THE NARROW LADDER:

THE VALUE OF INDUSTRY CERTIFICATIONS IN THE JOB MARKET

OCTOBER 2017

burningglass®
TECHNOLOGIES

THE NARROW LADDER: THE VALUE OF INDUSTRY CERTIFICATIONS IN THE JOB MARKET

In theory, professional certifications ought to be a key element in addressing the skills gap in the job market—yet in practice, certifications still fall short of their potential. How do employers use these credentials in their hiring process today? What would make certifications more valuable in the job market?

In this report, we seek to bring clarity to the debate by using job posting data to examine the market value of industry certifications. Using our database of more than 700 million historical job postings, we are able to track how often employers explicitly ask for certifications, and in what context.

It's not that the "non-degree" credentials are rare; more than a quarter of the employed U.S. population holds a license or certification, on top of any degrees they may hold.[1] Certifications can be precisely tuned to industry needs, and they hold the promise of reducing the need for employers to rely on imperfect proxies, like college degrees. In certain occupations, certifications outline career ladders that define industries and give employers and job seekers alike guidance about what skills are necessary to advance. Those occupations, however, are the exception, and if the nation is to close the skills gap, perhaps they should become the norm.

A number of solutions have been proposed, and all of them in one way or another call for more insight on the market value of credentials. Lumina Foundation's Connecting Credentials initiative urges the development of a common language for learners and employers to describe each credential's job market value.[2] The Workforce Data Quality Campaign calls for a competency-driven credentialing ecosystem that is built upon transparency about what a credential represents.[3] The Center for Law and Social Policy (CLASP)'s Quality Career Pathways approach connects education, training, and alternative credentials to optimize the progress and success of individuals with varying degrees of abilities.[4] Mozilla's Open Badges provides one of the first online standards to recognize and verify learning through different sources.[5] WorkCred connects industry with educators to determine the market value of credentials.[6]

Job postings provide an important data-driven basis for informing such initiatives by giving us a clearer picture of how much – and where – certifications matter in the real world of the labor market. After all, since most job postings don't require certification, it likely means something when employers do ask for them. Recent research demonstrates that employers are, if anything, becoming more specific about the skills they require in job posts.[7]

---

[1] U.S. Department of the Treasury Office of Economic Policy, U.S. Council of Economic Advisers, and U.S. Department of Labor. 2015. Occupational Licensing: A Framework for Policymakers. Washington, DC: The White House. https://www.whitehouse.gov/sites/ default/files/docs/licensing_report_final_nonembargo.pdf, Bureau of Labor Statistics, Data on Certifications and Licenses, Current Population Survey 2015. http://www.bls.gov/cps/certifications-and-licenses.htm

[2] Lumina Foundation. http://connectingcredentials.org/

[3] Workforce Data Quality Campaign. http://www.workforcedqc.org/resources-events/resources/competency-based-credentials

[4] The Center for Law and Social Policy. http://www.clasp.org/issues/postsecondary/pages/aqcp-framework-version-1-0

[5] Mozilla. http://openbadges.org/

[6] WorkCred. http://www.workcred.org/

[7] National Bureau of Economic Research Working Paper, "Do Recessions Accelerate Routine-Biased Technological Change? Evidence from Vacancy Postings," October 2016, http://www.nber.org/papers/w22762

Our hope is that this study answers some key questions about credentials: What does the demand for certifications look like in the real world of the market today? What role do certifications play in careers? Where have certifications gained traction with employers and where have they not? Where are the opportunities to develop new certifications that prove successful in resolving the skills gap?

We focus solely on industry certifications in this report, not certificates. We also exclude licenses (either where explicitly requested or where they can be inferred occupationally, such as those in licensed health care and legal professions). Those markets have their own distinct dynamics. (See our glossary on "Defining the Terms.")

Key findings include:

- The impact of certifications is potent but narrow, with employer demand confined to a handful of certifications. In fact, the top 50 certifications account for two-thirds of all requests in job postings.

- In career fields that value certifications, they carry a significant salary premium (as much as 18% in our sample).

- Certifications fall into two broad categories, each with its own distinct impact: Door Openers, which help new labor market entrants enter a field; and Career Escalators, which pave the path for experienced workers' upward mobility.

- Certifications are most likely to gain market acceptance when they validate hard-to-fill skills or readiness for hard-to-fill jobs, thereby providing a signaling mechanism in markets where employers have struggled to find qualified talent.

- While certifications struggle to gain acceptance in many corners of the job market, we find that, in others, there are indications of under-supply – that is, occupations for which employers struggle to fill jobs despite routinely seeking certificated workers.

- Across sectors, there are particular occupations which show signs of being ripe for broader adoption of certification regimes.

- Even though employers struggle to find workers with adequate foundational or "soft" skills, these skill areas have resisted certification, likely because there is no common agreement on how to define or measure them or because such skills are best assessed within the context of a particular occupation rather than in isolation.

GLOSSARY: DEFINING THE TERMS

The credentialing system is confusing, even to those who have one. Focus groups and interviews conducted as part of a federal survey on credentials found people often had trouble distinguishing between different kinds of credentials.   Perhaps it's no surprise then that both workers and employers find it difficult to put value on specific credentials.[8]

The credentialing system is broken up into several different categories, each with its own goals and market value.

