Executive Insights

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Jobs for the Bots? How the UK Jobs Market Is Responding to Automation

If you watched the Channel 4 television program "Humans," it's a stark illustration of what many believe the future could hold for a world where automation increases and the mere mortal's role becomes obsolete. Aside from the dystopian images of popular fiction, however, the key question for businesses engaged in the U.K. employment market is how significant the impact of automation is really likely to be.

In a very thoughtful 2013 paper titled *The Future of Employment: How susceptible are jobs to computerisation?*, Carl Frey and Michael Osborne of the Oxford Martin School, suggested that nearly half of U.S. jobs (47%) faced a high probability of being automated.

But by using the automation framework developed in that paper and by examining recent trends, we see that the U.K. job market is, so far, responding well to automation. Frey and Osborne's work estimated the risk of automation for a wide range of jobs depending on how difficult they are to automate — in simple terms, how complex, social or creative the jobs are. And in these terms, the U.K. market is successfully creating harder-to-automate jobs in numbers that more than replace those lost to automation in recent years.

A world where automation takes over, or one of new sustainable job creation?

Between 2011 and 2016, the number of jobs in the U.K. grew by 2.5 million. This is a net figure, taking into account over 0.5 million jobs destroyed by automation and factors such as demographics, increasing complexity, changing lifestyles and automation itself creating 3.6 million jobs. Looking at ONS data across 369 categories of jobs, we see that 3.6 million jobs were created and 1.1 million destroyed.

Our analysis shows that of the jobs that have disappeared in the past six years, the probability of automation as calculated by Frey and Osborne — at 61% — was high. By comparison, the jobs created in that time have an automation probability of only 38%, and even this figure is inflated by "bubble" jobs (growing recently, but destined to be automated, such as delivery drivers). This means that the market is creating highly sustainable jobs faster than it destroys them through automation. Excluding "bubble" jobs, the automation probability is just 21%.

Automation has particular benefits for tasks in which repetitiveness is key — or where automated systems can deliver outputs that are more consistent and thus better or faster service. As a result, several traditional job roles are disappearing fast — from cashiers to traffic wardens — as automation takes hold (see Figure 1).

In retail, self-service checkouts have revolutionized the shopping experience, with 42,000 units now installed and the loss of 39,000 cashier roles since 2011.

Jobs for the Bots? How the UK Jobs Market Is Responding to Automation was written by **Andrew Allum**, a partner at L.E.K. Consulting. Andrew is based in London.

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Figure 1
Example jobs destroyed by automation

	Job change 2011-16 (000s)	Change 2011-16 (percent)	Automatiom probability in next 20 years
Cashiers	(39)	(16%)	97%
Bank Clerks	(25)	(18%)	98%
Telesales persons	(12)	(24%)	99%
Typists	(18)	(34%)	81%
Traffic wardens	(13)	(59%)	84%

Source: The Oxford Martin School; ONS; L.E.K. analysis

Figure 2
Example jobs created by automation

	Job change 2011-16 (000s)	Change 2011-16 (percent)
IT Director	41	76%
IT Programme manager	30	51%
Mechanical engineer	34	48%
Programmers and developers	84	38%
IT business analysts and designers	20	23%

Source: The Oxford Martin School; ONS; L.E.K. analysis

Similarly, ANPR (automatic number plate recognition) systems are offering improved efficiencies. A trial by Westminster Council in 2010 showed that a mobile ANPR- and CCTV-equipped vehicle could cover the same ground as six traditional traffic wardens, cut costs by a third and access multiple databases at the same time, making searches faster and more efficient. Today there are around 8,500 ANPR cameras nationally, submitting between 25 to 35 million records a day, and the number of traffic wardens has fallen by 13,000 (a 59% reduction) since 2011.

Figure 1 also shows that the major declining categories had a high probability of automation according to Frey and Osborne, supporting the relevance of their framework.

A new breed of employment opportunities, but beware of the bubble

While some roles are disappearing due to automation, the process is, in itself, also creating new roles — including for people to manage the systems that enable automation. Automation actually accounts for 9% of all jobs created — some 328,000 jobs (see examples in Figure 2).

The number of programmers and software developers, for example, has risen by 84,000 since 2011. Similarly, IT directors have risen by 41,000 (up 76%).

