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Can AI Platforms Replace Valuation Experts?



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Reading the numerous articles on AI published daily can easily make a reader dizzy. One type of article paints a gloomy picture of the future of employment, with millions of people worldwide losing their jobs, and AI-based applications taking over their tasks. Other articles take a more nuanced view and generally fall into two groups.

The first group of articles focuses on technological advances that have replaced human labor in specific domains while, on the other hand, creating new employment opportunities for displaced workers. The second group of articles does not focus on employment but instead warns readers that many of the newly developed AI-based applications are overly ambitious and oversold to the public, who blindly relies on them without adequate verification, thereby increasing the risk of erroneous analyses and poor decision-making. This article presents two experiments that test generative AI's ability to replace valuation experts.[1]

Experiment One

Case Background

We were expert witnesses in a trial with the following key elements:

- The company was a pre-revenue, pre-Phase II FDA-approval-process gene therapy company.
- The company was founded by several medical school professors.
- The initial investment was $5 million.
- Several years after the company was founded, following unsuccessful attempts to raise capital or sell the company, its cash was nearly exhausted.
- A large number of biotech pharmaceutical companies were provided with the company's scientific and financial information.
- None of the many prospective buyers was willing to invest in the company or to acquire it.

The Transaction

When the company had exhausted almost all its available cash, a buyer approached the company with an offer of approximately $700,000. The founders accepted the offer, and the company's board of directors approved it.

Post-Transaction Developments

One year following the transaction, the buyer (who paid $700,000) sold the company for $85 million. Thus, within a year, the company's value increased by a factor of 121. The founders sued the original buyer, asserting, among other claims, that it was unreasonable for an asset valued at $700,000 to be resold for $85 million within a year.

Testing AI Platforms

We provided several leading AI platforms with the complaint and the company's financial information for the years leading to the $700,000 transaction. We asked the AI platforms to read the complaint, review the financial information, and answer the following questions:

1. What analyses should the expert witness perform to value the company?
2. What arguments should the expert make to support the valuation?
3. How can the expert explain that a company's value grew from $700,000 to $85 million within one year?

Where AI Platforms Demonstrated Strengths

The AI platforms were familiar with the "known or knowable" doctrine, indicating that the amount paid on the date of the first sale represented the best available evidence of the company's fair market value at that time. The AI models generally emphasized the following:

- The expert should not use hindsight.
- No subsequent events should be relied on, unless they are reasonably foreseeable as of the valuation date.
- Later success cannot retroactively increase value.

The AI platforms suggested that the significant increase in value within one year might reflect one or more of the following: changes in the company's financial condition; changes in market conditions; positive clinical-trial data; and strategic repositioning.

1 Throughout this article, references made to AI refer to "generative AI, sometimes called genAI, which is artificial intelligence that can create original content such as text, image, video, audio or sotiware code in response to a user's prompt or request." Source: Cole Stryker & Mark Scapicchio, "What Is Generative AI?," IBM Think, published on May 20, 2024 (can be accessed at https://www.ibm.com/think/topics/generative-ai).

Where AI Platforms Showed Limitations

In response to the question, "What analyses should the expert witness perform to value the company?," the AI platforms recommended the following:

Income (DCF) Valuation Approach: However, this recommendation did not fully account for company-specific factors, including the company's stage of development, product focus, risk profile and lack of revenue. Accordingly, a DCF analysis would generally not be considered a sufficiently reliable valuation approach in this case.

Market (CompCo) Valuation Approach: However, this recommendation does not account for the fact that, at the time of the transaction, there were no sufficiently comparable publicly traded companies that provided meaningful valuation benchmarks, particularly given the company's development stage, product focus, risk profile and lack of revenue.

Market (CompM&A) Valuation Approach: However, this recommendation ignores the fact that at the time of the first transaction, there was no meaningful information on comparable gene therapy M&A transactions.

Asset-Based Valuation Approach: However, this recommendation ignores the fact that at the time of the first transaction, the company did not have any tangible or significant intangible assets.

Experiment Two

Case Background

The wave of retail bankruptcies in 2020 affected many businesses, including the J.Crew retail business, which was restructured through chapter 11 bankruptcy proceedings.[2] As part of those proceedings, we were engaged to value J.Crew's business as a whole and, separately, the intellectual property (IP) that underpinned its entire business.

IP assets are commonly valued using the income, cost and market approaches. However, in the case of J.Crew, the cost approach was not applicable because of the difficulty in quantifying a reasonable replacement cost for its IP that included its trademarks. Similarly, the market approach was not utilized to value J.Crew's IP directly because no transactions involving sufficiently comparable intangible assets were identified. Instead, we valued J.Crew's IP using the relief-from-royalty (RFR) method, which represents an income-approach valuation.

Under the RFR method, the value of an intangible asset is determined by the value of the hypothetical royalty payments that would be saved by owning the asset compared with licensing the intangible asset from a third party.[3] In other words, if a company did not own its IP, it would have to license such IP from a third party in order to continue operating the business in the same manner.

The RFR method can be broken down into the following four steps:

- Obtaining revenue projections attributable to the subject IP.
- Selecting an appropriate royalty rate for the subject IP.
- Calculating the projected royalty savings based on the revenue projections and the selected royalty rate.
- Discounting the projected royalty savings to present value using an appropriate discount rate, which results in the value of the subject IP.