Licenses are mandated by law for workers in specific occupations and must be renewed periodically. Fields that require licenses usually involve health, public safety, or the potential for fraud: Registered Nurses, Real Estate Agents, Barbers and Cosmetologists, Truck Drivers, Stockbrokers, and Plumbers are all examples. Requirements vary depending on the state or licensing agency. Criteria may include some combination of degree attainment, certification, certificates, assessment, apprenticeship programs, or work experience. About 22% of the U.S. workforce holds an occupational license.[9]

We exclude legally-mandated licenses and certifications from this report because you can't work in a licensed field without them. Demand for licenses says more about overall occupational trends than about the need for increased market efficiency.

In a number of licensed fields, however, certifications are mandated as part of the licensing process. **Please note that, for that reason, this report excludes certification demand in the Health Care, Health Care Support, Legal, Education, Motor Vehicle Operation, Financial Services, and Personal Services sectors.**

Certifications are awarded by a certifying body, often an industry association or trade group, based on an examination process assessing whether an individual has acquired the designated knowledge, skills, and abilities to perform a specific job. Certifications are often used by employers to validate whether an applicant has the specific skills or competencies required. In particular, employers use certifications when the skills needed do not align well with existing formal degree structures. As noted above, many license holders also have certifications.

Certificates are short-term, professionally oriented credentials awarded by an educational institution (as opposed to an industry body) based on completion of specific coursework. Certificates are typically completed in one year of academic study or less.

A **badge** verifies skills, training, and achievements earned through multiple sources. Sometimes called "micro-credentials," they represent completion of specific learning processes or acquisition of certain skills. The most granular of the credentials included in this list, students and job seekers may assemble a series of badges to highlight their progress toward mastery of a particular domain.

---

[8] National Center for Education Statistics, U.S. Department of Education. "The Adult Training and Education Survey (ATES) Pilot Study" 2013. http://nces.ed.gov/pubs2013/2013190.pdf

[9] Bureau of Labor Statistics, "Labor Force Statistics from the Current Population Survey," 2015 averages, http://www.bls.gov/cps/certifications-and-licenses-table-1.htm

THE LABOR MARKET DEMAND FOR PROFESSIONAL CERTIFICATIONS

The demand for certifications varies significantly across the job market. Overall, 9% of unlicensed jobs (excluding health care, health care support, legal, education, motor vehicle operation, financial service, and personal services sectors) request some form of certification in job postings, rising to 11% for jobs that require a four-year degree (i.e. bachelor's) or higher to perform. Considered by occupational family, the request rate can vary from a mere 2% in Sales positions to 18% for postings in the Computer and Mathematical occupational area.

Table 1. Certification Request Rate in Select Occupation Families, 2015

Occupational Family	Number of Job Postings	Certification Request Rate		
		Sub-BA Jobs	BA Jobs	All Jobs
All Jobs	17,177,962	6%	11%	9%
Management	2,431,936	8%	14%	14%
Business and Financial Operations	1,753,102	11%	18%	18%
Computer and Mathematical	2,860,137	17%	13%	13%
Architecture and Engineering	634,773	6%	10%	10%
Life, Physical, and Social Science	214,815	9%	8%	8%
Community and Social Service	204,431	11%	13%	13%
Education, Training, and Library	379,850	6%	10%	9%
Arts, Design, Entertainment, Sports, and Media	484,243	2%	3%	2%
Protective Service	214,163	8%	12%	8%
Food Preparation and Serving Related	520,079	4%	5%	4%
Building and Grounds Cleaning and Maintenance	162,702	4%	17%	4%
Personal Care and Service	179,061	11%	3%	11%
Sales and Related	2,638,945	2%	3%	2%
Office and Administrative Support	2,343,410	3%	16%	3%
Construction and Extraction	170,198	9%	12%	9%
Installation, Maintenance, and Repair	554,750	14%	8%	14%
Production	398,258	7%	5%	5%
Transportation and Material Moving	1,033,109	6%	N/A	6%

However, not all certifications are created equal. Overall, in Burning Glass' sample of 16 million postings from 2015 in unlicensed fields, more than 1.4 million asked for at least one certification.[10] Nearly 2,500 distinct certifications were named in postings. Yet the demand for certifications is centered on a small number of credentials. The vast majority are rarely requested in job postings. Out of a total of more than 2 million certification requests in 2015, two-thirds ask for one of the top 50 certifications, and the top 100 represent a staggering 75% of total demand. Stated another way, only 4% of employer-requested certifications account for 75% of demand.

In addition, employers overwhelmingly request *certifications over certificates*. When we combined the top certifications and the top certificates in 2015, a mere 34 certificates would make the top 200 combined list. According to our analysis, the demand for certifications far outstrips the demand for certificates.

In 2015, the demand for certifications is approximately 1.5 million job postings, whereas only about 130,000 postings ask for certificates. This stark contrast is even more apparent as we compare the number of requests for the top 10 certifications with that for the top 10 certificates (Table 3); the former is nearly twenty times that of the latter. The most likely explanation for certifications' stronger market value comes from their standardized industry-wide criteria, which do not depend on the varied content or quality of the institutions or programs offering them.

Table 2. Share of Requests by Certification Popularity[11]

Time Range: Year 2015	# of Requests	Cumulative Percentage of All Requests
Top 50 Certifications	1,433,376	66%
Top 100 Certifications	1,636,970	75%

Table 3. Number of Requests, Top 5 Certifications vs. Top 5 Certificates

Top 5 Certifications	Number of Requests	Top 5 Certificates	Number of Requests
Certified Public Accountant (CPA)	276,880	Home Health Aide Certificate	18,007
Project Management Certification (PMP)	202,971	Paralegal Certificate	12,234
Certified Information Systems Security Professional (CISSP)	91,981	Phlebotomy Certificate	10,485
Automotive Service Excellence Certificate (ASE)	67,973	Medical Billing and Coding Certificate	8,466
Cisco Certified Network Associate (CCNA)	67,746	Typing Certificate	4,245

[10] For the purposes of this analysis, we included all unique postings collected during 2015 in unlicensed occupations that request at least three skills.

