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Artificial Intelligence (AD) is causing another paradigm shift, just as the World Wide Web did before it. Al has been widely employed by many industries, from banking, to education, to marketing, to healthcare, to perform a wide range of repetitive tasks, including customer service, technical support, facial recognition, online search, online ad targeting, and limited medical diagnoses. Despite its limitations, Al in the form of machine learning can be used to increase the efficiency of business operations and management decision making. Supplemented with other technologic, such as robots, big data, and cloud computing, Al is expected to be the next big thing that helps enterprises create value and reduce costs.

While AI is beneficial to businesses, some worry that the technology threatens job stability. In a survey of 2,092 people in Switzerland by the Swiss Broadcasting Corporation, two thirds of the respondents believed that the emergence of AI would render many jobs obsolete. Among the respondents, only 9 percent of the farmers and a quarter of the senior management were confident that their jobs would not be affected by AL. As noted by the European Commission in a comprehensive study on the changing nature of work and skills in the digital age, it is difficult to estimate the number of jobs that may be impacted by AI in the future, with estimates varying widely. In one study conducted in 32 countries, the Organization for Economic Co-operation and Development (OECD)estimated that only about 14 percent of jobs are at high risk (that is, they have more than 70 percent probability) of being automated. That said, the number of job losses forecast by the OECD--around 66 million--is still significant.

However, it may be too early to be pessimistic about the job market in the era of AI. Technological breakthroughs do not necessarily mean job loss. McKinsey & Company estimated that 60 percent of current jobs have technically automatable activities of over 30 percent. Moreover, many AI applications are designed to facilitate individuals in doing their jobs rather than replacing them completely. Human-machine collaboration is expected to generate optimal results.

McKinsey & Company's study of historical data also found that new waves of technology have both eliminated and created jobs. There are always shortages of the sort of labor that can master the skills related to new technologies. Advancements in technology have resulted in temporary job losses, but in the long term, they have created new openings to be filled by individuals who have equipped themselves with the right skillsets to thrive alongside technological progress. Dun & Bradstreet conducted a survey among 100 attendees of the Al World Conference and Expo held in late 2018 and found that only 8percent of respondents said that their organizations were axing jobs because of AI deployment. As much as 40 percent of respondents' organizations are adding more jobs because of AI implementation within their business. The respondents also said that a lack of internal human expertise was one of the obstacles to further implementation of Al in 2019. Thus, Al will definitely take away many jobs but will likely create many others, perhaps at an unprecedented rate. McKinsey & Company posits that AI will generate 50million jobs by 2030, creating vacancies we cannot yet foresee.

The European Commission, OECD, and McKinsey & Company studies all note that the number of jobs affected by AI will vary by country and by industry. For example, the European Commission study notes that the percentage of jobs at risk is much higher in eastern and southern Europe than in the Nordic countries and the UK. Those who work in farms or factories are at high risk, but some positions in the service sector may also be replaced by Al. These jobs require a relatively low level of education; generally, the higher the level of education required for an occupation, the more secure it is against the threat of AI substitutes. McKinsey & Company has estimated that if there is rapid adoption of automation, up to 375 million workers globally (approximately 14 percent of the global workforce) may have to change occupations and adopt new skills. The studies have both found that appropriate training will help workers switch to other career paths. However, not all workers are lucky enough to get the necessary training, and even if they do, they may not earn the same wage after changing jobs.

The OECD study also found a U-shape relationship between automation and age. Surprisingly, the peak is at the young age group rather than the older generation, with the valley at the age group of 3035.This means that the chance of losing a job to an AI is higher among the younger workforce with less work experience than the age group that's close to retirement age. Fortunately, young people are usually better at keeping up with technological progress than their senior counterparts. After six decades of IT driven automation, which early on was predicted by "experts'' to lead to massive unemployment, the most interesting question is, why did employment and jobs expand so rapidly despite intensive application of IT?

