Hiring as an Experiment: Reframing the Skills Shortage

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Abstract

"Skills shortage" is often used to describe the difficulty that can arise when trying to match a ready supply of qualified applicants to open positions. To believe the term accurately describes situations where unemployment rates are low and employers have to compete for skilled workers frames the discussion as an issue of supply and demand. However, this framework does not fully address why skills shortages persist (Holzer, 2017; Cappelli, 2014; Hora, Benbow, & Oleson, 2016; Veneri, 1999; Richardson, 2007). This paper argues that employers may want to consider adopting an experimental approach when addressing skills shortages. Using this approach examines the expectations and perceptions of employers as well as how they address their need for skilled labor. Altering their approach may empower employers when addressing chronic or systemic problems trying to find needed skills.

Hiring as Experiment: Reframing the Skills Shortage

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The hiring process can be a source of frustration if it requires employers to take valuable time trying to ensure (not always successfully) that those individuals chosen have or can gain skills and experience needed by the employer. The labor market is the arena where employers seek persons with the appropriate skills and credentials; an employer agrees to "rent" the knowledge, skills, and abilities of people in exchange for a wage. In a manner similar to the way employers choose vendors, employers use resumes, applications, and interviews to filter job seekers. Each position has specific needs, and employers can adjust the requirements (demand), which in turn alters the numbers and types of candidates considered (supply). However, the process of selecting an individual is more complicated than selecting a capital good (durable items used to produce goods and services) or a commodity (an economic good, a consumable used by the employer) because the employer has to identify the immediate need, as well as assume some responsibility on how that need will be met. Classic supply side economic theory suggests that employers who cannot find qualified candidates will increase the wages offered to lure those who have the needed skills. If correct, this theory suggests we should see wages rise as employers' perception of skills shortages remains unabated. However, according to the Bureau of Labor Statistics, wages for all wage earners as compared to the rate of inflation has remained relatively flat from 2006 to 2016.[1] This period includes rapid economic growth and decline as well as a slow recovery, which suggest supply side approaches are but a partial explanation of a perceived shortage.

The Challenge

A business must keep expenses at or below the aggregated market value of the product or service provided; otherwise, the business may fail. To remain competitive, a business must provide valued products or services, expand markets, and/or develop new products and services while controlling costs. Not all of these efforts will be successful; consequently, running a business requires accepting a degree of risk. Business managers, accountants, and others determine the acceptable degree of risk and use the calculated return on investment. This analysis enables businesses to compare different ventures and processes, including those processes used to acquire needed skills. By maximizing profits (the difference between expenses and income), increasing efficiencies, and reducing variation found in costs to produce a good or service, a business can reduce its exposure to risk. While businesses are able to design efficient systems that enable them to compete, a challenge for many is reducing the risks when recruiting or retaining skilled workers.

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[1] The Bureau of Labor Statistics reports the several measures of inflation. The two used for this comparison is the consumer price index for all urban consumers as well as the employer cost for employee compensation using wages and salaries for all civilian employees. Reported monthly, the urban consumer price index data are from December for 2006–16. The employer cost data are from the fourth quarter for the same years.

Reducing or stabilizing the costs of acquiring needed skills (labor) helps ensure profitability. The cost of labor can vary because the price of recruiting, training (or *re*training), and retaining labor is based on market pressures. Market pressures can include expectations of the employer, the quantity of individuals who have the minimum level of expertise needed, the compensation offered by other employers, costs of marketing the employers' needs, access to potential workers, verifying skillsets, and overhead. Technology can also influence the market. For example, the skills of a medical records clerk have changed over time. Their primary task had been to ensure the information filed would enable reimbursement; however, the duties now include ensuring the information allows for managed care of the patient. This shift requires the clerk to be proficient with not only the requirements of financial transactions, but also the communication process between health care professionals as they address patient needs. Because the labor market varies and the skills can change, labor costs can be considered a business risk.