[11] A job posting may request more than one certification, and so the total number of requests may be higher than the number of postings.

This extraordinary concentration of demand reflects a paradox about certifications. At their core, certifications are intended to provide clarity in the job market. Yet while employers may well value the skills demonstrated by a certification, they won't ask for the certification in job postings unless they are convinced there is a supply of certified workers. On the other hand, job seekers will not go through the time and expense of getting a certification unless they are convinced that employers want the qualification. The long list of certifications with limited currency in the market – the 96% of certifications that represent only 25% of demand – presumably have yet to achieve the escape velocity needed to break this vicious cycle.

In cases involving high-quality certifications with weak supply, job seekers may accrue benefits for the certification because it represents a valued or undersupplied skill. And in cases where a certification isn't much in demand, the credential may still give candidates a boost in the hiring process--even if the employer doesn't specifically ask for it, the certification still signals validated proficiency. From a policy perspective, however, the challenge is in career planning. Job seekers have no way to know in advance what value a certification will have if employers are not signaling any demand. For certifications to achieve their promise in resolving the skill gap, employers and job seekers need ready access to clear, transparent information about each certification's market value.

EMPLOYERS DEMAND CERTIFICATIONS FOR TECHNICAL SKILLS, NOT SOFT SKILLS

The list of certifications in demand is almost exclusively comprised of measures of technical skills such as welding, computer networking, or accounting. Employers have been slower to adopt certifications that focus on broader, baseline competencies such as writing, problem solving, or communication. Among the top 200 most-requested certifications, only one, ACT's National Career Readiness Certificate, focuses on these sorts of cross-cutting skills. There are a number of initiatives designed to help the NCRC credential gain traction, and ACT reports that more than 30 states and 10,000 employers now accept the certificate.[12] But while it may be accepted when put forward by an earner, the NCRC credential has less than 2% of the market adoption of the most common certifications discussed in this report.

Employers frequently bemoan the lack of "soft skills" in the workforce. Previous Burning Glass research has shown dissatisfaction with soft skills as a factor in the trend of "upcredentialing," or requesting a bachelor's degree for what were formerly middle-skill jobs.[13] In terms of certifications, it is beyond the scope of this report to determine why certifications have not been used to fill the gap. It is unclear whether the minimal demand for baseline skill credentials is a reflection of the challenge of assessing these skills out of a specific workplace context, whether employers are generally able to find candidates with employability skills, or whether the existing credentials do not fully align with the skills that employers need.

---

[12] "National Career Readiness Certificate," ACT, accessed Oct. 5, 2016, https://www.act.org/content/act/en/products-and-services/workforce-solutions/act-national-career-readiness-certificate.html

[13] Burning Glass Technologies, "Moving the Goalposts: How Demand for a Bachelor's Degree Is Reshaping the Workforce" 2014 http://burning-glass.com/research/credentials-gap/

CASE STUDIES: CERTIFICATIONS AS CAREER ESCALATORS

Those certifications that are in demand have a strong impact on the job market in their industries. We conducted qualitative and quantitative analyses to identify a number of well-established certifications in different career areas, and examined the relationship in job postings between certification requests and salaries offered (see methodology section). Clearly, not every single certification in our database has the same demand or salary premium. However, a case study of these in-demand certifications sheds some much-needed light into the aspirational potential of industry certifications. We found compelling evidence that these certifications serve as career escalators in distinct forms. While not all certifications can be categorized into one of these two groups, many in-demand industry certifications function either as Door Openers or Career Escalators for professionals with varying degrees of training and experience.

Door Openers are certifications that create standardized access to entry-level jobs in an industry, typically used by job seekers to enter career fields that don't have stringent degree or experience requirements (for example, Auto Repair, IT Help Desk, and Welding).

Career Escalators are certifications that help workers advance by validating the knowledge and skills of experienced workers. These certifications are typically used by mid-career job seekers looking to advance to the next level of their careers (e.g. Project Management, Cybersecurity).

Entry-level Certifications: Door Openers

Three Door Opener certifications stood out in our analysis, drawn from very different occupations: Auto Repair, IT Help Desk, and Welding. All of them are requested in a significant share of entry-level postings in their fields:

- Almost 3 out of 10 entry-level Auto Repair job postings request Automotive Service Excellence (ASE), an in-demand certification in this field.

- In entry-level roles on IT help desks, almost 1 out 5 entry-level jobs require the A+ certification.

- While there are many certifications sought after by employers in the production career field of Welding, the American Welding Society's certification (AWS) is the most popular, requested in 13% of entry-level job postings. When combined with other certifications, 23% of entry-level welding jobs require a certification.

Employers value these in-demand certifications so much that they are willing to pay a higher salary for them. All of these door-opener certifications carry sizeable net salary premiums, independent of skill, experience, education, other certification requirements, occupation, and wage levels for the industry and MSA. For example, entry-level auto repair postings asking for ASE pay a 21% net premium. Based on the average salary of entry-level auto repair jobs, that translates into more than $9,587 per year.