CASE STUDY QUESTIONS

I. What are the various views on the impact of AI on jobs? What do you think will happen in your country?

2. Some people think that AI does not kill jobs but transforms business models. Do you agree? Why or why not?

3. How would AI potentially add more jobs than it eliminates?

就像萬維網之前一樣，人工智能（AD）正在引起另一種模式轉變。人已被許多被廣泛使用的行業，包括銀行，教育，營銷，醫療保健，進行了廣泛的重複任務，包括客戶服務，技術支持，面部識別，在線搜索，在線廣告目標，以及有限的醫療診斷。儘管有其局限性，但以機器學習形式的Al仍可用於提高業務運營和管理決策的效率。補充其他技術，例如機器人，大數據和 在雲計算領域，Al有望成為幫助企業創造價值並降低成本的下一件大事。

雖然AI對企業有利，但有些人擔心該技術威脅到工作穩定性。瑞士廣播公司（Swiss Broadcasting Corporation）對瑞士的2,092人進行了一項調查，其中三分之二的受訪者認為，人工智能的出現將使許多工作過時。在受訪者中，只有9 ％的農民和四分之一的高級管理層有信心他們的工作不會受到AL的影響。正如歐洲委員會在對數字時代工作和技能的不斷變化的性質所做的全面研究中指出的那樣，很難估計未來可能會受到AI影響的工作數量，且估計值差異很大。在一項研究在32個國家進行的，該組織的經濟合作-與發展組織（OECD）估計，大約只有14％的工作是在高風險的（也就是說，他們有超過70 ％的概率）被自動化。這就是說，由OECD預測失業人數-約66萬-仍然顯著。

但是，現在對AI時代的就業市場感到悲觀還為時過早。技術上的突破並不一定意味著失業。麥肯錫公司（McKinsey＆Company）估計，目前有60％的工作具有超過30％的技術自動化活動。此外，許多AI應用程序旨在幫助個人完成工作，而不是完全取代他們。人-機合作預計將產生最佳結果。

麥肯錫公司對歷史數據的研究還發現，新的技術浪潮已經消除並創造了就業機會。總是缺乏能夠掌握與新技術相關的技能的勞動。技術的進步已經導致暫時失業，但在長遠來看，他們已經創造了新的開口，以填補由誰都有配備個人自己使用正確的技能興旺靠技術進步。Dun＆Bradstreet對2018年末舉行的Al World Conference and Expo的100名參與者進行了一項調查，發現只有8％的受訪者表示，由於AI的部署，他們的組織正在裁員。由於企業內部實施了AI，多達40％的受訪者組織增加了工作機會。受訪者還表示，缺乏內部的人類專業知識是在2019年進一步實施Al的障礙之一。因此，Al肯定會帶走許多工作，但可能會創造許多其他工作，而且可能以前所未有的速度創造。麥肯錫公司（McKinsey＆Company）認為，到2030年，人工智能將創造5000萬個工作崗位，這將創造我們尚無法預見的空缺。

歐盟委員會，經合組織和麥肯錫公司的研究均指出，人工智能所影響的工作數量將因國家和行業而異。例如，歐盟委員會的研究指出，東歐和南歐的危險工作百分比遠高於北歐國家和英國。在農場或工廠工作的人處於高風險中，但是服務業中的某些職位也可能被Al取代。這些工作需要相對較低的教育水平；通常，某職業所需的教育水平越高，它對AI替代品的威脅就越安全。麥肯錫公司（McKinsey＆Company ）估計，如果迅速採用自動化技術，全球多達3.75億工人（約佔全球勞動力的14％）可能不得不改變職業並採用新技能。兩項研究均發現，適當的培訓將有助於工人轉向其他職業道路。但是，並非所有的工人都幸運地獲得了必要的培訓，即使他們這樣做，他們在換工作後也可能無法獲得相同的工資。

經合組織的研究還發現U形-自動化與年齡之間的關係形態。出人意料的是，高峰期是在年輕的年齡組，而不是老一代，在同年齡組的3035.This手段山谷，失去工作到AI的機率較高的年輕中員工與工作量少經驗比接近退休年齡的年齡段。幸運的是，年輕人通常比高級年輕人更能適應技術進步。在由IT推動的自動化技術發展了六十年之後，“專家”早就預測這將導致大量失業，但最有趣的問題是，儘管IT大量應用，但為什麼就業和工作機會如此迅速地增長？

 案例研究問題

I.關於人工智能對工作的影響有哪些不同看法？您認為您的國家會發生什麼？

2.有人認為AI不會殺死工作，而是會改變商業模式。你同意嗎？為什麼或為什麼不呢？

3. AI如何可能增加比消除的工作更多的工作？