From a cost perspective, employees are the sum of the value they provide minus the costs of recruiting, training, and retention. Consequently, from this perspective, an employee is a tangible asset that produces value. If employers presume that labor is akin to capital goods, that labor has a life expectancy, requires maintenance (benefits), and needs occasional upgrades (training), they will invest in training, career development, and similar activities to enhance the morale and abilities of those they have hired. From this perspective, hiring agents consider each candidate as being unique in terms of her/his potential capacity; and skills shortages are expressed as a lack of capacity. Conversely, if employers consider labor similar to way they perceive commodities, they regard individuals as the embodiment of skills and these individuals are interchangeable. In this scenario, labor shortages reflect a lack of requisite units (people who possess the needed skills). In both instances, supply does not meet the expected demand.

One attraction for businesses to believe there are skills shortages is that this avoids conveying to others what could be perceived as a weakness. Businesses operate in a competitive environment. As a result, product development, strategies, the need for specific skills, compensation, and similar information are often considered trade secrets of a business. When a firm shares its needs, others may be able to use this information to advantage. When a business posts a job opening, it expects individuals who have the specific skills and experience to use this information in order to help meet the needs (demand) of the business.

Decades of evidence suggest that attempting to address a skills shortage by increasing the supply of workers or modifying the education/training is inadequate in changing the perception of employers. Examples include the ongoing national shortages of registered nurses and of people pursuing science, technology, engineering, and mathematics (STEM) disciplines. In 1965, the American Nurses Association recognized a shortage of registered nurses (Committee on Nursing Education, 1965). Likewise, Xu (2008) reported that several programs that addressed the supply side to increase diversity and the supply of skilled individuals found in the STEM workforce were not adequate. Researchers have also studied skills shortages from the perspective of a skills *gap*—where the person hired does not have the skills that match their credentials (O'Heir, 2017; Conroy, Marion, Murphy, & Setren, 2016; Bergson-Shilcock, 2017; Pappalardo & Schaffer, 2016; Smith, 2017). To address this lack of skills, school administrators and others

are trying to change education and training programs to improve the match between the skills needed and the credentials a skilled worker earns (Kashiwagi & Massner, 2002; Cappelli, 2014; Blatter, Muehoemann, Schenker, & Wolter, 2016). However, as reported by Hora, Benbow, and Oleson (2016) and Smith (2017), employers cite difficulty finding people with "soft skills," or those who can work well with others and adapt to changing situations. These findings are similar to those of Allan and Aldebron (2008), who found that the difficulty, or shortage of skilled workers, continues despite expanding numbers of facilities and students, reducing barriers for immigrants with nursing credentials, increases in pay, changes in job duties, changes in curricula, and efforts on the part of employers to reduce the costs of education/training. As a whole, the body of research suggests that the shortage of skills is an issue of perception where employers perceive a lack of individuals with the technical and/or social skills.

Supply side (the number and type of job candidates) approaches to meet the demands of employers assume that the demand for skills (job requirements) changes slowly. However, for individual businesses, when compared to an industry as a whole, demand can be more fluid as the conditions of the labor market, evolving technology, and employers' willingness to assume risks can influence the need for specific skills. Take for example, a print shop that has not invested in desktop publishing. The shop may need the skills of a typesetter. Applying this knowledge of how a business's need for skills can differ from the needs of the industry calls into question career readiness. The Career Readiness Partnership Council defines a career-ready person as one who "effectively navigates pathways that connect education and employment to achieve a fulfilling, financially-secure, and successful career."[2] This definition, developed by a variety of stakeholders (including businesses), suggests that employers need to adjust their perceptions.

