U.S. Employment and the Skills Gap

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Abstract

The purpose of this paper is to investigate the distribution pattern of U.S. employment in recent years, discuss the country's workforce skills shortage, explore the kind of skills needed, and elaborate on the role of federal government, business community, and educational institutions to bridge the skills gap. The expanding landscape of economic activities in the country, coupled with the emergence of new technologies, demand a growing supply of competent workforce for various sectors. Evidence shows the existence of acute skills shortage in many industries a situation, if persists, could lead to a prolonged economic slowdown or even economic stagnation.

Key words: employment, occupations, skills gap, the economy

Introduction

National employment is the source of income, output, and economic growth. It is also the impetus for education, innovation, and competitive advantage. The magnitude of employment and its sector distribution are influenced by an array of factors that include consumer demand, private investment, and government expenditures, in addition to the workforce skills and productivity. Sustaining high employment level is the subject of national discussion especially during economic cycles (e.g., recession, prosperity). The role of job creation (or destruction) is crucial in the life of the nation and its economic destiny. Scholars, policy makers, and the business community pay attention to employment fluctuations and its ramification.

Investigating the country's employment trends is important to gain insight into the skills needed for the workforce in addition to acquiring knowledge about the factors that influence the distribution of workforce among economic sectors. The investigation could also shed light on skills shortage and strategic initiatives necessary to alleviate lack of critical skills. Skills play a major role in productivity, product quality, and competitive advantage in the life of the nation and individual organizations.

Literature Review

Authors in the United States and elsewhere around the world have discussed many issues related to employment as an economic and social phenomenon. For example, Gius (2006) studied the influence of state and federal spending on employment and output. The author concluded that spending had positive influence on job creation and output. In the same vein, Habanabakize and Paul-Francois (2018) in a study about South Africa found out that government expenditures and private investment were the most influential factors in job creation. Jacobs (2004) discussed the economic influence of self-employment in developing countries. Fuei (2017) said that digitization of the economy is likely to change the kinds of future occupations in societies. Aghion (2019) pointed out that non-educated employees will be more negatively affected in future by robotization than educated individuals. Binder and Bound (2019) discussed the declining job opportunities for individuals with less skills and education. Leitner and Stehrer (2019) indicated that many EU nations are undergoing demographic changes because of shrinking working-age population, a situation that could cause labor shortage and declining economic growth.

Moreover, Bunel et al (2016) discussed the issue of employment discrimination for restaurant applicants (cooks and waiters) in Paris, France. The authors concluded that applicants who resided in "good areas" of the city were more likely to be invited for job interview. Krishna (2021) elaborated on the ability of transgender employees and the challenge they face to continue employment in the same workplace. Haunshild (2004) discussed employment relations in German theaters. Ostoj (2015) explored the issue of labor market efficiency, that is, the influence of the labor market on the competitiveness of the global economy. Mujahid et al (2016) studied the impact of female unemployment on the supply of labor.

On the other hand, workforce skills (and under-skills) have also been the subject of discussion in many U.S. circles. Different aspects of skills have been debated with the aim to bridge the skills gap. For example, a study conducted by Laboissiere and Mourshed (2017) of McKinsey and Company showed that about 40 percent of American employers say they cannot find people with the necessary skills they need, even for entry-level jobs. The National Center for

Education and the Economy (2009, p.1), asserted that "The United States faces an alarming challenge that seriously threatens our competitiveness in the world economy".

The Center added that "A large and growing portion of the American workforce lacks critical basic skills and work readiness competencies, posing an acute threat to our nation's economic well-being". Belkin (2015) pointed out that, a survey of business owners conducted by the American Association of Colleges and Universities, found out that nine out of 10 employers judge recent college graduates as poorly prepared for workforce tasks. The skills mentioned include problem solving, communication, and critical thinking.

Furthermore, Shacklett (2016) addressed the issue of skills gap by saying that valuable talents are leaving the manufacture sector at an alarming rate and there is the need for employers to equip the workforce with the necessary tools and support system. Smith et al (2019) discussed the importance of professional development to enhance individuals' competencies via continual learning and knowledge acquisition. Selko (2019) said that apprenticeship is an important approach to deal with the country's skills gap. Cappelli (2015) cited the concern expressed by the business community and policy makers in the United States about labor force skills shortage. The author, however, believes that the complaints about skills scarcity is unwarranted because the country is experiencing overeducation.

Authors have also discussed other countries' skills gap. For instance, Makumbirofa and Saayman (2018) mentioned the importance of skills development to South Africa's hospitality industry. Richardson and Tan (2008), in reference to Australian employment, pointed out that forecasting the size of a country's future employment and the skills needed for its labor force is not a simple task. Cabral and Rajib (2019) explored the importance of skills development in India and its critical role in technology adaptation. Prayitno et al (2017) addressed the low-level academic achievement of Indonesian students in scientific process. To remedy the skills gap, the authors indicated that scholars have recommended such approaches as inquiry-based learning, problem-based learning, or project-based learning.