Testing AI Platforms

We asked the AI platforms to calculate the value of J.Crew's IP under the RFR method, using the following information:

- J.Crew's IP-related projections including revenue and profitability margins (see Table 1 for the projected margins).
- Data from 62 reference IP transactions completed over the 10-year period prior to the valuation date, including their reported royalty rates (see Table 2).[4]

AI Platforms' Misguided Response

As shown in Table 2, the royalty rates observed in the reference IP transactions varied widely, ranging from

2 J.Crew Group, Inc., its ultimate parent, Chinos Holdings, Inc., and certain affiliates filed voluntary chapter 11 petitions on May 4, 2020.

3 International Valuation Standards Council (IVSC), International Valuation Standards, IVS 210 – Intangible Assets, "Relief-from-Royalty Method," para. 60.18 (effective Jan. 31, 2025).

4 The reference IP transactions were used only to inform the royalty-rate input to the RFR analysis, rather than as direct market-approach valuation comparables.

Tables 1 and 2: IP's Profitability Projections and Summary Statistics for 62 IP Transactions

Table 1

IP's Profitability Projections (1)	
Year	Adjusted EBIT Margin (2)
2021	3.5%
2022	3.7%
2023	3.1%
2024	3.1%
Median	3.3%

Notes: (1) Obtained from the company; (2) EBIT margin adjusted for share-based comp, amortization of lease commitments, and one time items.

Table 2

Summary Statistics for 62 IP Transactions (3)	
Statistics	Royalty Rate
Minimum	0.1%
Lower Quartile	2.8%
Median	5.6%
Upper Quartile	7.5%
Maximum	67.2%

Note: (3) Data obtained from the Markables database.

0.1% to 67.2%, with a median of 5.6%. As can be seen in Table 1, J.Crew projected its IP-related adjusted EBIT margin (profit margin) to range from 3.1% to 3.7%, from 2021 through 2024. The AI models analyzed all this information and reached a consensus recommendation that a median royalty rate of 5.6% should be utilized to value J.Crew's IP.

Generally, a median is not an unreasonable statistic to use as an input to a valuation methodology. However, one must employ common sense and confirm that all assumptions used in a valuation model are indeed reasonable and congruent. What the AI platforms failed to do is to inspect the reasonableness of selecting a royalty rate of 5.6% to value J.Crew's IP, which was only expected to generate annual profits of about 3.3% (median estimate of adjusted EBIT). In other words, the AI responses implicitly assumed that a potential licensee would be willing to pay a royalty rate of 5.6% for an IP that can generate only 3.3% in profits, which is irrational.

Analysis of AI-Generated Responses

While valuing J.Crew's IP ourselves, we first compared the median royalty rate to the adjusted EBIT margin the IP was expected to generate, and we found that it substantially exceeded the margin. We addressed this issue by analyzing the reference transactions in greater detail, identifying profit-split data and utilizing the profit-split method. The "profit-split [method] for a trademark or other intangible asset attempts to quantify what share of the profit of the business is attributable to the subject asset."[5]

Generally, there is a linear relationship between royalty rates and profitability measures.[6] Therefore, the profit-split method can also be used to estimate a royalty rate by multiplying the percentage split by the profit margin.[7] For example, if 25% of a business's profits are attributable to an intangible asset, and the business's profit margin is 10%, then the implied royalty rate would be 2.5% (25%×10%). Therefore, we used the profit-split method to estimate a reasonable royalty rate for J.Crew's IP, based on available profit-split data from the 62 reference IP transactions.

Although these transactions were not sufficiently comparable to support a direct market-approach valuation, they provided relevant market evidence for estimating the royalty-rate input under the RFR method. After estimating an appropriate royalty rate, we applied the RFR method to calculate the value of J.Crew's IP. This step of using the profit-split method to calculate a reasonable royalty rate required professional judgment that the AI platforms did not demonstrate in their responses.

Conclusion

Generative AI is developing at a rapid pace and has significantly changed many aspects of human life. Its versatility and practicality have led to widespread adoption — from routine daily tasks to professional practice. However, despite these advancements, there are still clear limitations on the use of generative AI in highly specialized and demanding professions. Valuation is one such profession.

Valuation experts are often retained in cases that involve very complex, fact-specific issues that are not frequently encountered, presenting a significant challenge for AI (at least at present). Current AI models have likely not been extensively trained on these fringe cases that are not commonly described in textbooks or taught in schools. This can result in inadequate responses from AI when tasked with solving such unusual problems. However, AI capabilities are expected to continue improving over time, potentially reducing some of these limitations.

This article is not intended to question the future potential of AI models or their growing role in the valuation profession. However, in the experiments described here, the AI platforms demonstrated clear limitations. Reliance on these platforms without appropriate oversight and human judgment could lead to serious professional consequences. Ultimately, AI should be viewed as a tool that enhances, not replaces, the expertise and judgment of experienced valuation professionals. abi

5 Christof Binder & Anke Nestler, "Valuation of Intangibles and Trademarks — A Rehabilitation of the Profit-Split Method Atier Uniloc," Licensing Executives Society International, published on Dec. 2, 2015 (can be accessed at https://lesi.org/article-of-the-month/valuation-of-intangibles-and-trademarks-a-rehabilitation-of-the-profit-split-method-atier-uniloc/).

6 Jonathan E. Kemmerer and Jiaqing "Jack" Lu, "Profitability and Royalty Rates Across Industries: Some Preliminary Evidence," KPMG Global Valuation Institute, November 2012 (can be accessed at https://assets.kpmg.com/content/dam/kpmg/pdf/2015/09/gvi-profitability.pdf).

7 Glenn Perdue, "Trade Secret Economics and Value," Licensing Executives Society International, published in July 2023 (can be accessed at https://lesi.org/article-of-the-month/trade-secret-economics-and-value/).

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