Hiring as an Experiment

Kuhn (1962/2012) suggested that an area of science advances until research exposes anomalies that do not fit the prevailing paradigm. A shift is needed to address previous findings as well as new discoveries. Reframing the processes changes the expectations and measurements. Using a different paradigm enables additional approaches to encourage different partnerships and relationships. In the context of acquiring individuals with needed skills, the solutions offered with the existing supply side paradigm is to increase the supply of potential workers and focus on specific skills through technical education. Consequently, a business's human resources must include a systemic review of skills needed and the means by which the employer presents its needs (demand). The human resources office filters candidates and identifies those qualified to ensure that the employer finds people with the right skills. In an analogous manner, researchers design an experiment to ensure reliability (the ability to repeat results) and validity (the measures and procedures used in the experiment are appropriate). The analogy between hiring and a research experiment holds when considering the process and outcomes.

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[2] *Building blocks for change: What it means to be career ready.* Taken from https://cte.careertech.org/sites/default/files/CRPC_4pager.pdf.

Researchers develop hypotheses and use data to test them. When looking to fill the demand for needed skills, the human resource office assumes that qualified applicants have the needed skills. The fact that these skills are packaged in the form of a person requires the human resources office to develop processes to test the assumption and identify (filter) the candidates to find individuals who possess the needed skills.

After eliminating some people from consideration, deeming them not qualified, human resources assumes the remaining candidates have the needed skills; the candidates are further refined to selects the person who best fits. This process introduces two possible errors. From a researcher's perspective, there are two types of errors. In the first case, an error occurs if the filtering process eliminates a person who *could do the job* (Type I error). The second, (Type II) is when the person chosen is found to be unable to do the job after placement. In research, these errors are inversely related. When researchers experience a Type I error, it indicates the criteria used to screen is set too high. To decrease the likelihood of the first error, researchers use an appropriate level of statistical accuracy (an employer would increase the supply of candidates by loosening the qualifications), but this adjustment increases the likelihood of committing the second type of error (hiring someone who does not work out).

From a cost-benefit analysis, costs associated with a Type II error are based on the successful placement of a qualified candidate. However, the costs associated with a Type I error are more difficult to determine as the costs are based on the potential contributions that could have been brought to the business but were denied because of the filtering process. Consequently, efforts to reduce this type of error (Type I) are not included in strategies to reduce risk. As a result, the focus of hiring becomes one of screening candidates to reduce costs. If the screening process is too restraining, the firm will likely face a supply problem, as there are not enough individuals selected for consideration.

When conducting an experiment, researchers must clearly state the hypothesis, identify the assumptions used, and how they operationalize the concepts used in the experiment. In testing a hypothesis, it is critical that the processes and methods are documented and used consistently. When filling positions, employers rely on consistent processes and methods. The researcher's experimental approach suggests several methods businesses can use to address a skills shortage. These include carefully reviewing the job description, requirements, and preferences, periodically revisiting the firm's investment in talent development, and showing a willingness to commit to the community. While these options (detailed below) increase the likelihood of producing a Type I error, they also expand the number of potential candidates and could afford businesses better ways of finding the needed skills.

Use Consistent Processes and Methods

When filling a vacancy, the employer does something similar by preparing and/or reviewing the job description, which outlines the expectations of the employer, specific requirements, and skills expected to meet the minimum standards (the demand). Employers should carefully review the job description, requirements, and preferences. Jobs routinely require people to do tasks that vary in frequency, skills, and importance. If the job description does not account for these

variations, then the employer does not convey expectations. In turn, searching for the right employee will be compromised. The employer must learn to write accurate and flexible job descriptions.

Problems can arise if the job description does not reflect the minimum qualifications needed for the position (a Type I error), perhaps because the vacancy occurred when a longtime employee retired. Consequently, potential applicants could be denied the chance to compete—supply because the process of hiring requires someone with those years of experience. Setting the minimum criteria too high is a design flaw, as the tasks, expected skills, and experience do not match the actual tasks for the position. Likewise, if the criteria used to judge applicants are not reflective of the dynamic nature of the job, employers may select candidates who do not have the right skills (a Type II error).

The challenge of writing good job descriptions increases when relying on technology to screen applicants. While technology can ensure consistency, if the description is not updated or refined to address current needs, the selected candidates may not address the need, as automated systems rely on keywords, phrases, and credentials when filtering. Identification of the minimum parameters and the appropriate use of technology will assist human resources when adapting to different expectations and labor market conditions.

