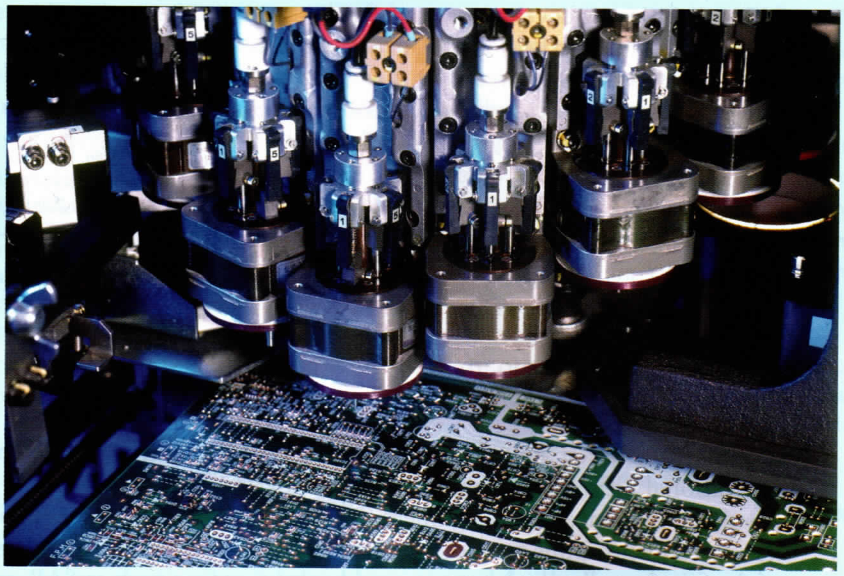

How do advances in information technology change the ways firms manage their resources?

and the growth became unstoppable. By 1980, the majority of Germany's top 100 companies were running *SAP* software on *IBM* mainframe computers. By 1993, turnover exceeded €1 billion, and in 2007 it went above €10 billion. After set-backs during the financial crisis, it reached €22.1 billion in 2014 with a profit margin of 16%. The small town of Walldorf (near Heidelberg in south-western Germany) remains the hub of *SAP*'s global operations.

*SAP* invented and developed the market for ERP software. Essentially, its electronic information systems integrate data from different parts of an organization, such as manufacturing efficiency, inventories, sales and customer feedback. ERP software is like the central nervous system of a company, gathering information and conveying it in real time to decision-makers in an accessible form – including fancy tables and graphs.

The business model combines products with service; customers would buy not only software but a maintenance contract that includes regular software upgrades, thus generating two income streams for *SAP* – one at the time of the sale and one spread over several years. As a business-to-business (B2B) supplier, *SAP* is working closely with many of the world's largest MNEs. Independent IT service partners help clients to implement *SAP* systems in their organization.

*SAP* built on German strengths in quality and reliability of engineering, yet soon that was not enough. Since the 1990s, research and software development have been internationalized, with eight centres around the globe. An operation in Palo Alto, California, served as an ideas factory and to stay in touch with the latest trends in Silicon Valley. This internationalization allowed *SAP* to tap into human capital around the world. To stay ahead of the competition, *SAP* pushed further than most firms by aiming to hire the best software engineers – wherever in the world they were found. Thus gradually the hub of the development was shifting away from Walldorf. This internationalization was appreciated by clients and investors outside Germany, but received a mixed response in Walldorf. Disgruntled employees talked in the local media about 'Americanization' and loss of traditional values, such as commitment to quality and the entrepreneurial spirit of the early years. Having to speak English in internal meetings did not please many of the older engineers.

However, in this fast-growing industry, new generations of technology often required new ways of organizing software. *Oracle* and *Mircosoft* became major players in the business software market, and for many years *SAP* responded by flexibly redesigning its business model. However, new start-up companies challenged *SAP*'s business model. In particular, companies like *Salesforce.com* developed 'software on demand' through the internet, paid by monthly subscription, replacing the old model of installing software on clients' computers and then regularly updating it. *SAP* responded by investing in infrastructure and delivery capabilities based on cloud computing to stay ahead of its competitors.