

[DOI: 10.20472/IAC.2018.040.012](https://doi.org/10.20472/IAC.2018.040.012)

## **CHENG-FENG CHENG**

**3D Printing Medical Research Institute/ Department of Business Administration/ Department of International Business, Asia University, Taiwan, R.O.C., Taiwan**

## **YI-JU CHENG**

**Department of Business Administration, Asia University, Taiwan**

# **EXPLORING ADOPTION INTENTION IN 3D PRINTING MARKET BASED ON ASYMMETRIC THINKING IN DATA ANALYSIS**

### **Abstract:**

Three-dimensional (3D) printing has become the major strategic technology in the world, and managers must understand customer behavior in 3D printing market to enhance competition of business activities. In addition, most of social science theories are formulated in set relations or asymmetrical relationship, method for asymmetrical or set-theoretic relationship has been receiving a lot of attention from social science academics and practitioners. Drawing on theory of planned behavior, the major purpose of this study is to extend our understanding of the antecedents of adoption intention in 3D printing market based on asymmetric thinking in data analysis. Specifically, this study employs a set-theoretic approach based on fuzzy set qualitative comparative analysis (fsQCA) to combine potential relevant antecedents (i.e., product quality, service quality, system quality, perceived risk, perceived ease of use, and perceived usefulness) into various causal recipes to explore the configurations for achieving high 3D printing adoption intention. To assess the applicability of this conceptual model, this study employs an Internet-based questionnaires survey and collected primary data from 3D printing customers. The statistical techniques adopt contain descriptive statistics, factor analysis, reliability analysis, and fsQCA. The intermediate solutions of fsQCA indicate four causal configurations have found to be sufficient for high level of 3D printing adoption intention. For instance, first configuration signals a logical statement “product quality \* system quality \*~ perceived risk \*~ perceived ease of use \* perceived usefulness”, and this result represents that the combination of high level of product quality, system quality, and perceived usefulness with low level of perceived risk and perceived ease of use can achieve high level of 3D printing adoption intention. In other words, even the level of customer’s perceived ease of use is low, he/she will like to adopt 3D printing if firm can improve product quality, system quality, perceived usefulness, and reduce perceived risk.

### **Keywords:**

Quality, perceived risk, perceived ease of use, perceived usefulness, 3D printing adoption intention

**JEL Classification:** M31