This salary premium is particularly notable because certifications usually demand less investment compared to degree credentials, such as an associate's degree. For instance, A+ certification requires a $200 fee and an average of six weeks of preparation time to pass the exam.[14] Yet A+ certification commands a 5% salary premium, more than half as much as the average premium for IT workers with a two-year associate's degree (9%). So in this area, certification can be an alternative for job seekers for whom acquiring more formal education is not a viable option.

But the salary premium for these certifications doesn't necessarily hold as workers gain more experience. The impact dissipates as workers advance, either because experience provides the equivalent of the certification, or because other mid-career certifications start to become expected.

Table 4. Salary Premium of Door Opener Certifications in Auto Repair, Help Desk, and Welding

Certification	% of Entry level Postings Requesting Certification	% of Postings Entry Level	% of Postings Sub-BA	Net Certification Salary Premium (Entry level)	Equivalent Years of Experience
Automobile Service Excellence (ASE)	29%	45%	100%	21% ($9,587)	7
A+	19%	62%	75%	5% ($2,030)	1
American Welding Society (AWS)	13%	45%	97%	9% ($3,077)	1.5

Mid-Career Certifications: Career Escalators

Career Escalator certifications, such as Project Management Professional (PMP) and Certified Information Systems Security Professional (CISSP), help experienced workers take their careers to the next level. They are designed to validate advanced knowledge and skills. As such, most Career Escalator certifications have a minimum work experience requirement. For example, a CISSP certification requires five years' relevant experience, and PMP demands at least 3,500 hours leading projects.

These credentials are often in high demand: PMP and CISSP are requested in at least 1-in-4 job postings in their fields. Moreover, employers pay salary premiums to hire certified professionals. Net of other factors, Project Management job postings asking for a PMP pay more than $10,000 (+11%) more than those don't, while Cybersecurity postings asking for CISSP pay a net premium of more than $6,000 (+7%).

---

[14] CompTIA, "CompTIA A+," https://certification.comptia.org/certifications/a, accessed August 2017. Preparation time may vary.

BLAZING THE TRAIL: CERTIFICATION-DEFINED CAREER PATHWAYS

Some fields, such as IT Networking, are completely shaped by certifications. In these fields, certifications are not only elaborate but interconnected. The credentials become "stackable" upon each other, and define the whole career ladder from beginner to expert. Workers can choose to obtain these certifications in sequence, and expect career advancement as a result. These career fields reveal the full potential of certifications, and can be used as a model for other career fields.

IT specializations such as Security Technologies and Network and Cloud Technologies offer good examples of stackable credentials at work. In these areas, certifications create a clear career ladder, validating qualifications at each career stage.[15] Employers regularly use them as selection criteria for hiring and promotion. Indeed, we found significant salary premiums at each stage as the level of certification requested goes up. Take Security Technologies for an example: compared to a beginner-level salary, an intermediate-level certification's salary premium is 10% higher, an advanced certification is 26% higher, and an expert certification can offer a premium of as much as 45%. That is equivalent to more than $20,000 per year.

Table 6. Salary Premium of Stackable Certifications in Network and Cloud Technologies

	Beginner	Intermediate	Advanced	Expert
Certification Name	A+ Cisco Certified Entry Networking Technician (CCENT	Cisco Certified Network Associate (CCNA) Cisco Certified Design Associate (CCDA) Network+ Linux+ Microsoft Certified Systems Administrator (MCSA) Red Hat Certified System Administrator (RHCSA)	Cisco Certified Design Professional (CCDP) Cisco Certified Network Professional (CCNP) Certified Coding Associate (CCA) Microsoft Certified Systems Engineer (MCSE) Certified Novell Engineer (CNE) Red Hat Certified Engineer (RHCE) Certified Linux Engineer (CLE)	CISCO Certified Internetwork Expert (CCIE) Red Hat Certified Architect (RHCA)
Additional Salary Premium over Beginner Level Certifications	N/A	12% ($5,350)	22% ($10,027)	57% ($26,375)

---

[15] CompTIA IT Certification Roadmap. https://certification.comptia.org/docs/default-source/downloadablefiles/it-certification-roadmap.pdf?sfvrsn=2

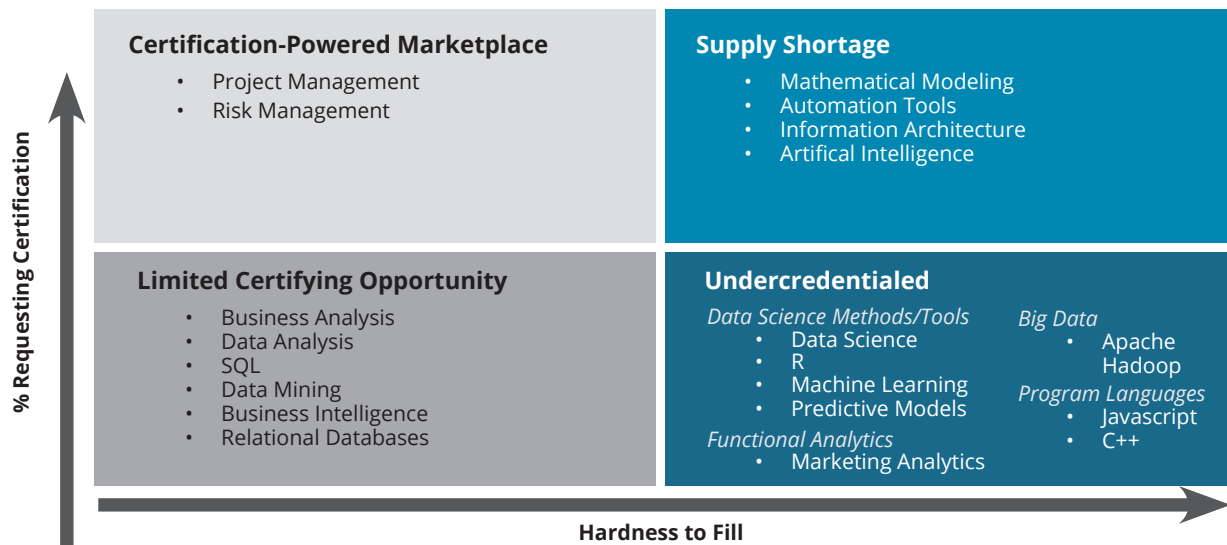**Table 7. Salary Premium of Stackable Certifications in Information Security Technologies**

