

ChatGPT and Chatbot Tutor: Explaining the Time Value of Money

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Abstract

A good understanding of the Time Value of Money will lay down a solid foundation to study finance further. In this paper, we show five ways to explain the concept: traditional way (in a classroom setting), free financial and mortgage calculators, ChatGPT (general format), ChatGPT based on a user's own PDF file (such as this paper), and Chatbot. Performances of the last four methods are compared in terms of explaining 5 formulae: $pv(\text{one } fv)$, $fv(pv)$, $pv(\text{perpetuity})$, $pv(\text{annuity})$, and $fv(\text{annuity})$. The results show that Chatbot plus a financial calculator might be the best solution. Since our financial calculator also mimics five Excel functions: `pv()`, `fv()`, `pmt()`, `rate()`, and `nper()`, it will help business school students when Excel is used as the computational tool. Even though our Chatbot and financial calculator are written in Python, students and teachers don't need any prior knowledge related to Python. For interested readers, a few basic Python programs are included in the appendices.

JEL classifications: G00, G19, G14

Keywords: ChatGPT, Chatbot, AI, Time value of money, Excel functions, Python, `pv()`, `fv()`, `pv(perpetuity)`, `pv(annuity)`, and `fv(annuity)`.