Furthermore, Sengupta (2006) elaborated on a study conducted by India's National Association of Software and Service Companies about skills gap. The author indicated that the study found out that Indian colleges and universities graduate about 400,000 engineers annually but only one in four engineering graduates are employable because the great majority of them are deficient in the required technical skills, fluency in English, skills to work in a team, or deliver basic oral presentations. On the other hand, Dychtwald (2021) pointed out that eight of the 10 fastest companies ever to reach a $1 billion valuation are Chinese. The author attributed the reason for the Chinese companies fast growth to the Chinese consumers adaptability and adoption of innovation and technology, an indirect reference to growing skills competency of the Chines workforce and society.

U.S. Employment

Fey and Osborne (2013) of Oxford University estimated that about 47 percent of U.S. total employment is at risk of computerization (i.e., automation). This implies that approximately 77 million individuals were at risk of being unemployed in 2019. This "gloom and doom" view about the future of the workforce is matched with opposite conclusion of the Bureau of Labor Statistics that indicates the country's employment would increase from 163 million in 2019 to 169 million in 2029, an increase of 3.7 percent.

Moreover, recent data reveal that the country's employment has steadily been moving upward during past decades, as has been the case with population growth. The pace of employment gain had been faster than the pace of population expansion. For example, as table1shows, while the country's employment increased from 59 million in 1950 to 163 million in 2019, an increase of 176 percent, . the population increased from 105 million in 1950 to 259 in 2019, an increase of 147 percent. The ratio of employment to population increased from 56 percent in 1950 to 63 percent in 2019.

Table 1
U.S. Civilian Noninstitutional Population and Employment*, 1950 and 2019
(Thousands)

Year	Population Persons 16 years of age and over	Employment	Ratio of employment to population
1950	104,995	58,918	56.1
2019	259,175	162,792	62.8
Change 1950 to 2019	154,180	103,874	67.4
Percent increase	146.8	150.8	-

Source: U.S. Bureau of Labor Statistics.
* According to the Bureau, the term U.S. civilian noninstitutional population refers essentially to individuals who are not in mental institutions, in homes for the aged, or inmates, in addition to individuals who are on active duty in the armed forces.

The remarkable jump in job creation in the United States during the period under discussion (1950-2019) reflects the long-term growth of the economy which, in turn, mirrors the influence of many factors including the following:

- Growing number of entrepreneurial and other firms that contributed to job creation.
- Introduction of new and improved goods and services because of innovation and the deployment of artificial intelligence (AI) technologies such machine learning.
- Greater consumer demand because of income growth.
- Rising private domestic investment, government expenditures, and the inflow of foreign capital.
- The country's immigration policy that enabled millions of international scientists, teachers, technicians, physicians, and other highly-skilled professionals to contribute to the country's education, innovation, business creation, and standard of living.

Aggregate Sector Employment

To gain further insight into recent aggregate sector distributional trends of employment in the economy, table 2 shows the trends for 2009 and 2019. Employment increased from 143 million in 2009 to 163 million in 2019, an increase of 14 percent. The private sector, as expected, was the source for the rise in employment. While employment declined by 5 percent for the state and local governments during the period under consideration, it increased by merely 2,000 jobs for the federal government.

Employment data imply that the national economy was vibrant and highly conducive for the private sector to create new employment opportunities during the 2009-2019 period. The data also suggest that college graduates and other individuals who will seek employment in the near

future should prepare themselves to acquire skills and other competencies demanded for occupations in the private sector or as entrepreneurs, because of anticipated scarcity of employment opportunities in governmental agencies.

Table 2
U.S. Employment by Major Economic Sectors, 2009-2019
(Thousands of Jobs)

Sector	2009	% of total	2019	% of total	% change 2009-2019
Total	143, 036	100	162,796	100	14
State and local government	19,723	14	18,759	12	(5)
Federal government	2,832	2	2,834	2	(0)
Agriculture, forestry, fishing, and hunting	2,012	1	2,304	1	15
Manufacturing	11,848	8	12,840	8	8
Construction	6,017	4	7,492	5	25
Mining	643	1	685	0	7
All other sectors	99,961	70	117,882	72	18

Source: Table calculations are based on data provided by the Bureau of Labor Statistics, https://www.bls.gov/emp/tables/employment-by-major-industry-sector.htm.

The data also show that the share of state and local governments in total employment in 2019 was relatively high (12 percent), declining from 14 percent in 2009. It appears that this sector is in need for further skills development of its workforce in addition to increased utilization of modern technology to elevate its effectiveness and productivity. The relatively large share of government employment to the country's total workforce has for many years drawn criticism about government "bigness".

