the support of appropriate HR practices. However, the implementation of HR practices may not deliver the desired outcomes. This is because their successful implementation relies on cooperation between HR managers and line managers. Line managers are tasked with setting goals and expectations, providing feedback, drafting performance evaluations, identifying training needs, acting as gatekeepers for training participation, providing leadership and motivation, and influencing rewards (non-monetary rewards depend upon the line manager's ability to recognize a worker for good performance; monetary rewards are influenced by the allocation of bonuses and promotion decisions). If line managers' priorities differ from those of HR managers, or if they perceive HR practices as an increased administrative burden, the practices may not have the desired effects on workers' motivation [11].

If HR practices are not appropriately implemented, complex job design may result in work intensification, which drives work-related stress, leads to burnout, fosters counterproductive work behavior (damage, theft, lateness, sabotage, decreased cooperation, withholding/not sharing important information), and, ultimately, results in increased staff turnover.

Paradoxically, workers may experience a lack of support when HR practices intended to assist their work effort are introduced. Workers' understanding of the reasons why management has introduced certain HR practices influences the ability of those practices to deliver the desired result. If workers perceive that the introduction of HR practices reflects management's genuine concern with their well-being and safety, the practices will provide those workers with positive motivational resources. On the contrary, if the introduction of HR practices is ascribed to a managerial attempt to control workers' efforts more tightly (e.g. due to a lack of trust between managers and workers), the practices will fail to deliver the appropriate motivational resources [9], [11].

### **The coordination problem**

The heterogeneity of job complexity is compounded by the varied ways in which such jobs can be designed and managed, as well as from the many different ways in which things may go wrong. This, combined with further heterogeneity of incentive systems (which may produce different motivational outcomes in different organizational climates), results in highly idiosyncratic workplaces.

The coordination problem generated by the diverse ways in which organizations use skills and design jobs which have the same job title is formulated by the skill-weight approach [12]. Workers tend to invest in the skill mix with the highest currency



in the labor market: the one adopted by the majority of firms. As a consequence, organizations adopting skill profiles that deviate from what the majority of firms do will tend to attract applicants who do not possess all of the skills needed [3]. Organizations adopting such an idiosyncratic skill mix and wanting to adopt an arm's-length relationship with the workforce (by recruiting applicants who "hit the ground running," for example) may encounter serious difficulties in sourcing the skills they need. However, the misalignment between the skill profile sought by organizations and that possessed by applicants need not persist over time; it may be mitigated if organizations provide training to support workers in the skill development process and offer prospects of long-term employment, in which work incentives encourage both parties to continue the relationship [4].

## LIMITATIONS AND GAPS

The analysis presented in this article is based on a large body of research spanning different disciplines—including economics, management science, and organizational psychology—that suffers from various limitations. First, there is currently a lack of an integrated analytical or theoretical framework extending across the various disciplines, with different disciplines dealing with specific aspects of skills utilization in the workplace (e.g. organizational psychology focuses on performance, work attitudes, and motivation; economics focuses on the effects of monetary incentives and the importance of skills and human capital for economic growth; and management science focuses on the adoption of various configurations of HR practices).

The empirical analysis of skill utilization in the workplace is further hampered by the difficulty of measuring workers' skills. While some approaches measure core skills (such as literacy and numeracy), others infer skill utilization based on task descriptions or self-reported measures.

Finally, longitudinal data is needed to more firmly establish causal relationships concerning the motivational effects of monetary and non-monetary incentives for skill utilization in organizations. Gathering such data is difficult, however, because there are only a few representative panels of organizations that cover the issue of skill utilization. Nevertheless, the few studies that have implemented longitudinal design tend to confirm the relationships on which the current article builds [9]. Moreover, meta-analyses show that the cross-sectional evidence can be used in a wide variety of contexts and can be found in many different samples [9], [10].

## SUMMARY AND POLICY ADVICE

Skills strategies in organizations are extremely complicated to implement. Skills utilization in the workplace is conditional on organizations being able and willing to create complex jobs, which are highly heterogeneous in nature.

Complex jobs are demanding and tend to deplete workers' resources. Workers' effort needs to be supported by motivational resources provided by work incentives. In addition, workers in complex jobs have private information about their performance that is not available to managers. Therefore, incentives need to be used to align workers' interests with those of the organization and to encourage workers to display desirable work-related behaviors. If jobs are characterized by clear performance indicators covering all

the relevant performance criteria, incentives can be linked to performance outcomes on the job. However, when clear performance indicators are not available, a mix of incentives needs to be put in place; possibly involving *ex-post* performance evaluations and non-monetary incentives aimed at directing employees' effort toward the relevant aspects of the job.

There are many combinations of monetary and non-monetary incentives that can be adopted for any given job design. The workplace heterogeneity that arises due to differences in job design across organizations (which may even include jobs with the same title) is therefore compounded in workplaces by variance in the choice of the mix of such incentives.

Finally, another layer of workplace heterogeneity is added by the various ways in which skill management in organizations is implemented and how it may go wrong. For example, an HR system put in place to support workers' effort may not produce the desired outcomes if workers believe that the HR system aims to increase managerial control. Also, to the extent that the HR function is delegated to line managers, desired outcomes may fail to materialize if line managers resist the transfer or do not have the time or resources to implement company HR policies.