	Beginner	Intermediate	Advanced	Expert
Certification Name	A+	Cisco Certified Network Associate (CCNA) Security+ Network+ Server+ Citrix Certified Integration Architect (CCIA) GIAC Certified Incident Handler (GCIH) GIAC Security Essentials (GSEC) GIAC Information Security Professional (GISP) GIAC Information Security Professional (GISP)	Cisco Certified Design Professional (CCDP) Cisco Certified Network Professional (CCNP) Certified Ethical Hacker (CEH) Certified Information Systems Auditor (CISA) Certified Information Systems Security Professional (CISSP) GIAC Security Leadership (GSLC) GIAC Certified Enterprise Defender (GCED)	CISCO Certified Internetwork Expert (CCIE) Certified in the Governance of Enterprise IT (CGEIT) Certified Information Security Manager (CISM)
Additional Salary Premium over Beginner Level Certifications	N/A	10%($4,870)	26%(12,310)	45% ($20,691)

WHERE CAN CERTIFICATIONS MAKE A DIFFERENCE?

How can certifications break out of their current, narrowly defined role in the job market? One strategy is to identify the areas where certifications might have the biggest impact: situations where there is high unmet demand for talent, with skill sets that would lend themselves to certification, but little traction among employers for these credentials – conditions indicative of markets lacking efficient skill validation mechanisms.

To examine this question, we looked at both supply and demand for certifications in 2016. The crucial task is to pinpoint hard-to-fill skill sets in fields which lack widely accepted certifications. We defined hard-to-fill in terms of how long positions stayed open. For credentials we assessed how frequently an employer demands a certification, compared to the norm for similar jobs. We then plotted these two factors on a matrix.

Planning and Analysis (Figure 1)

% Requesting Certification (vertical axis)

Certification-Powered Marketplace
- Project Management
- Risk Management

Supply Shortage
- Mathematical Modeling
- Automation Tools
- Information Architecture
- Artifical Intelligence

Limited Certifying Opportunity
- Business Analysis
- Data Analysis
- SQL
- Data Mining
- Business Intelligence
- Relational Databases

Undercredentialed

Data Science Methods/Tools
- Data Science
- R
- Machine Learning
- Predictive Models

Big Data
- Apache Hadoop

Program Languages
- Javascript
- C++

Functional Analytics
- Marketing Analytics

Hardness to Fill

As an example, the matrix above assesses opportunities for credentialing among various Planning & Analysis skills.
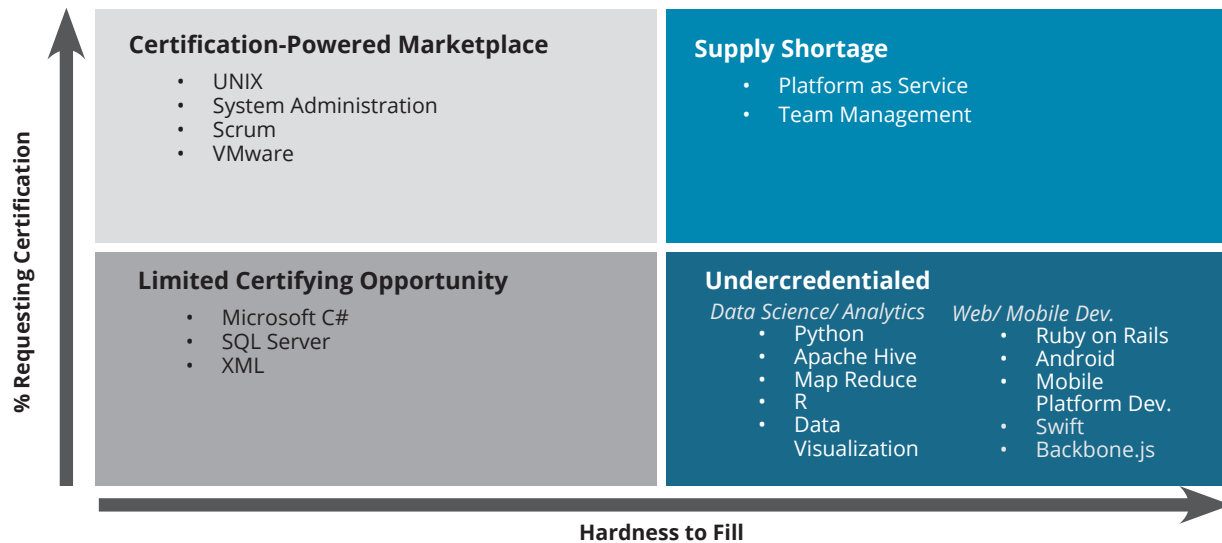
On the left are two areas where certifications either have traction already (top left) or probably wouldn't add much value (bottom left). In areas like Business Intelligence or older, common technologies such as relational databases, for example, employers don't request certifications, but they also don't have much trouble filling jobs. So there isn't much of a problem to solve.

