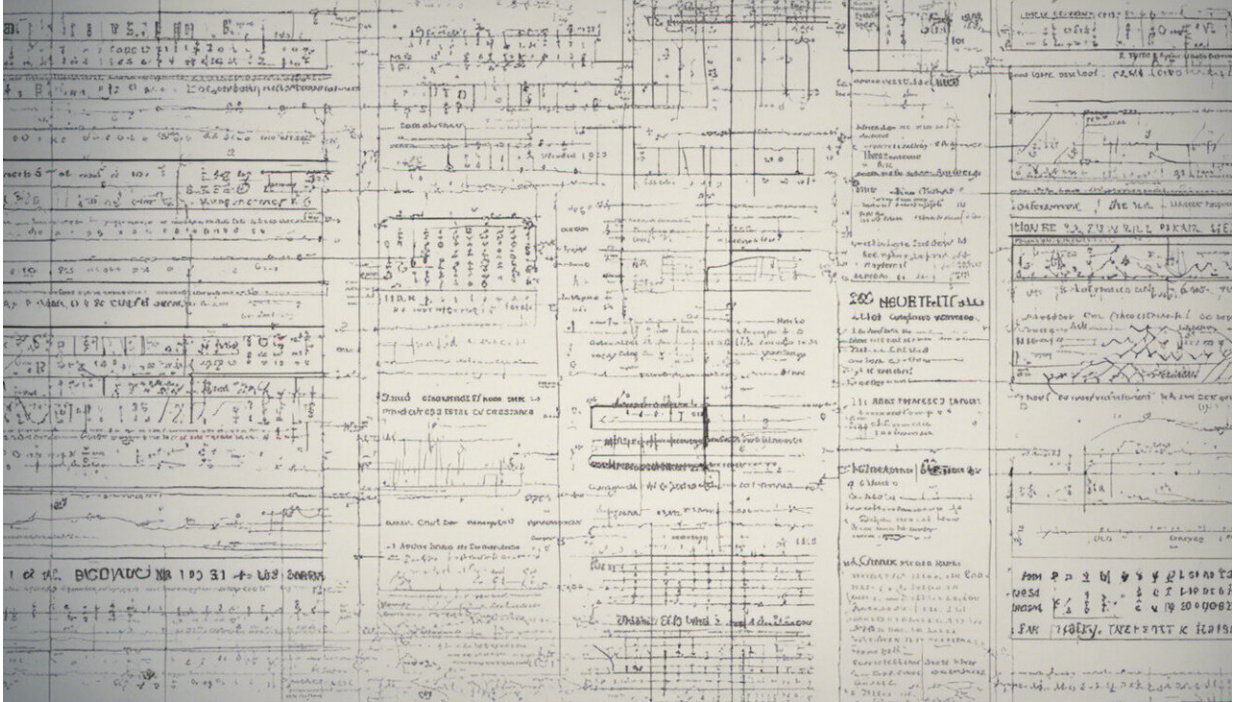


# Calculating the value of technology start-ups

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Credit: AI-generated image ([disclaimer](#))

Researchers at Oxford University have developed a novel way of determining the value of new technologies in the information and communications sector, filling a significant gap in existing methods and potentially creating a decision-making tool for investors.

A variety of methods are currently used to work out what new technologies are worth, from simple financial formulas to highly

complex techniques, combining qualitative and quantitative models.

However, the existing techniques have significant drawbacks – they are either purely theoretical and cannot be used in practice, are mainly based on past financial investment and do not reflect the value of creativity and novelty, or they rely on subjective assessments. This means they tend to have poor predictive power.

Now Professor Xiaolan Fu and Dr Shaomeng Li of Oxford's Technology and Management Centre for Development (TMCD), working with Chao Ai, Head of Early Stage Investment, R&D, at Chinese information and communication [technology](#) (ICT) company Huawei Technologies Co. Ltd, have co-proposed and pioneered a new approach drawing on big data.

The researchers created a database that matched all UK start-ups in the ICT sector – defined as being less than five years old between 2006 and 2015 – with records of patents granted in the relevant technology fields by the world's major patent grant offices during the same time period. The resulting database matched over 1,500 patents to 143 UK ICT firms.

Based on this study, the researchers were able to develop a [model](#) that could determine how the characteristics of the patents, the characteristics of the companies themselves, and the market into which the technology was introduced explained variability in their ultimate value. The model was able to explain around 85% of the variation in the value of technologies owned by the start-ups in the whole database.

By inputting information about these same characteristics for technologies that are about to be commercialised, the model can be used to predict what they will be worth.

For example, the researchers tested the model on Deepmind, the

company that created AlphaGo and which was later acquired by Google. Using the model, their estimate of the value of Deepmind was between around \$590 million and \$660 million; Google paid \$650 million to acquire Deepmind in January 2014.

'The model has already proven itself to have a highly accurate predictive power, especially for technologies at an [early stage](#) of commercialisation,' said Professor Fu. 'It also uses completely objective data, which is a significant improvement on existing methods.'

'We are now looking forward to bringing our findings to the ICT community to explore the new model's applications.'

In late June the research was named Best Paper by the Innovation Strategic Interest Group at the 2017 European Academy of Management Annual Conference.

The research is an outcome of the Valuation of Early Stage Technology (VEST) research project, an industry-university collaboration between TMCD, a research programme at the Oxford Department of International Development (ODID), and Huawei. The project sought to develop a contemporary theory and an empirical, practically applicable model to appraise the value of early stage technology and innovation in the ICT industry based on large, linked patent-firm data.

The researchers cautioned that the technique is currently only applicable to the ICT sector; however, they have already been approached to develop similar models for other industries.

Provided by University of Oxford

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