Robotics is also a significant growth area when it comes to automation, as industries from warehousing to waste management make better use of the technology to improve operational efficiency and reduce costs. This is leading to a huge rise in the numbers of mechanical engineers, whose ranks have swelled by 34,000 (up 48%) since 2011.

Under Frey and Osborne's framework, these roles have less than a 5% probability of automation.

But automation as measured by these jobs above accounts for 9% of those created since 2011. Figure 3 shows the other major factors identified in our analysis.

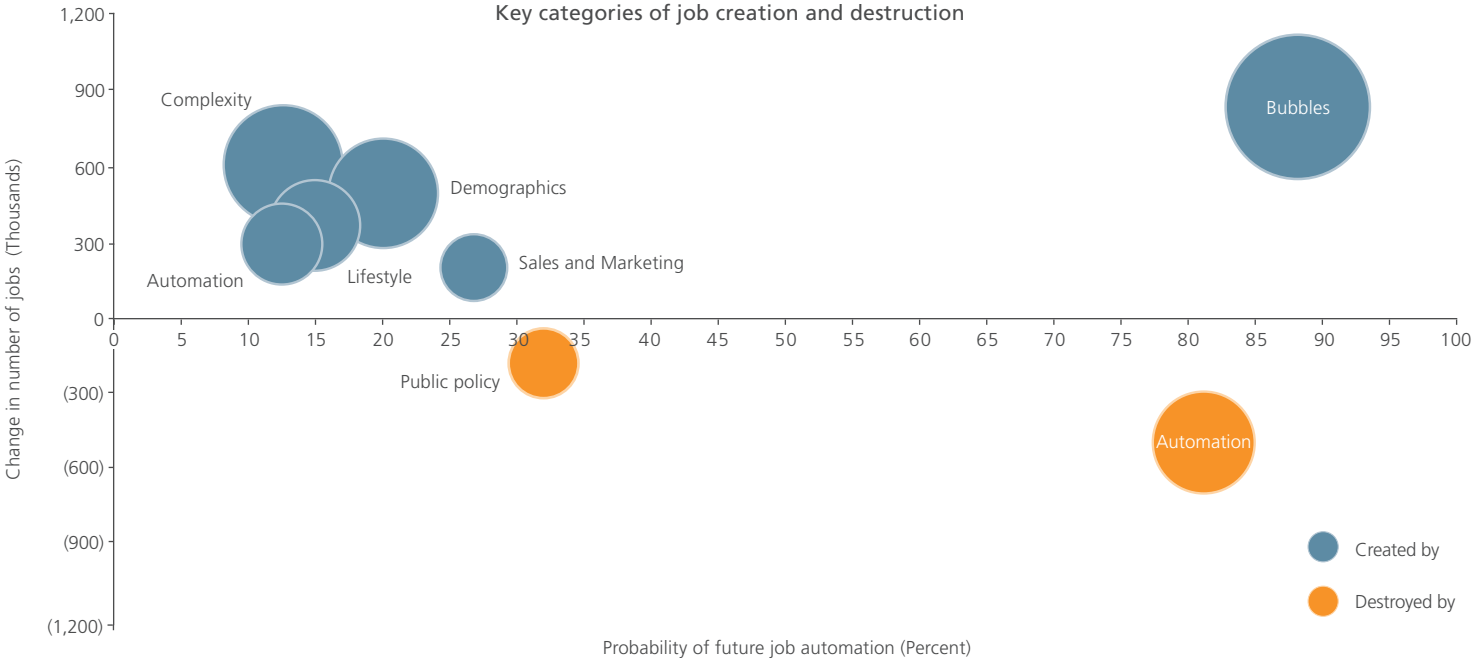
There are areas to be wary of. Within the new jobs created are those that are the result of bubble growth; those have seen huge increases in recent years (road-driving occupations, for example, are up by 110,000 since 2011), but they are at high risk of automation (89% according to Frey and Osborne). Such bubbles, however, make up only a quarter of the total jobs created since 2011 (0.9 million out of 3.6 million), and the majority of roles created have a low risk of automation.

A major driver of employment growth is demographic change, with increases in school-age and elderly populations creating more roles for teachers, caregivers and medics (we estimate this factor has created 666,000 jobs).