The share of mining in total employment was minor in 2019 (less than one percent), as was the share of agriculture, forestry, fishing, and hunting. The negligible share of mining in total employment is largely attributed to (i) closing of many mining operations in the county because of environmental concern and the deployment of other energy sources, (ii) resource depletion of the mines, and (iii) declining output prices. The low employment share of agriculture, forestry, fishing, and hunting in total employment is mainly due to greater utilization of mechanization and other technologies. The construction sector experienced a large jump in employment (25 percent) from 2009 to 2019, an indication of the country's improved economic activities.

U.S. Industry Classification: NAICS

U.S. authorities use a classification scheme by which the country's economic sectors are classified into twenty categories for data collection and analysis. The scheme is called the North American Industry Classification System (NAICS) for which the employment for 2009 and 2019 is shown in the table below:

Table 3
Selected Employment Sectors, 2009-2019
(Thousands of Jobs)

Employment source	2009	2019	% increase (decrease)

Professional & business services	16,634	21,313	28
Healthcare & social assistance	16,540	20,413	23
Retail Trade	14,528	15,644	8
Leisure & hospitality	13,078	16,576	27
Self-employed (nonagricultural)	8,995	8,782	(2)
Financial activities	7,838	8,746	12
Other services (unclassified)	6,150	6,714	9
Wholesale trade	5,521	5,903	7
Transportation &warehousing	4,225	5,618	33
Education services	3,091	3,765	22
Information	2,804	2,859	2
Utilities	560	549	(2)
Total	99,964	116,882	17

Source: Table calculations are based on data provided by the Bureau of Labor Statistics, https://www.bls.gov/emp/tables/employment-by-major-industry-sector.htm

The table indicates that the largest employment generating sectors in 2019 were (i) professional & business services (21.3 million), (ii) healthcare & social services (20.4 million), (iii) leisure & hospitality (16.6 million), and (iv) retail trade (15.6 million). The table also displays the percentage jump (and decline) in employment in various sectors during the period in question, that reveals the likely tendency of the economy to grow further in future as well as the potential for greater demand for skilled labor. Indeed, increasing demand for employees coupled with the emergence of new technologies will necessitate further development of workforce skills and its upgrading.

Educational institutions, business organizations, and governmental agencies can play a critical role in this regard. Many colleges and universities, for instance, lack the diversity of academic programs largely due to insufficient financial resources. Government grants can alleviate their financial burden. It is likely that the demand will substantially increase in the near future for such academic programs as leisure and hospitality, business management, social entrepreneurship, innovation, leadership, critical thinking, data analytics, and artificial intelligence.

The Skills Gap

The national goals of technological advancement, competitive advantage, and rapid economic growth make it imperative for U.S. workforce to be skillful, productive, and competitive. While some skills are deemed essential for all occupations and sectors of the economy (e.g., effective communication), other skills (e.g., stock analysis) are industry -or- company specific. The emphasis in this paper is on general workforce competencies typically called ‘hard’ and ‘soft’ skills. The range of skills extend to include problem solving, self-leadership, programing, communication, and team work.

The distinction between hard and soft skills is sometimes blurred because of the absence of precise distinguishing factors between the two sets of skills. In general, hard skills refer to the individuals’ capabilities in performing specific technical tasks related to organizational functions such as marketing, finance, and quality control. On the other hand, soft skill (also called people skills) are competencies often related to personality attributes of the individuals such as leadership capability, innovation, cultural intelligence, and communication.

Skills Needed

What kind of labor skills are needed for the United States as an advanced developed country? To begin, some authors emphasize the importance of soft skills while others underscore hard skills. The great majority recognize the need for the two sets of skills to bridge the skills gap in the country. For instance, Yoke et al (2018) discussed the importance of language skills for the employment of college graduates as well as effective communication. Stelfox (2011) pointed out the relevance of criminal investigative for society and for training purposes to bridge the skills gap in managerial and leadership investigators. Moreover, The World Economic Forum identified hard and soft skills for the international workforce, including the following:

- Analytical thinking and complex problem solving.
- Active learning, creativity, originality, innovation, and initiative.
- Leadership and social influence.
- Technology design, use, and programming.
- Resilience and flexibility.

Career Guide, INDEED, identified the following skills:

- Artificial intelligence.
- Cloud computing.
- Blockchain and software development.
- Industrial design.
- Animation and video production.
- Creativity and analysis.
- Collaboration, adaptability, and team management.