Workplace heterogeneity is reflected in the different skill sets needed by employees to successfully perform in various types of workplaces. Admittedly, finding the right applicants and matching the required skill profile is not an easy task. To address the difficulties that organizations routinely face to attract applicants with characteristics, skills, values, and goals that match specific job requirements and/or organizational cultures, recruiters have relied on improvements in their recruitment practices (targeting applicants, choosing the right recruitment channels, and involving recruitment agencies) and increased their reliance on training provision (so that applicants' trainability becomes an important hiring criterion).

The above analysis suggests that employers' claims about difficulties in sourcing skills are due to workplace heterogeneity, and that finding applicants who have the skill set that exactly matches the skill requirements requires careful recruitment planning and execution. Alternatively, organizations may search for candidates who can be trained into the desired skill profile.

Research clearly shows that incentives are powerful devices and that setting them correctly can improve organizational survival. However, misalignments in the system of incentives may have disastrous consequences for organizations [4], [5], [9], [13].

Policymakers have traditionally focused policy interventions on improving the supply of skills. But the returns on this investment are affected by how organizations make use of the skills supplied to them. Organizations adopting complex job design and making heavy use of workers' skills will provide better returns to workers' skills than organizations adopting simple job design. Of course, companies adopting complex job design also need to put in place incentives that will provide their workers with the motivational resources to sustain skill deployment over time. Research findings suggest that it may be difficult for organizations to attain the optimal alignment between job and organizational characteristics and the incentive system. There is appreciable room for improvement in organizations' skill strategies. Consequently, policy interventions on the demand side to support skill utilization in organizations may be warranted.

## Acknowledgments

The author thanks an anonymous referee and the IZA World of Labor editors for many helpful suggestions on earlier drafts. The author also thanks Pascaline Descy and Konstantinos Pouliakas. The analysis and conclusions expressed in this article are solely those of the author and do not necessarily reflect the views of the European Centre for the Development of Vocational Training (Cedefop).

## Competing interests

The IZA World of Labor project is committed to the *IZA Guiding Principles of Research Integrity*. The author declares to have observed these Principles.

© Giovanni Russo

## REFERENCES

### Further reading

DeGeest, D. S., E. H. Follmer, S. L. Walter, and E. H. O'Boyle. "The benefits of benefits: A dynamic approach to motivation-enhancing human resource practices and entrepreneurial survival." *Journal of Management* 43:7 (2017): 2303–2332.

Garicano, L., and L. Rayo. "Why organizations fail: Models and cases." *Journal of Economic Literature* 54:1 (2016): 137–192.

### Key references

- [1] Bessen, J. *Learning by Doing: The Real Connection Between Innovation, Wages, and Wealth*. New Haven, CT: Yale University Press, 2015.
- [2] Cappelli, P. H. "Skill gaps, skill shortages, and skill mismatches: Evidence and arguments for the United States." *ILR Review* 68:2 (2015): 251–290.
- [3] Weaver, A., and P. Osterman. "Skill demands and mismatch in US manufacturing." *ILR Review* 70:2 (2016): 275–307.
- [4] Gibbons, R., and J. Roberts (eds). *The Handbook of Organizational Economics*. Princeton, NJ: Princeton University Press, 2013.
- [5] Kanfer, R., G. Chen, and R. D. Pritchard (eds). *Work Motivation: Past, Present, and Future*. New York: Routledge, 2008.
- [6] Boxall, P., and J. Purcell. *Strategy and Human Resource Management*. New York: Palgrave Macmillan, 2011.
- [7] Pouliakas, K., and G. Russo. *Heterogeneity of Skill Needs and Job Complexity: Evidence from the OECD PIAAC Survey*. IZA Discussion Papers No. 9392, September 2015.
- [8] Boning, B., C. Ichniowski, and K. Shaw. "Opportunity counts: Teams and the effectiveness of production incentives." *Journal of Labor Economics* 25:4 (2007): 613–650.
- [9] Truss, C., R. Delbridge, K. Alfes, A. Shantz, and E. Soane (eds). *Employee Engagement in Theory and Practice*. New York: Routledge, 2014.
- [10] Paauwe, J., D. E. Guest, and P. Wright (eds). *HRM and Performance: Achievements and Challenges*. Chichester: Wiley, 2013.
- [11] Ashkanasy, N. M., R. J. Bennet, and M. J. Martinko (eds). *Understanding the High Performance Workplace: The Line Between Motivation and Abuse*. New York: Routledge, 2016.
- [12] Lazear, E. P. "Firm-specific human capital: A skill-weights approach." *Journal of Political Economy* 117:5 (2009): 914–940.
- [13] Kerr, S. "On the folly of rewarding A, while hoping for B." *Academy of Management Journal* 18:4 (1975): 769–783.

### Online extras

The **full reference list** for this article is available from:

<http://wol.iza.org/articles/skill-utilization-at-work-opportunity-and-motivation>

View the **evidence map** for this article:

<http://wol.iza.org/articles/skill-utilization-at-work-opportunity-and-motivation/map>