On the right, however, are areas where the there's a shortage of talent. Under such conditions, employers are more likely to consider alternative validation mechanisms.

In the Supply Shortage quadrant, employers already exhibit a high demand for certifications. However, the fact that these skills remain difficult for employers to source suggests that there may be an insufficient number of certification holders to meet that demand. For skills like Mathematical Modeling, Artificial Intelligence, and PERL, channeling workers into existing certification programs could have a major payoff for job seekers.
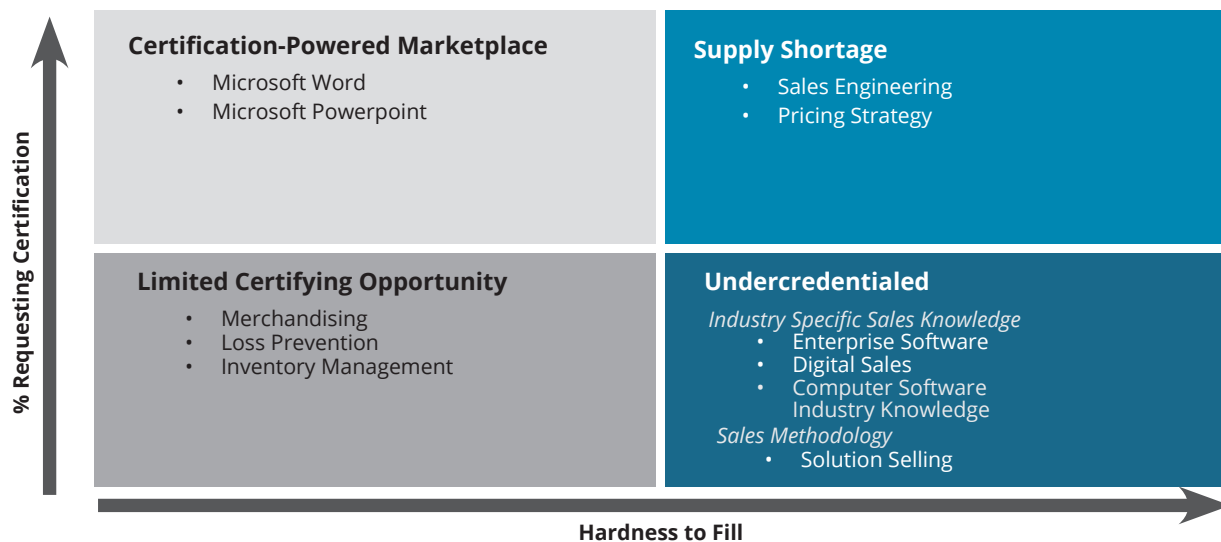
In the Undercredentialed quadrant, the problem is that the positions are hard to fill and yet there isn't much demand for certifications. This is where new certification programs—and outreach to employers about their benefits—could change the dynamics of the job market, giving employers a straightforward proxy for hard-to-find skills. (Figure 2)

Information Technology (Figure 2)

% Requesting Certification (vertical axis)

Certification-Powered Marketplace
- UNIX
- System Administration
- Scrum
- VMware

Supply Shortage
- Platform as Service
- Team Management

Limited Certifying Opportunity
- Microsoft C#
- SQL Server
- XML

Undercredentialed

Data Science/ Analytics
- Python
- Apache Hive
- Map Reduce
- R
- Data Visualization

Web/ Mobile Dev.
- Ruby on Rails
- Android
- Mobile Platform Dev.
- Swift
- Backbone.js

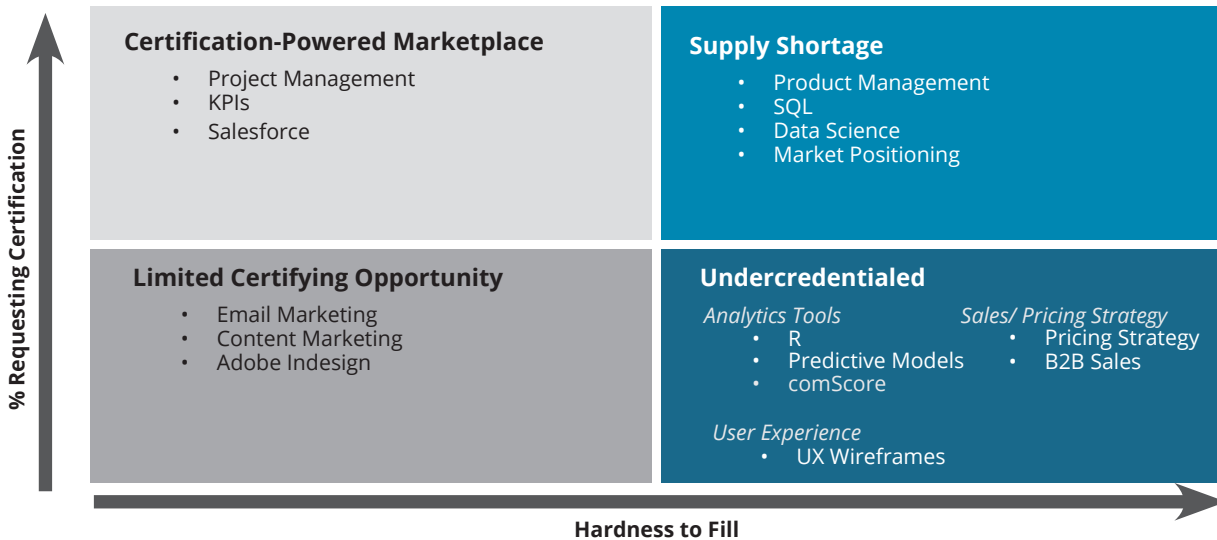**Hardness to Fill** (horizontal axis)