On the other hand, a Strayer University's study identified 10 soft and hard skills that college students need to learn for career success, as indicated below:

- Communication (e.g., team collaboration, effective writing).
- Problem solving (e.g., solutions identification, crafting solution plans).
- Data analysis (e.g., translate data into graphs, identify information gaps).
- Productivity (e.g., time management, project planning).
- Digital proficiency (e.g., software selection, internet communication).
- Creativity (e.g., being open minded, solving difficult problems).
- Agility (e.g., adaptability to unfamiliar work environment, meeting deadlines).
- Confidence (e.g., positive attitude, seeking leadership role).
- Self- and social- awareness (e.g., learning from past mistakes, help customers).
- Drive (e.g., making progress, perseverance).

Baird and Parayitam (2019), in a survey of business firms, found out that the most desired skills by employers are the following:

- Interpersonal.
- Critical thinking/problem-solving.
- Listening skills/ speech communication.

- Professionalism.
- Personal motivation.

A study based on a national survey entitled Remington the WorkForce 2021 published by Beyond Wiley identified the following as hard skills:

- Computer technology.
- Data analysis.
- Communication skills.
- Network structure and security.
- Cloud computing.
- Marketing.
- Mobile and web development.
- Design.

Of these skills, computer technology was ranked the highest (44 percent), followed by data analysis (34 percent), communications skills (24 percent), and network structure and security (21 percent). The study also identified the following soft skills:

- Critical thinking.
- Communication.
- Creativity.
- Analytical skills.
- Leadership.
- Emotional intelligence.
- Collaboration.
- Persuasion.

Of these capabilities, critical thinking was ranked the highest (36 percent) followed by communication (35 percent), creativity (34 percent), and analytical skills (28 percent).

Bridging the Skills Gap

Skills gap is often referred to as the difference between the country's (or organization's) current skills and anticipated future skills. At any given period in time, there will be shortage for certain skills in a sector, industry, occupation, or locality because of the emergence of new technologies, products, diseases, processes, consumer needs, government regulations, and so on. For example, Gurchiek (2019) reported that the CEO of JP Morgan, Jamie Dimon, said that the 'The new world of work is about skills, not necessary degree', and that business firms 'cannot find the skilled workers they need'.

To bridge the skills gap, Young (2014) recommends business firms to coordinate efforts with educational institutions to offer the required courses that could help the firms bridge the skills gap and, hence, achieve their goals. LaPrade et al of IBM Institute for Business Value suggested that business firms adopt the following strategic initiatives to close their skills gap:

- Acquire domestic and international talent from outside the organization.
- Move talents across business unites.

- Leverage apprenticeship/internship to train talent.
- Apply analytics to analyze and forecast skill supply and demand.
- Implement skill recognition program.
- Leverage new educational programs.

Singh and Sharma (2014), in discussing the skills gap in India, indicated that the Indian Chambers of Commerce and Industry recommended that the educational institutions to espouse the following long-term strategic initiatives:

- Establish relationships with the country's industries.
- Adapt curriculum to the industries' needs.
- Tailor the educational programs to meet the business community's skills shortage.
- Faculty collaboration to create the best learning models.
- Develop research-based teaching materials.
- Develop alumni networks.
- Seek the possibility of endowed chairs for the institution.

Finally, The White House Report (2015) - President Obama's Upskills Initiative - recommended several strategies to bridge the country's skills gap, including the following:

- Expand apprenticeship in the form of on-the-job training.
- Increase employer provided educational benefits.
- Form partnership with educational institutions.
- Emphasis labor-management partnership and training initiatives.

To sum up, the skills gap is a serious problem that the U.S. economy must confront and settle to maintain its long-term growth and competitiveness. Solutions revolve around innovative courses of actions to further enhance workforce competencies in soft and hard skills with the help of education, training, apprenticeship, and internship.

Conclusion

The U.S. economy is resilient, resourceful, and growing. The country's gross domestic product (GDP) is the world's largest at $23 trillion in 2021. Data show that the economy is growing, so is the demand for workforce. Data also show that the rate of increase in demand for labor outstripped the country's population growth rate. For example, according to the Bureau of labor Statistics, the number of job openings in late July 2021 were 10.9 million, an indication of huge employment opportunity for those individuals with the necessary skills. Although the economy has been efficient in job creation, the obstacle it faces to faster growth is, however, the relative scarcity of highly qualified workforce to meet the increasing demand of new technologies and sectors. Studies demonstrate the existence of skills gap im many industries that require urgent attention of policy makers, the business community, and educational institutions.

Maintaining high employment growth is essential for U.S. global competitiveness and technological leadership. Skillful workforce, innovation, investment, and entrepreneurship can undoubtedly help the country achieve its national and global strategic goals. It is likely that the demand for skilled workforce will continue as a result of gradual lessening impact of COVID-19

on the population and the rapid resumption of business activities. Viable strategic initiatives need to be pursued that include allocation of funds to eliminate (or minimize) the country's persistent skills gap. Polices to facilitate the entry and employment of international talents is certainly an appealing initiative.

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