Jobs serving lifestyle choices have also grown quickly, adding 500,000 since 2011. Lifestyle is driving job creation through trends such as individuals' greater focus on fitness and well-being, resulting in an increased need for services such as personal trainers. There is also the creation of brand-new roles, such as hotel and accommodation managers (up 84% since 2011), itself an indirect consequence of automation. For example, businesses such as Airbnb are changing the way we book accommodations and are creating a new niche, that of agencies that employ lodging managers to provide check-in services for owners. These roles face a low probability of automation.

Along with jobs necessary to serve our more complex world (up 625,000), sales and marketing jobs (up over 200,000) and those created by automation as described earlier, we see 2.7 million jobs

Figure 3
Key categories of job creation and destruction



Source: ONS; Frey, C and Osborne, M (2013) The Future of Employment: How susceptible are jobs to computerisation? The Oxford Martin School; L.E.K. analysis

created with a low risk of automation (c. 21%), and which are therefore much more sustainable than the jobs that have been destroyed. Such figures provide confidence that, so far, the job market is responding well to the challenge of automation, creating new roles that are more complex, social and creative (and thus more sustainable with respect to automation) than the jobs destroyed by automation.

What the U.K. employment market can do to embrace the trends

But is industry prepared for the challenges as automation accelerates? Are we doing enough to embrace the changing demands on investors, employers, workers and training providers? Many of the new roles have different skill sets, and labor market participants need to be aware of and respond to these factors.

Eight key priorities:

1) Counsel the young toward jobs with a future
Education establishments, career advisors and trainers need to refocus when it comes to the future job market — helping promote and educate about roles that have a future rather than just focusing on student interests.

2) Beware of bubble jobs
A number of job areas have seen huge growth in recent years but in themselves face a high risk of automation. For every Uber or Deliveroo driver saving for their MBA, there are many people in these categories who lack a plan for what to do as

	Drivers	Examples of jobs affected
Created by:	Automation	Programmers Mechanical engineers IT business analysts
	Demographics	Nurses Care workers Primary teachers
	Lifestyle	Hotel managers Chefs Sports coaches
	Bubbles	Drivers Food preparation Security guards
	Complexity	Solicitors Project managers Management consultants
	Sales and marketing	Advertising account managers Graphic designers Business development managers
Destroyed by:	Public policy	Local government administrators NGO officers FE teachers
	Automation	Telesales Cashiers Parking enforcement

automation matures and gathers pace.

3) Teach the new skills required
Having identified the jobs that have a future — and aren't so at risk of automation — the right courses and training must be demanded by students and offered by training and educational establishments, responding to market needs.

4) Drive productivity via automation
Investors (and this would suit private equity investors well) can use this framework to recognize those businesses with many jobs subject to automation and drive the process forward, usually improving services and profit margins at the same time.

5) Pursue opportunities in public sector automation
The major categories of jobs lost to automation are in the private sector, suggesting that the public sector is behind in pursuing this trend (although the mix of roles differs). This paper also shows a reduction of over 250,000 in public sector jobs that are absorbed into the private sector, including jobs that are increasingly sustainable with respect to automation and therefore better for the worker and taxpayers.

6) Generate better data
With such a dynamic market, the ONS should review its job categories more often and more thoroughly. ONS data identifies 8,600 weighers, graders and sorters (down two-thirds since 2011) but, by contrast, does not split over 300,000 programmers and software developers between enterprise and cloud or between SAP, Java and countless other specific and fast-growing areas.

7) Develop a medium term "Skills Plan"
Major employers need to develop a medium term "Skills Plans" for how to develop and retain skills in their organizations considering the supply-demand balance for different skills and reassessing the benefits of reskilling staff versus cost of recruitment. The retention and productivity value of high quality training may be going up.

8) Keep an eye on the pace of change
Observe the pace of change and the ability of labor market participants to keep up.

The story of automation is only just entering its next chapter, and like all major technological advances of the past, there is significant disruption to come. By acquiring a deep understanding of how the U.K. employment market is developing, its main stakeholders can create strategies to get ahead of the curve and capitalize on the opportunities presented by automation.

About the Author

Andrew Allum is a partner at L.E.K. Consulting, a global strategic consulting firm with more than 30 years of consulting experience. His main areas of practice are surface transport and business services, with a focus on human capital sectors such as training, education and recruitment. Andrew holds a BSc (first class) in Physics from Imperial College and an MSc in Computing from Oxford University.

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