Information Technology is one of the fields where certifications have historically been most valuable, but there are still significant areas where credentials are lacking, such as with Ruby on Rails and Android. This field is also increasingly drawing on data science skills, which are generally undercertified, making them an outlier in this highly certified industry. (Figure 3)

Sales (figure 3)

% Requesting Certification (vertical axis)

Certification-Powered Marketplace
- Microsoft Word
- Microsoft Powerpoint

Supply Shortage
- Sales Engineering
- Pricing Strategy

Limited Certifying Opportunity
- Merchandising
- Loss Prevention
- Inventory Management

Undercredentialed

Industry Specific Sales Knowledge
- Enterprise Software
- Digital Sales
- Computer Software Industry Knowledge

Sales Methodology
- Solution Selling

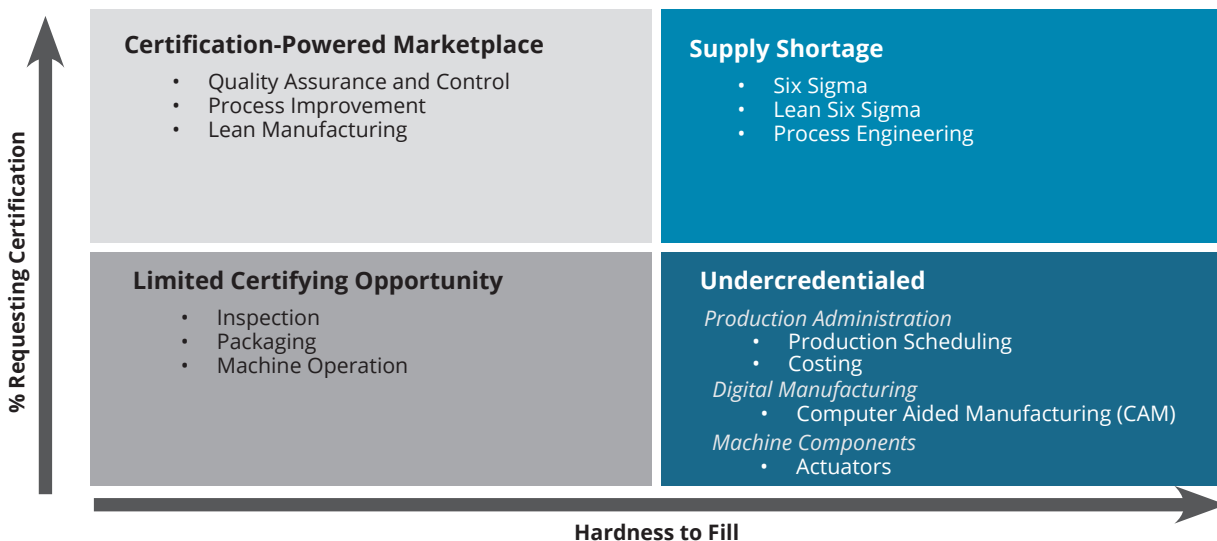**Hardness to Fill** (horizontal axis)

It is important to note that just because a skill is classified here as undercredentialed doesn't mean that there are no training programs for that field. In business-to-business sales, for example, there are numerous training courses available, both on- and offline. In a few cases, there is even an existing certification (the IBM Linux Selling Solution is one). But there is a definite opportunity to build more widely accepted certifications. (Figure 4)

Figure 4. Marketing and PR

Certification-Powered Marketplace
- Project Management
- KPIs
- Salesforce

Supply Shortage
- Product Management
- SQL
- Data Science
- Market Positioning

Limited Certifying Opportunity
- Email Marketing
- Content Marketing
- Adobe Indesign

Undercredentialed

Analytics Tools
- R
- Predictive Models
- comScore

Sales/ Pricing Strategy
- Pricing Strategy
- B2B Sales

User Experience
- UX Wireframes

% Requesting Certification (vertical axis)

Hardness to Fill (horizontal axis)

There are also opportunities in fields with a growing number of hybrid jobs, occupations that mix and match skill sets from different fields. Marketing is a good example. Big Data has upended the field, and so has the increasing use of digital media techniques. So more and more marketing jobs are requiring data skills like Predictive Modeling, or design skills like UX Wireframes. However, these skills are generally absent from the curriculum of traditional marketing programs. As such, it is not surprising that marketing jobs seeking these skills are proving hard for employers to fill. Certifications would be highly useful to hiring managers here. (Figure 5)

Figure 5. Manufacturing and Production

Certification-Powered Marketplace
- Quality Assurance and Control
- Process Improvement
- Lean Manufacturing

Supply Shortage
- Six Sigma
- Lean Six Sigma
- Process Engineering

Limited Certifying Opportunity
- Inspection
- Packaging
- Machine Operation

Undercredentialed

Production Administration
- Production Scheduling
- Costing

Digital Manufacturing
- Computer Aided Manufacturing (CAM)

Machine Components
- Actuators

% Requesting Certification (vertical axis)

Hardness to Fill (horizontal axis)

Manufacturing has shifted decisively toward automation and robotics, and while that has hit general production workers hard, Computer Aided Manufacturing skills have become more vital. While a number of community colleges offer CAM courses, it is usually in the context of a mechanical engineering degree, rather than as a stand-alone certification which would make this more viable as a middle-skill career.