Revisit Talent Development

Businesses know that each person hired will undergo some form of training to do the tasks assigned. It is not a case of whether employees needed training, rather how much and when. If training costs are low when compared to the costs of acquiring new talent, it can be economically prudent to rely on internal labor markets (those already hired). Consequently, hiring new people to meet employer demand may be more expensive (and increases the likelihood of committing a Type II error). To adopt this strategy, employers must identify and map the skills required for each position so one can see opportunities to develop needed skills (as well as where they overlap) with existing labor. This approach allows firms to adjust to changing markets and the pool of available labor. Additionally internal labor markets enable firms to instill corporate values and develop business practices that reflect those values. The use of career ladders (a series of jobs with increasing responsibility and developing skills) and career lattices (a means for individuals to move horizontally as well as vertically to diversify their skills) will help employers develop a workforce that can adapt to changing employer needs. Using a career management/exploration system can help develop career ladders and lattices, allow workers in the internal labor market to compete for job opportunities; and reduce the costs of recruitment and training by encouraging career development. Integrating internal talent development can assist management a sense of corporate pride, provide an incentive to those who start at an entry-level position, reduce the costs of vetting applicants, and hide the firms' need for skilled workers in key positions (Grundvig, 2017). Additionally career management/exploration systems can record an employee's adoption of the firm's core values and strategic plans.

Develop Talent and Careers

A job consists of activities and expectations narrowly defined by a business, while a career is a set of jobs or experiences. From the business's perspective, career development is helping staff develop skills to fit the current and future needs of the firm. The distinction between career and jobs creates two spheres of responsibility when it comes to developing skill sets. The development of a career path is often considered the responsibility of the individual, while businesses offer positions (jobs) of increasing responsibility and skill. However, these spheres overlap and, as a result, some responsibilities are shared. For example, it is the responsibility of the firm to maintain up-to-date job descriptions as well as identify potential threats to the firm and the skills needed to address these threats, while it is the responsibility of the employee to assess her/his skill level and develop those skill sets that will help the firm. A career management/exploration system enables employees to identify the knowledge and skills needed by the employer, provides a ready pool of talent for the employer to draw upon, and helps employees develop their careers. A career management/exploration system is a means for both the employee and the employer to address individual and shared responsibilities. These systems may include assessments that cover career interests, competencies, work values, and learning styles, which could help employers identify potential candidates for future or existing openings as well as a means to record the certifications and progression of skills of the employee. Documenting the skills needed and using the current level of skills could produce a list of skills so the employer can develop its staff to address these needs. The training creates a ready supply of individuals to fill vacancies. Because the training includes those who would otherwise be screened out of further consideration, this approach reduces both Type I and Type II errors.

Individuals may consider career ladders and lattices, as well the career management/exploration system and related training, as too costly and without an immediate payoff. However, this thinking is shortsighted because it does not consider lost opportunity costs (Type I error) or the selection of someone who does not work out because of a lack of awareness of the unique culture of the business (Type II error). Training is a shared responsibility. Consequently, a well-designed system that identifies career ladders, lattices, and career exploration/development should, over time, decrease costs by reducing the number of people who do not work out (Type II error).

Soft skills, as defined by the employer, can be thought of as a set of variables readily available when selecting a candidate. Because the employer chooses which skills and how they are measured, these skills could be developed and addressed through career development/management systems and work well for internal labor markets. By integrating attendance and performance reviews, and other internal measures of success, an employer can determine how well an individual would fit on various teams. By incorporating career ladders and lattices, employees are able to build their skill level and be better able to use them in a variety of jobs.

Career development is not a panacea (King, 2016). If a business needs to use skills not found in its workforce, reliance on established criteria of existing job descriptions may not be appropriate. Nevertheless, when considered from an experimental approach, options to develop

staff talent could be viewed as variables and the satisfaction of both the employee and the employer as measureable outcomes.