CONCLUSIONS AND IMPLICATIONS

Broadly speaking, certifications haven't lived up to their potential in the job market. There is no shortage of available certifications, covering a variety of jobs across all levels of educational and experience requirements. Yet the certification universe is particularly complex, filled with mainly obscure certifications from an array of providers. Only a relatively small number of industry-recognized certifications really live up to their promise and carry strong value in the market. The best-established certifications shape industries by defining career ladders, and provide pathways to job entry and career advancement in many different occupations. Our analysis finds that there are more corners of the job market where certifications could play a similar role – if employers, trade groups, and job seekers made use of them.

For Employers:

Employers frequently complain about having a hard time finding talent. As Burning Glass research has documented in the past, employers often resort to requesting college degrees for positions that never required one before—an imprecise and potentially self-defeating strategy.[16] Indeed, only a minority of major U.S. companies consider college graduates to be prepared for the workforce.[17] [18]

Certifications can provide a more precise screening tool to identify qualified talent, validating a clearly defined set of knowledge and skills. The IT and Project Management fields show how this could work. For the idea to expand successfully, however, employers will have to work actively with certifying bodies and training programs to ensure that certifications meet industry needs. In addition, employers will have to start demanding certifications routinely as part of their hiring process. No one will go to the trouble of getting a certification unless employers signal that they actually want it.

For Job Seekers:

Workers need to keep reinventing themselves to stay relevant in the job market. While it can be costly for workers to start over as their career needs change, professional certifications could provide a mechanism for career advancement that is much more affordable than traditional educational programs. However, knowing that being certified is an affordable option for career advancement is one thing;

---

[16] Burning Glass Technologies, "Moving the Goalposts: How Demand for a Bachelor's Degree is Reshaping the Workforce," 2014, http://burning-glass.com/research/credentials-gap/

[17] Business Roundtable and Change the Equation. "CEOs Say Skills Gap Threatens U.S. Economic Future." 2014. http://changetheequation.org/press/ceos-say-skills-gap-threatens-us-economic-future

[18] U.S. Chamber of Commerce Foundation "Managing the Talent Pipeline." 2014. https://www.uschamberfoundation.org/sites/default/files Managing%20the%20Talent%20Pipeline.pdf

knowing exactly which certifications to invest in is another story. Relatively few certifications actually have market value, and there is a shortage of easy-to-find information to sort out which credentials are pathways and which are blind alleys. More transparency in the certification market can significantly improve the returns people receive on their certification investments.

For Training Providers and Certifying Bodies

The surging demand for skills and credentials opens up new horizons for the certification market. However, the fact that there is little demand for the vast majority of certifications may indicate a mismatch between skills being certified and the skills employers actually need. To better serve employers and job seekers, educators and training providers need to align their training programs around the high-value certifications that are already of currency to the market and yet are proving to be in short supply. On the longer term, higher education institutions and training providers have a significant opportunity to develop new certifications that validate the high-value skills that have heretofore gone undercredentialed. They need to ensure that their credentials address true employer needs and accurately validate these skills.

For Policy Makers

If certifications are to expand their role, both employers and job seekers need assurances that certification programs represent up-to-date skills in demand. One potential way of building credibility is to develop a standardized quality-assurance system. A 2014 study found only 10% of the more than 4,000 certification bodies in information technology and health care are accredited or reviewed by a third party.[19] As a result, the quality of different certifications can be highly uneven, so it stands to reason that their adoption in the marketplace is uneven as well. To reshape our fragmented credentialing system, the federal and state governments, professional associations, certifying bodies, and employer-based organizations need to work together to ensure that certifications are of high quality, up-to-date, and interconnected.

METHODOLOGY

Burning Glass Technologies based this report on an analysis of 16 million job postings covering calendar year 2015. The analysis of areas where there are opportunities to expand certifications was based on an analysis of job postings in 2016. In order to estimate the salary premium of a certification, we use a linear regression model at a posting level. We regress the natural logarithm of the annual salary that we observe in postings data, on education and experience requirements, number of skills per posting, industry and MSA groups, and certification dummy variables. The coefficients on the certification dummies are used to estimate the salary premium of each certification. Similarly the coefficients on educa-

---

[19] Call for a National Conversation on Creating a Competency-based Credentialing Ecosystem. 2014. http://www.clasp.org/resources-and-publications/files/Developing-a-Competency-Based-Credentialing-Ecosystem.pdf

ABOUT BURNING GLASS TECHNOLOGIES

Authors

By Will Markow, Dan Restuccia and Bledi Taska, with Scott Bittle and research assistance from Weilu Li, Matej Mavricek, Rachel Neumann and Qian Wang

About Burning Glass Technologies

Burning Glass Technologies delivers job market analytics that empower employers, workers, and educators to make data-driven decisions. The company's artificial intelligence technology analyzes hundreds of millions of job postings and real-life career transitions to provide insight into labor market patterns. This real-time strategic intelligence offers crucial insights, such as which jobs are most in demand, the specific skills employers need, and the career directions that offer the highest potential for workers. For more information, visit http://burning-glass.com/.

FOR MORE INFORMATION, PLEASE CONTACT

BURNING GLASS TECHNOLOGIES

ONE LEWIS WHARF | BOSTON, MA 02110 USA

 +1 (617) 804-1549

WWW. BURNING-GLASS.COM

Cover image courtesy of Christophe Ferron at Upsplash