Commit to the Community

The experimental approach can be also applied to community partnerships and economic developers. Community resources such as economic development, proximity to schools, infrastructure, and available workforce can help a business tap into a skilled workforce. These resources can be included in experimental design to determine which community traits help a business fill demand for skilled labor. Importantly, these resources imply a quid pro quo between the community and the employer. In fact, site selectors often compile this information for businesses when they consider relocating or expanding into a new market.

The community has already committed to help businesses by providing infrastructure (i.e., roads, utilities, internet access), as well as training and education vendors, housing for employees, and so on. In exchange, a business commits to a community, informs the community of its need for resources (including skilled workers) and anticipated timeline for acquiring these resources. This shared commitment helps reduce the opportunity costs for the business and provides more certainty to public officials, providing economic stability for the community. For example, the state of Wisconsin recently announced it was successful in negotiating with Foxconn, the world's largest contract electronics manufacturer, to establish a LCD production facility near Racine. In exchange for tax credits, assistance on infrastructure and other items, Foxconn has announced it will invest $10 billion to build its plant. Governor Walker and Foxconn also announced plans to develop training programs to help address the need for a skilled workforce and establishing a corporate headquarters in Milwaukee. By sharing the current and future expectations the business is able to draw upon community resources to address its needs.

Other Options

Besides hiring skilled workers, another option is to examine the benefits of a long-term relationship with a provider not on payroll, such as contract labor. Employers can also address the supply side of the equation and encourage a ready supply of available labor by hiring a third party or encouraging entities to train or educate potential workers and to place them with the organization for job shadowing, apprenticeship, and mentoring. In some cases, employers may want to invest in technology (capital and commodities) rather than labor. Yet these options do little to address the need for long-term strategic planning or developing internal resources to address change and/or maintain competency. Consequently, these approaches actually limit the firm's ability to adapt and remain flexible.

Caveat: Size Matters

Management structure, style, and systems depend on the size of the firm (Covin & Slevin, 1988; Bento & Bento, 2006; Wickert, Sherer, & Spence, 2016). Consequently, small businesses would adopt an experimental approach that is different from those used by larger firms. Smaller

employers, by their nature, are likely to need adaptable, flexible individuals with strong soft skills, rather than specialized skills found in larger firms. These different tasks may afford opportunities for employers to develop skills with the in-house talent. Because of their unique needs, smaller firms may still benefit by adopting a systemic approach when reviewing their success and failures of hiring or training people.

Often concerns voiced by the business community are coming from smaller firms. According to the U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, approximately 88% of private sector establishments employed fewer than 20 employees. However, this group of employers accounts for only 27% of the total employment. The U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages reports employment for all individuals covered under the unemployment insurance program accounting for approximately 95% of all employment in the United States.[3] Historically, these percentages are stable.

Conclusion

An experimental paradigm enables employers to test several factors that may influence the availability of workers with needed knowledge, skills, and abilities with which to help firms maintain or expand operations. The experimental approach enables an employer to attract specific work skills while containing the costs of obtaining and retaining a talented workforce. Rethinking how to acquire talent is a way to determine appropriate opportunity costs by adjusting the various filters that restrict the number of potential candidates by making the qualifications for hiring too hard for many workers to meet. The cost of labor includes the wages and benefits for the employee. Yet, labor costs also include recruiting, selecting, training, and maintaining the needed knowledge, skills, and abilities to prepare for the loss of efficiencies when training a new worker.

An experimental paradigm does not give permission for businesses to *conduct* experiments, as this raises issues related to bias, ethical treatment of workers, and unintended consequences. However, an experimental *approach* could reduce the exclusion of qualified candidates and increase efficiencies in addressing current and future needs for a skilled workforce. By encouraging robust training, career ladders, lattices, and career development for existing employees, businesses can develop both short and long-term approaches to address skills shortages. As businesses voice frustration over their inability to find qualified candidates, they may want to consider an experimental approach to better control the hiring, training, and retaining processes.

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